1 STREET STRIP ELEVATION - ALLSTON WAY
A3-304 NOT TO SCALE

2 STREET STRIP ELEVATION - KITTREDGE ST
A3-304 NOT TO SCALE

EXTERIOR ELEVATIONS FOR GENERAL REFERENCE ONLY. PLEASE REFER TO ENLARGED ELEVATIONS FOR PROPOSED DESIGN

PROJECT # : 121246
DRAWN BY: TF, RK
CHECKED BY: MM

NILES BOLTON ASSOCIATES

3060 Peachtree Rd. N.W.
Suite 600
Atlanta, GA 30305

T 404 365 7600

www.nilesbolton.com

APPLICANT:

BILL SCHRADER

T 925 638 8782

No.	Description	Date
4	USE PERMIT	10/25/21
5	USE PERMIT RESUBMIT.	12/10/21
6	SAP	12/22/21
9	SAP RESUBMIT.	3/23/22
13	JUNE LMRKS. MEETING	5/10/22

BERKELEY PLAZA
2065 KITTREDGE ST
BERKELEY, CA 94704

CA VENTURES

SHEET TITLE:

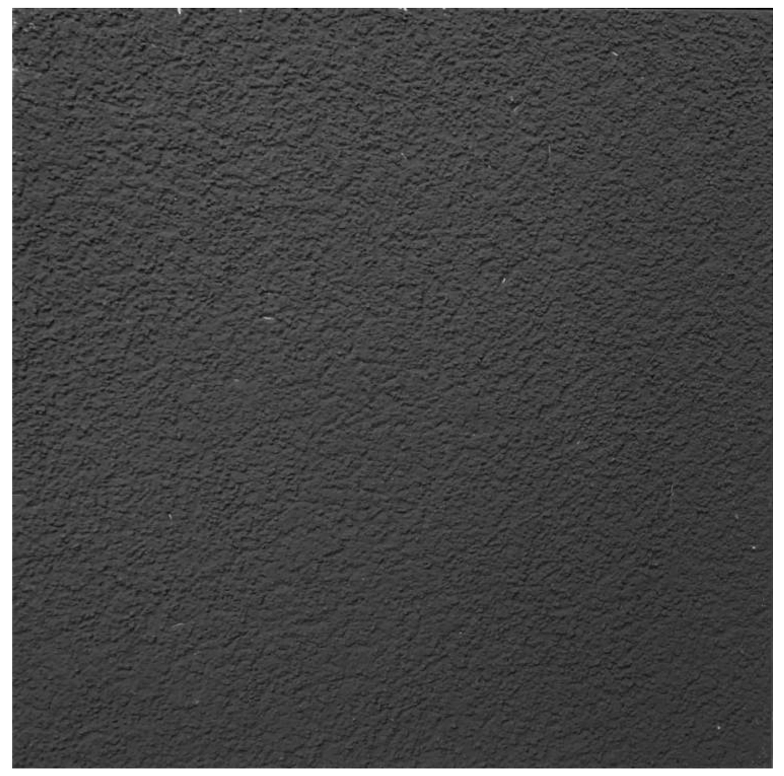
STREET STRIP ELEVATIONS

SHEET NUMBER:

A3-304

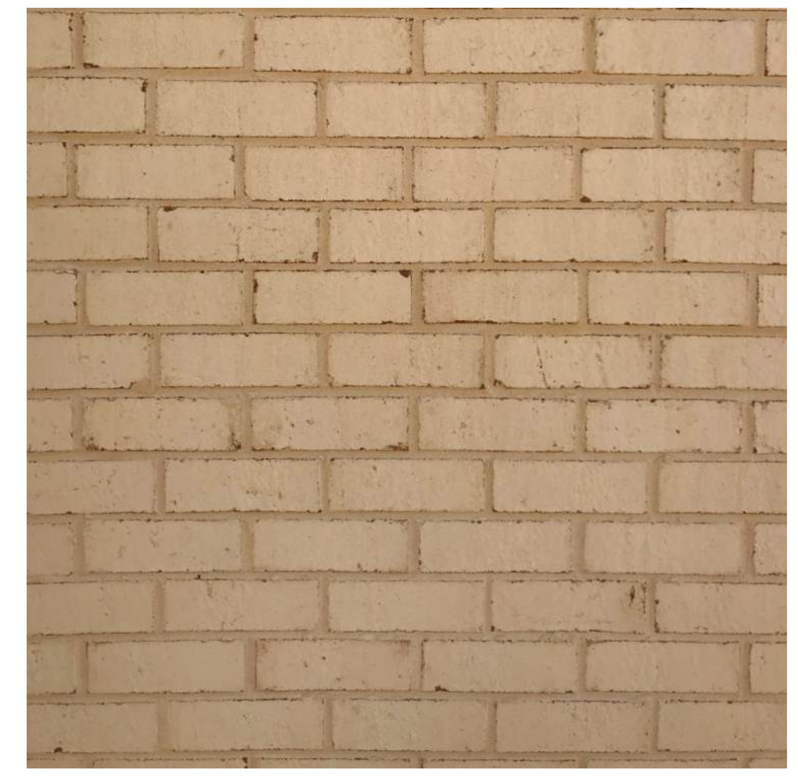
NOT RELEASED FOR CONSTRUCTION

E1 - TAN STUCCO



E2 - CHARCOAL GREY STUCCO

E3 - DARK TAN STUCCO

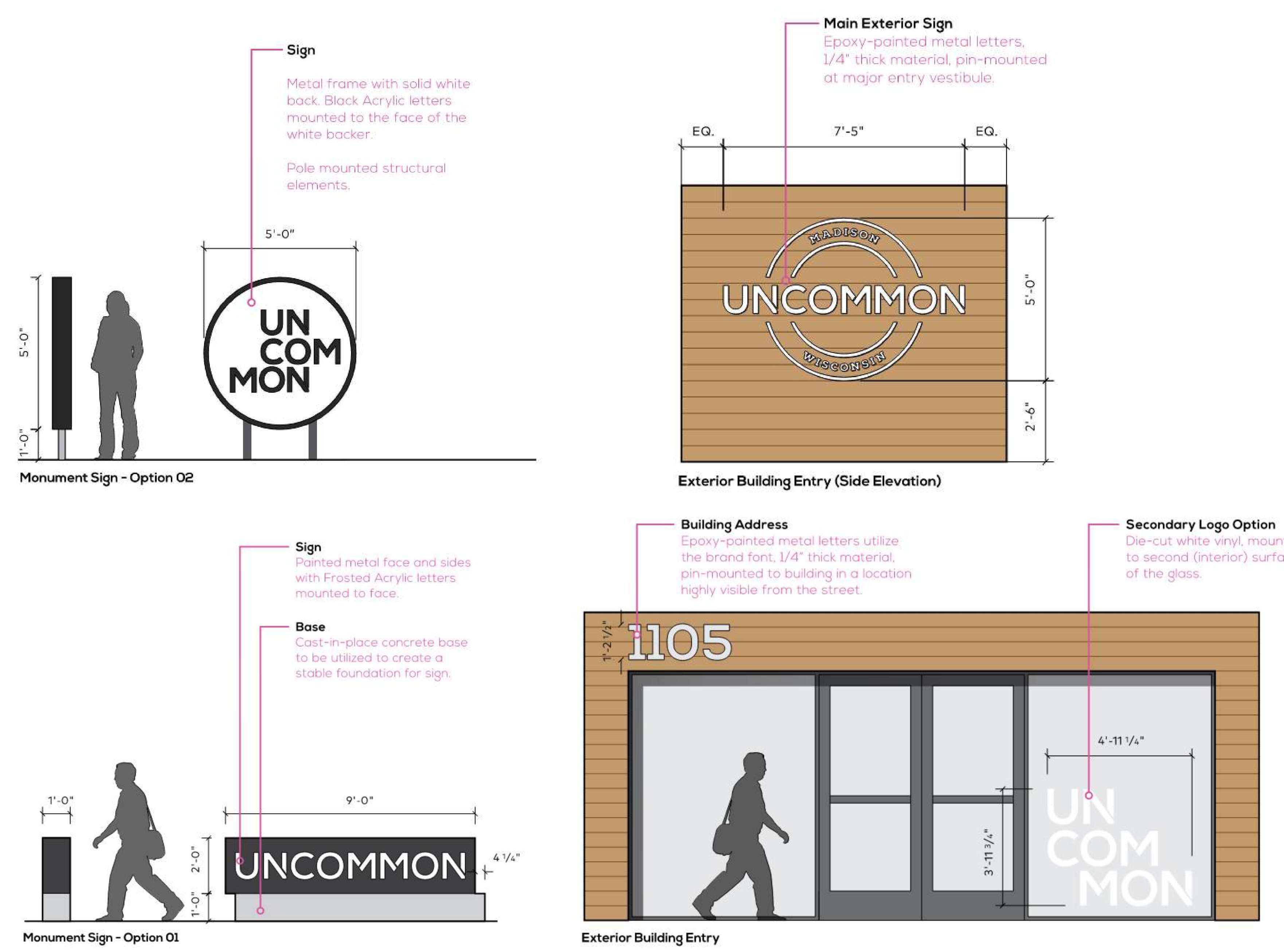


E4 - BRICK

E5 - WHITE FIBER CEMENT

E7 - ALUMINUM CANOPY

E8 - EXTERIOR WALL SCONCE



E9 - SIGNAGE

1 MATERIAL BOARD
A3-305 NOT TO SCALE

PROJECT # : 121246
DRAWN BY: TF, RK
CHECKED BY: MM

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APPLICANT:

BILL SCHRADER

T 925 638 8782

No.	Description	Date
6	SAP	12/22/21
9	SAP RESUBMIT.	3/23/22
11	USE PERMIT RESUBMIT.	3/28/22
12	APRIL DRC MEETING	4/11/22
13	JUNE LMRKS. MEETING	5/10/22

BERKELEY PLAZA
2065 KITTREDGE ST
BERKELEY, CA 94704

CA VENTURES

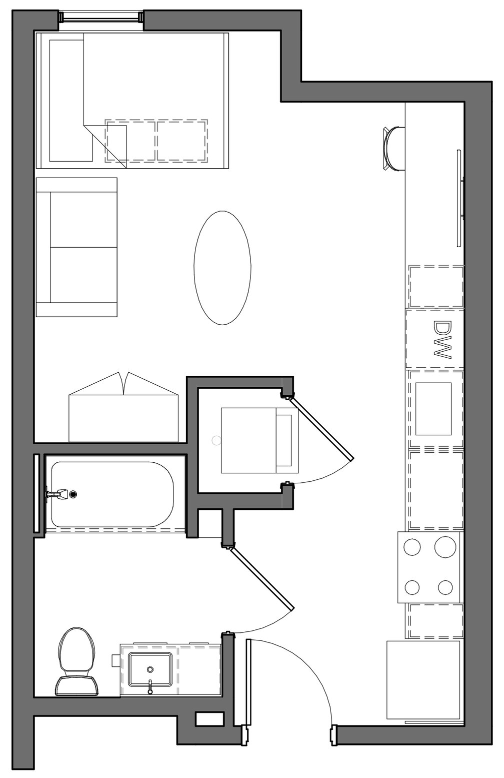
SHEET TITLE:

MATERIAL BOARDS

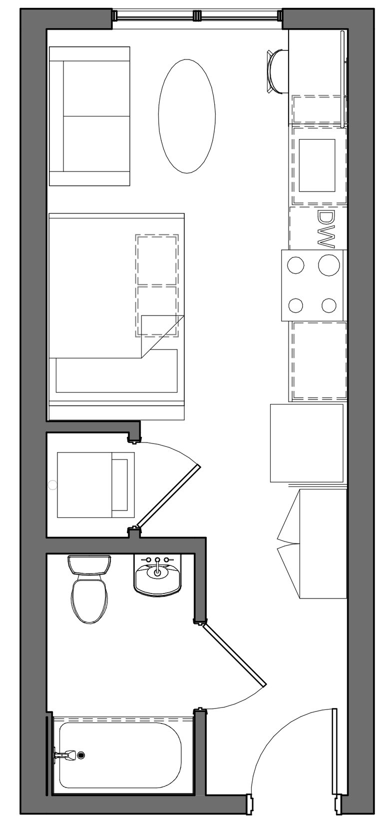
SHEET NUMBER:

A3-305

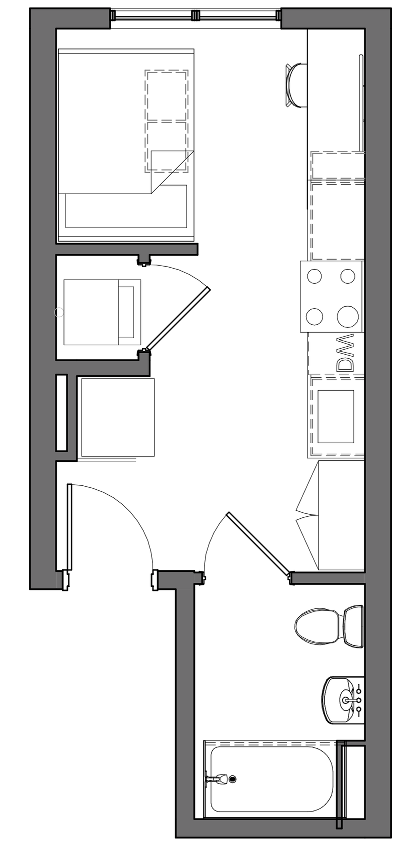
NOT RELEASED FOR CONSTRUCTION



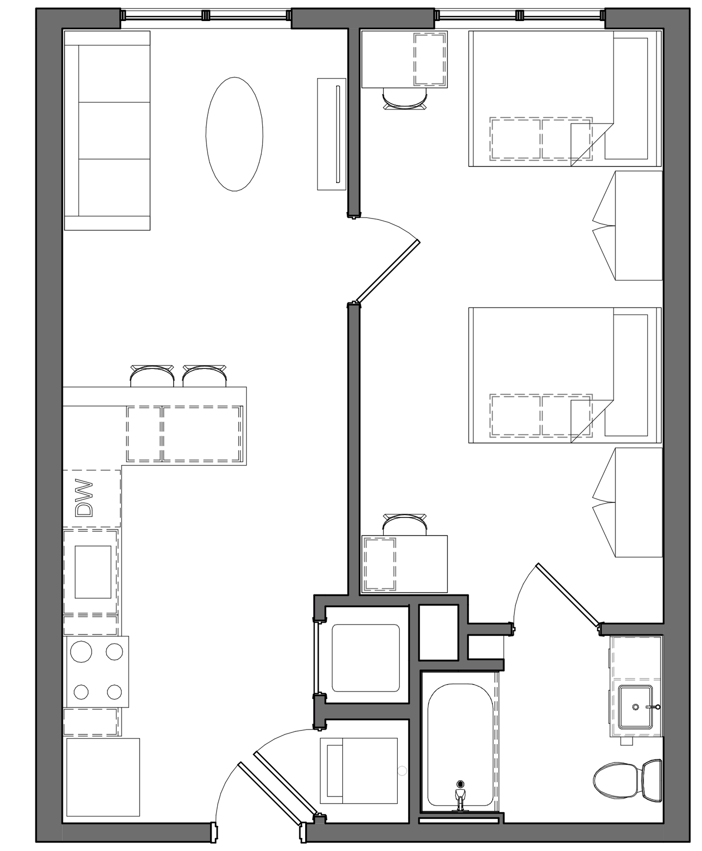
2 SAMPLE UNIT - S2
A5-001 3/16" = 1'-0"



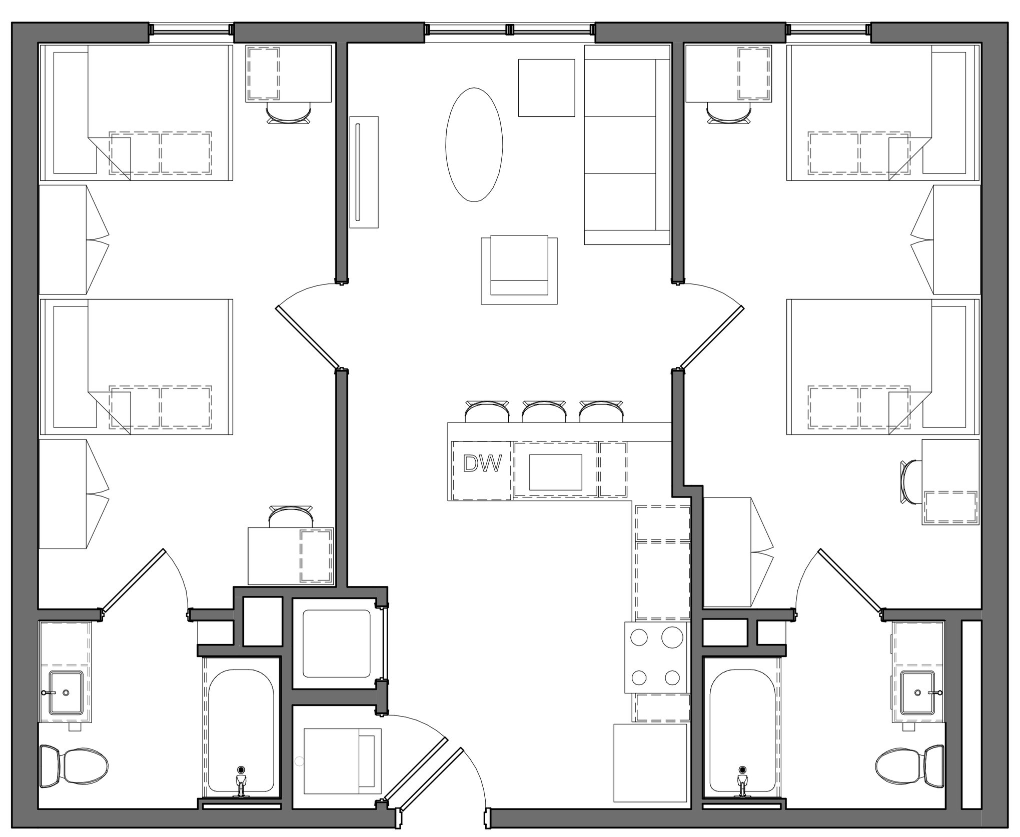
3 SAMPLE UNIT - MS1
A5-001 3/16" = 1'-0"



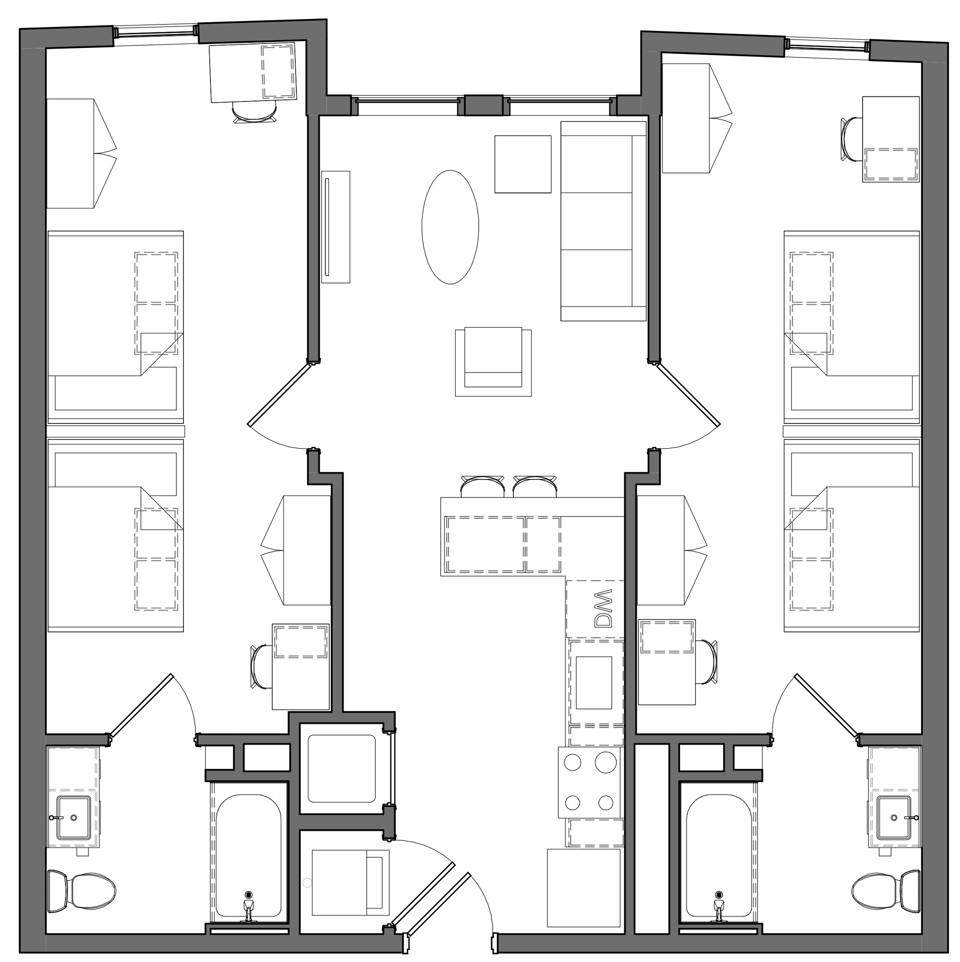
4 SAMPLE UNIT - NS1
A5-001 3/16" = 1'-0"



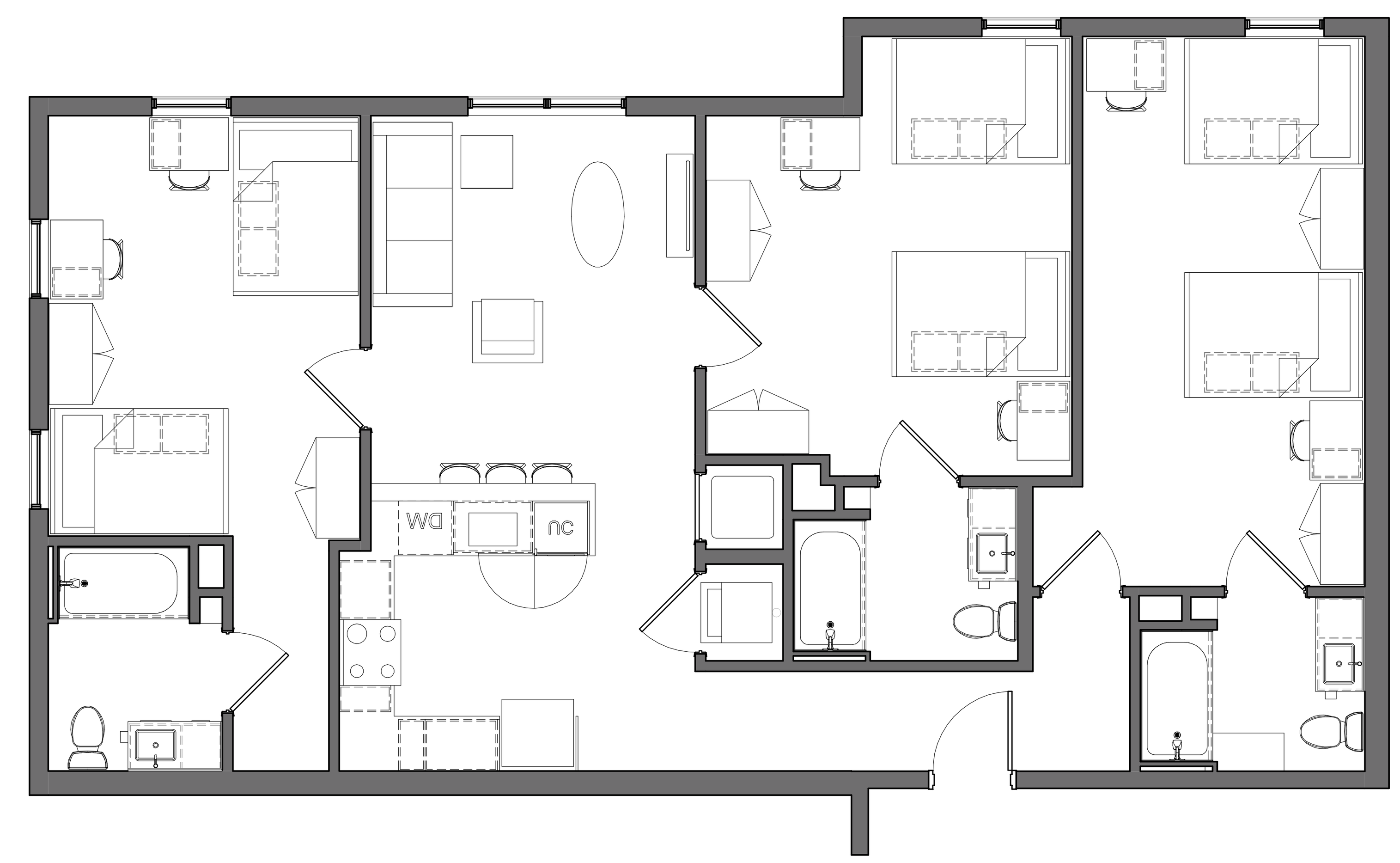
5 SAMPLE UNIT - A1
A5-001 3/16" = 1'-0"



1 SAMPLE UNIT - B1
A5-001 3/16" = 1'-0"



6 SAMPLE UNIT - B2
A5-001 3/16" = 1'-0"



7 SAMPLE UNIT - C1
A5-001 3/16" = 1'-0"

0 1'-4" 2'-8" 5'-4"

PROJECT # : 121246
DRAWN BY: TF
CHECKED BY: MM

NILES BOLTON ASSOCIATES

3060 Peachtree Rd. N.W.
Suite 600
Atlanta, GA 30305

T 404 365 7600

www.nilesbolton.com

APPLICANT:

BILL SCHRADER

T 925 638 8782

No.	Description	Date
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13	JUNE LMRKS. MEETING	5/10/22

BERKELEY PLAZA
2065 KITTREDGE ST
BERKELEY, CA 94704

CA VENTURES

SHEET TITLE:

SAMPLE UNITS

SHEET NUMBER:

A5-001

NOT RELEASED FOR CONSTRUCTION

Master Landscape Design Concept

The landscape design for the Berkeley Plaza blends the City and Bay-Friendly landscape requirements to fit within the context of the surrounding project's urban character, as well as provide a more individual character of onsite plant materials and compositions that compliment the building architecture. Usable space is the focus of each outdoor courtyard, providing site residents amenity space and garden atmosphere while allowing for required stormwater treatment areas. The plant palette is predominantly California Natives, with a generous mix of pollinators to encourage the local insect and bird populations.

GRAPHIC SCALE

16 0 8 16 32 64

(IN FEET)
1 inch = 16 ft.

REFER TO SHEET L2 FOR ROOF DECK LANDSCAPE
REFER TO SHEET L3 FOR PLANT LIST AND IMAGES

REVISIONS

5	Use Permit Resubmit 12/10/21
6	Design Review Submit 03-21-22
7	Design Review Submit 05-18-22
8	DRC Resubmittal 07-22-22

RW Stover & Associates, Inc.
Landscape Architecture
1620 North Main Street, Suite 4
Walnut Creek, CA 94596
Ph: 925.933.2583

LANDSCAPE ARCHITECT RICHARD STOVER 3017 Signature Date Expires 5/31/22 STATE OF CALIFORNIA

BERKELEY PLAZA
2065 KITTREDGE STREET
BERKELEY, CALIFORNIA

GROUND LEVEL PRELIMINARY LANDSCAPE PLAN

DESIGNED: DRAWN:
CHECKED: JOB NO:
DATE 08-04-22
SCALE NOTED

SHEET L1 OF SHEETS

BUILT-IN COUNTER W/
(2) PROPANE GRILLS

ARCHITECTURAL OVERHEAD
SHADE ARBOR

CONVERSATION AREAS

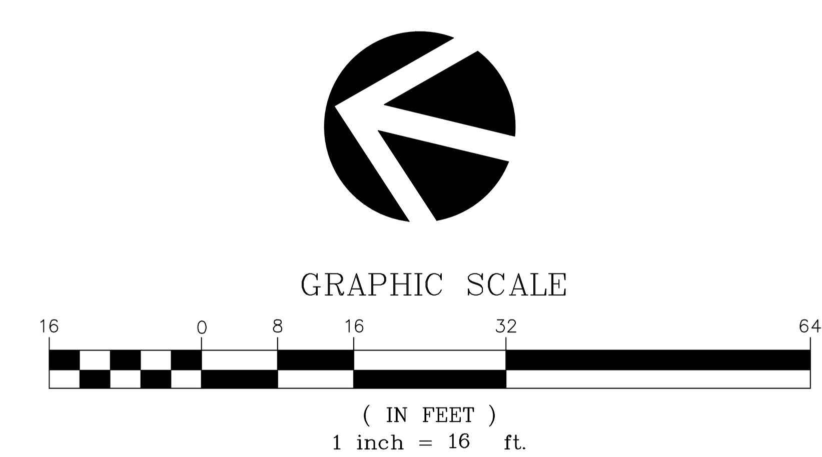
36" HT. BUILT-IN RAISED
STORMWATER TREATMENT
PLANTER ALONG PERIMETER

24" SQ. PAVERS
ON PEDESTALS

CORNHOLE GAME

24" HT. PREFABRICATED
FIBERGLASS PLANTERS

24" SQ. PAVERS ON PEDESTALS



REFER TO SHEET L3 FOR PLANT LIST AND IMAGES

REVISIONS	
5	Use Permit Resubmit 12/10/21
6	Design Review Submit 03-21-22
7	Design Review Submit 05-18-22
8	DRC Resubmittal 07-22-22

RW Stover & Associates, Inc.
Landscape Architecture
1620 North Main Street, Suite 4
Walnut Creek, CA 94596
Ph: 925.933.2583

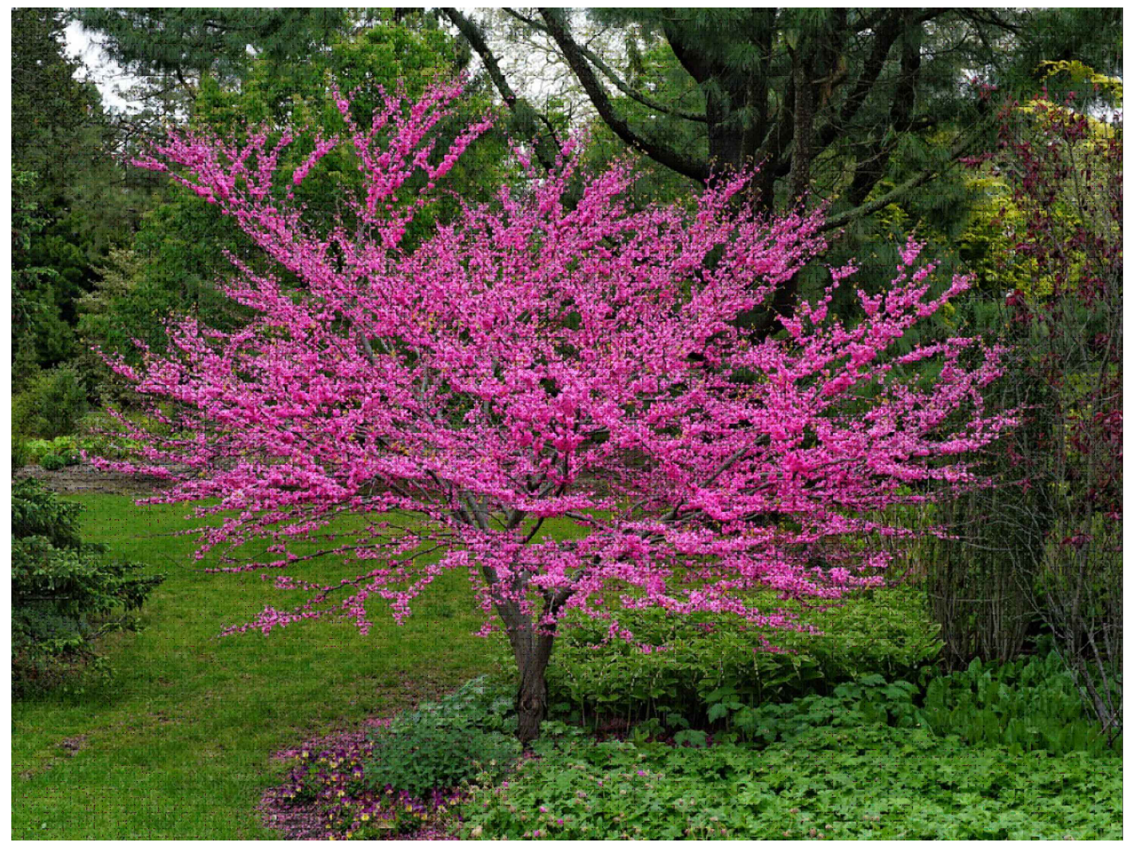
REGISTERED LANDSCAPE ARCHITECT
RICHARD STOVER
3017
Signature
Date Expires 5/31/22
STATE OF CALIFORNIA

BERKELEY PLAZA
2065 KITTREDGE STREET
BERKELEY, CALIFORNIA

EIGHTH FLOOR PRELIMINARY LANDSCAPE PLAN

DESIGNED:
DRAWN:
CHECKED:
JOB NO:
DATE 08-04-22
SCALE NOTED

SHEET
L2
OF SHEETS



SPECIMEN ACCENT TREES IN RAISED PLANTERS
CERCIS OCCIDENTALIS (WESTERN REDBUD)

PROPOSED PLANT MATERIAL LIST (ALL BUILDING LEVELS):

BOTANICAL NAME	COMMON NAME	MATURE SIZE(H'xW')	SIZE	WUCOLS WATER USE	NATIVE	COUNT
TREES:						
STREET TREE (CITY-APPROVED)		SEE PLAN	24" BOX	MED	NO	9
CERCIS OCCIDENTALIS (LOW-BRANCHING)	WESTERN REDBUD	18'x18'	36" BOX	LOW	YES	6
SHRUBS:						
*+CALYCANTHUS OCCIDENTALIS	SPICE BUSH	8'x5'	5 GA	LOW	YES	11
+ERIOGONUM ARBORESCENS	BUCKWHEAT	4'x4'	5 GA	LOW	YES	15
*+SALVIA CLEVE. 'WINNIFRED GILLMAN'	CALIFORNIA BLUE SAGE	3'x5'	5 GA	LOW	YES	29
TEUCRIUM 'COMPACTA'	DWARF GERMANDER	3'x3'	5 GA	LOW	NO	8
PERENNIALS / GRASSES:						
* +ACHILLEA MILLEFOLIUM	COMMON YARROW	1'x2'	1 GA	LOW	YES	44
ERIGERON GLAUCUS	BEACH ASTER	1'x2.5'	1 GA	LOW	YES	36
*FESTUCA CALIFORNICA	CALIFORNIA FESCUE	2'x3'	5 GA	LOW	YES	8
*JUNCUS PATENS	CALIFORNIA GRAY RUSH	1.5'x3'	1 GA	LOW	YES	17
*MUHLENBERGIA RIGENS	DEER GRASS	4'x4'	5 GA	LOW	YES	14
+PENSTEMON HETEROPHYLLUS	FOOTHILL PENSTEMON	3'x2'	1 GA	LOW	YES	44

POLLINATOR PLANTS NOTE: 63% OF PLANT PALETTE IS NATIVE POLLINATOR SPECIES (143 OF 226 SPECIMENS)

+ DENOTES PLANT SPECIES RECOMMENDED AS POLLINATOR PLANT IN NORTHERN CALIFORNIA

* DENOTES PLANT SPECIES SELECTED FROM THE ALAMEDA COUNTY APPENDIX B STORMWATER MEASURES PLANT LIST

WATER EFFICIENT LANDSCAPE WORKSHEET

REFERENCE EVAPOTRANSPIRATION (ETo): 41.8

HYDROZONE / PLANTING DESCRIPTION	PLANT FACTOR (PF)	IRRIGATION METHOD	IRRIGATION EFFICIENCY (IE)	ETAF (PF / IE)	LANDSCAPE AREA (sq. ft.)	ETAF x AREA	ESTIMATED TOTAL WATER USE (ETWU)
REGULAR LANDSCAPE AREAS:							
LOW WATER USE	0.3	DRIP	0.81	0.3703703	1,862	689.6294986	17872.4
MEDIUM WATER USE	0.5	BUBBLER	0.81	0.6172839	90	55.555551	1439.8
				TOTALS:	1952	745	
SPECIAL LANDSCAPE AREAS:							
REC. AREA				0	0	0	0
WATER FEATURE 1				0	0	0	0
WATER FEATURE 2				0	0	0	0
				TOTALS:	0	0	
						ETWU TOTAL:	19,312
						MAXIMUM ALLOWED WATER ALLOWANCE (MAWA):	22,765

ETAF CALCULATIONS:

REGULAR LANDSCAPE AREAS:

TOTAL ETAF x AREA	745
TOTAL LANDSCAPE AREA	1,952
AVERAGE ETAF	0.38

NOTE: AVERAGE ETAF FOR REGULAR LANDSCAPE AREAS MUST BE 0.55 OR BELOW FOR RESIDENTIAL AREAS, AND 0.45 OR BELOW FOR NON-RESIDENTIAL AREAS.

ALL LANDSCAPE AREAS:

TOTAL ETAF x AREA	745
TOTAL LANDSCAPE AREA	1,952
SITEWIDE ETAF	0.38

GENERAL NOTES:

1. ALL PLANTING SHALL BE WATERED BY FULLY AUTOMATIC, WATER-CONSERVING IRRIGATION SYSTEM.
2. ALL PLANTING AREAS, EXCEPT FOR STORMWATER TREATMENT PLANTERS, SHALL RECEIVE A 3" LAYER OF FIRBARK MULCH DRESSING.
3. STORMWATER TREATMENT PLANTERS SHALL RECEIVE A 2" DEEP LAYER OF 1-3/8"Ø DECORATIVE RIVER-WASHED GRAVEL.

PROJECT PRIVATE USABLE LANDSCAPE OPEN SPACE

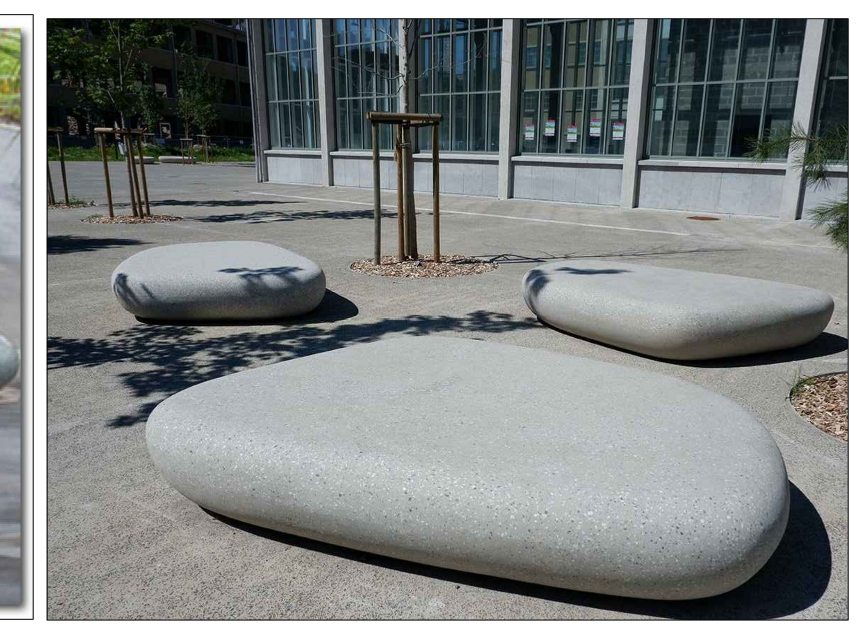
	TOTAL AREA	LANDSCAPE AREA
• GROUND LEVEL	4,481 SF	835 SF
• ROOF LEVEL	2,742 SF	722 SF
	7,223 SF	1,557 SF

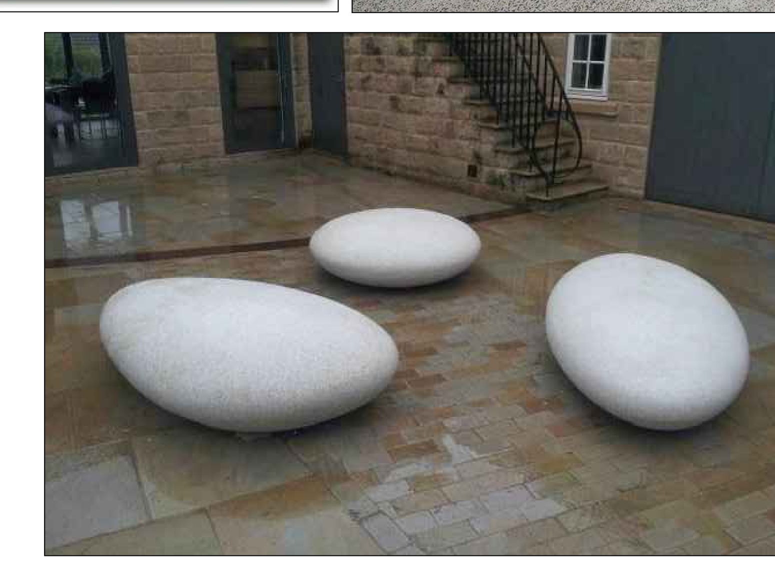
CITY REQUIREMENT THAT LANDSCAPE AREA EQUALS 40% OF USABLE PRIVATE OPEN SPACE
TOTAL AREA OF LANDSCAPE PROVIDED EQUALS 21.5% OF USABLE PRIVATE OPEN SPACE

BUILT-IN PLANTERS

PREFABRICATED PLANTERS
TOURNESOL 'WILSHIRE' COLLECTION
COLOR: BRONZE

BIKE RACKS
COLUMBIA CASCADE LOOP RACK
WITH GALVANIZED FINISH





ARTIFICIAL FIBERGLASS PEBBLE FURNITURE (LARGE AND SMALL)
FROM NATURE WORKS, ENGLAND

REVISIONS

5	Use Permit Resubmit 12/10/21
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REGISTERED LANDSCAPE ARCHITECT
RICHARD STOVER
3017
Signature
Date
Expires 5/31/22
STATE OF CALIFORNIA

BERKELEY PLAZA
2065 KITTREDGE STREET
BERKELEY, CALIFORNIA

RECOMMENDED PLANT LIST, SITE AMENITY IMAGES

DESIGNED: DRAWN:
CHECKED: JOB NO:
DATE 08-04-22
SCALE NOTED

SHEET
L3
OF SHEETS

2065 Kittredge Street Mixed-Use Project

Addendum to the 2211 Harold Way Mixed-Use Project Final Environmental Impact Report (SCH #2014052063)

prepared by

City of Berkeley
1947 Center Street, 2nd Floor
Berkeley, California 94704
Contact: Sharon Gong, Senior Planner, (510) 981-7429)

prepared with the assistance of

Rincon Consultants, Inc.
449 15th Street, Suite 303
Oakland, California 94612

July 2022

RINCON CONSULTANTS, INC.
Environmental Scientists | Planners | Engineers
rinconconsultants.com

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July 2022

RINCON CONSULTANTS, INC.
Environmental Scientists | Planners | Engineers
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Table of Contents

Tables

Figures

Appendices

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1 Introduction

This document is an Addendum to the *2211 Harold Way Mixed-Use Project Final Environmental Impact Report* (Final EIR) (State Clearinghouse #2014052063) for the 2211 Harold Way Mixed-Use Project, hereinafter referred to as "the original project." The Final EIR was certified in December 2015 by the City of Berkeley. The Final EIR included an Infill Environmental Checklist (IEC) as an appendix, which was prepared pursuant to California Environmental Quality Act (CEQA) Guidelines Section 15183.3 for infill projects and was intended to streamline the environmental review based on the analysis provided in the prior Downtown Area Plan (DAP) EIR.

The 2065 Kittredge Street Residential Project (hereinafter referred to as "the modified project") would involve changes to the previously approved original project considered under the Final EIR. Therefore, some modifications and additions are necessary to the previously certified Final EIR for the original project.

Pursuant to Section 15164 of the *CEQA Guidelines*, codified in Sections 15000 et seq. of Title 14 of the California Code of Regulations, a lead agency shall prepare an addendum to a previously certified EIR if some changes or additions are necessary but none of the conditions described in Section 15612 calling for preparation of a subsequent EIR have occurred. Under Section 15162 (a), where an EIR has been certified for a project, no subsequent EIR shall be prepared for the project unless the lead agency determines, on the basis of substantial evidence in light of the whole record, that there are substantial changes in the project or circumstances or substantially important new information that will cause the project to have significant new impacts or substantially increase previously identified significant impacts.

Specifically, the *CEQA Guidelines* state:

- The lead agency or responsible agency shall prepare an addendum to a previously certified EIR if some changes or additions are necessary, but none of the conditions described in Section 15162 calling for preparation of a subsequent EIR have occurred (Section 15164 (a)).
- An addendum need not be circulated for public review but can be included in or attached to the final EIR or adopted negative declaration (Section 15164 (c)).
- The decision-making body shall consider the addendum with the final EIR or adopted negative declaration prior to making a decision on the project (Section 15164 (d)).
- A brief explanation of the decision not to prepare a subsequent EIR pursuant to Section 15162 should be included in an addendum to an EIR, the lead agency's findings on the project, or elsewhere in the record. The explanation must be supported by substantial evidence (Section 15164 (e))

According to Section 15164 of the *CEQA Guidelines*, an addendum to a previously certified EIR or negative declaration is the appropriate environmental document in instances when "only minor technical changes or additions are necessary" and when the new information does not involve new significant environmental effects beyond those identified in the previous EIR.

This addendum has been prepared in accordance with relevant provisions of CEQA (California Public Resources Code Section 21000, *et seq.*) and the *CEQA Guidelines*. It describes the modified project and compares its impacts to those identified in the Final EIR. The analysis demonstrates that the modified project does not require the preparation of a subsequent EIR.

2 Project Description

The modified project, like the original project, is a proposed mixed-use development in Downtown Berkeley and is on the same project site as the original project. Also similar to the original project, the modified project's primary street frontage would be along Harold Way, with shorter frontages on portions of Allston Way and Kittredge Street. The main building entrance and entrance to the subterranean garage would remain on Kittredge Street between Harold Way and Shattuck Avenue. The project location is shown in Figure 1. Similar to the original project, the existing structures on the site would be altered or demolished to accommodate the modified project, as detailed in the Final EIR for the original project (hereby incorporated by reference).

The modified project would alter some additional components of the original project, including a reduction in the building height, number of proposed residential units, the amount of commercial/retail space, and the number of parking spaces; demolition of the existing movie theater, rather than retaining/modifying it; and changes in the location of pedestrian and vehicle access points. These modifications are listed in more detail under *Summary of Proposed Changes*, below. The proposed modifications would not substantially expand, intensify, or change the use of the proposed building compared to that of the original project, and the modified project would continue to comply with the Berkeley Municipal Code and Downtown Area Plan. Overall, the proposed modifications would result in a smaller and less intensive mixed-use project than the original project. Figure 2 through Figure 7 show the modified project plans, including the proposed open space areas and an architectural rendering.

Additional differences between the original project and the modified project include architectural design, replacing the façade solar fins with a rooftop solar system that has greater capacity pursuant to 2019 California Green Building Standards Code (CalGreen), including a rainwater capture system for landscape irrigation, and adding a low-flow planter filtration system on the proposed roof terraces. The modified project footprint would be slightly reduced as compared to the original project, as it would not extend to the southeastern corner of Kittredge Street and Shattuck Avenue and none of the existing building on the corner would be demolished.

Site preparation, construction procedures, and proposed utility connections would remain similar to the original project. Please refer to the Final EIR for details regarding these project components. However, site preparation and architectural coating phases are estimated to be longer than assumed in the Final EIR, as discussed under Section 4.2, *Air Quality.* Additionally, excavation and subsurface work would be reduced under the modified project due to the reduction in proposed subterranean levels from three to one. As indicated in a memorandum submitted by DCI Engineers on October 22, 2021, included as Appendix A to this Addendum, neighboring structures and existing building foundations would not be substantially altered during construction of the modified project. Project design includes seismic reinforcement of the proposed building with reinforced concrete on the lower portion of the building (including the subterranean level) and conventional lightweight framing on the upper portion of the building.

The modified project includes a density bonus request. The project applicant would comply with the City's Housing Mitigation Fee Ordinance by restricting rental rates according to California's Density Bonus Law. The project would include nine very low-income units in order to qualify for density bonus units, as well as one incentive/concession and waivers (for height, setbacks, encroachments, and open space) under the Density Bonus Law (Government Code Section 65915). The proposed level of affordability is at 5 percent of the base project (164 units) at very low-income levels. The very low-income units would be of comparable size to the market rate units and would contain, on average, the same number of bedrooms, and have comparable appearance, materials and finishes as the market rate units in the project. These units would also have access to the same common areas and amenities as the market rate units. The 20 percent density bonus would allow for up to 33 additional units, but only 24 of those bonus units are included for a final total of 188 units.

Summary of Proposed Changes

Project differences from the original project analyzed in the Final EIR that are relevant to the environmental analysis are described in Table 1.

Table 1 Changes to Previously Approved Project

Project Characteristic	Previously Approved Project	Updated Project
Total Building Size	**389,470 sf**	**220,982 sf**
Residential	278,185 sf	149,678 sf[1]
Retail	10,535 sf	4,181 sf[2]
Cinema	21,641 sf	N/A
Parking	79,109 sf	20,881 sf
Building Height	180 feet; 18 stories	87 feet; 8 stories
Total Residential Units	**302 units[3]**	**188 units[4]**
Studio	76 units	41 units
1-Bedroom	145 units	31 units
2-Bedroom	75 units	101 units
3-Bedroom	6 units	11 units
Live/Work	N/A	4 units
Affordable Units	28 units	9 units
Open Space		
Private Roof Terrace	16,406 sf	2,930 sf
Private Balconies	9,762 sf	N/A
Public Open Space	713 sf	9,186 sf[5]
Outdoor deck	18th floor, 4,354 sf	N/A
Cinema	641 seats 10 screening rooms	Demolished
Main Pedestrian Entrance	Corner of Kittredge Street and Harold Way	Kittredge Street between Harold Way and Shattuck Avenue
Parking	**3 subterranean levels**	**1 subterranean level**
Automobile	171 spaces	43 spaces
Bicycle	100 spaces	129

[1]Includes 9,019 sf of indoor residential amenity and 2,946 sf of elevated roof terrace amenity

[2]Includes 2,666 sf retail suite (coffee shop) and 1,515 sf work space in live/work units

[3]Units were approved to range in size from 474 sf to 1,103 sf.

[4]Units would range in size from 295 sf to 1,374 sf.

[5]Includes a 6,186 sf public plaza on Kittredge Street and a 3,000 sf public plaza on Allston Way

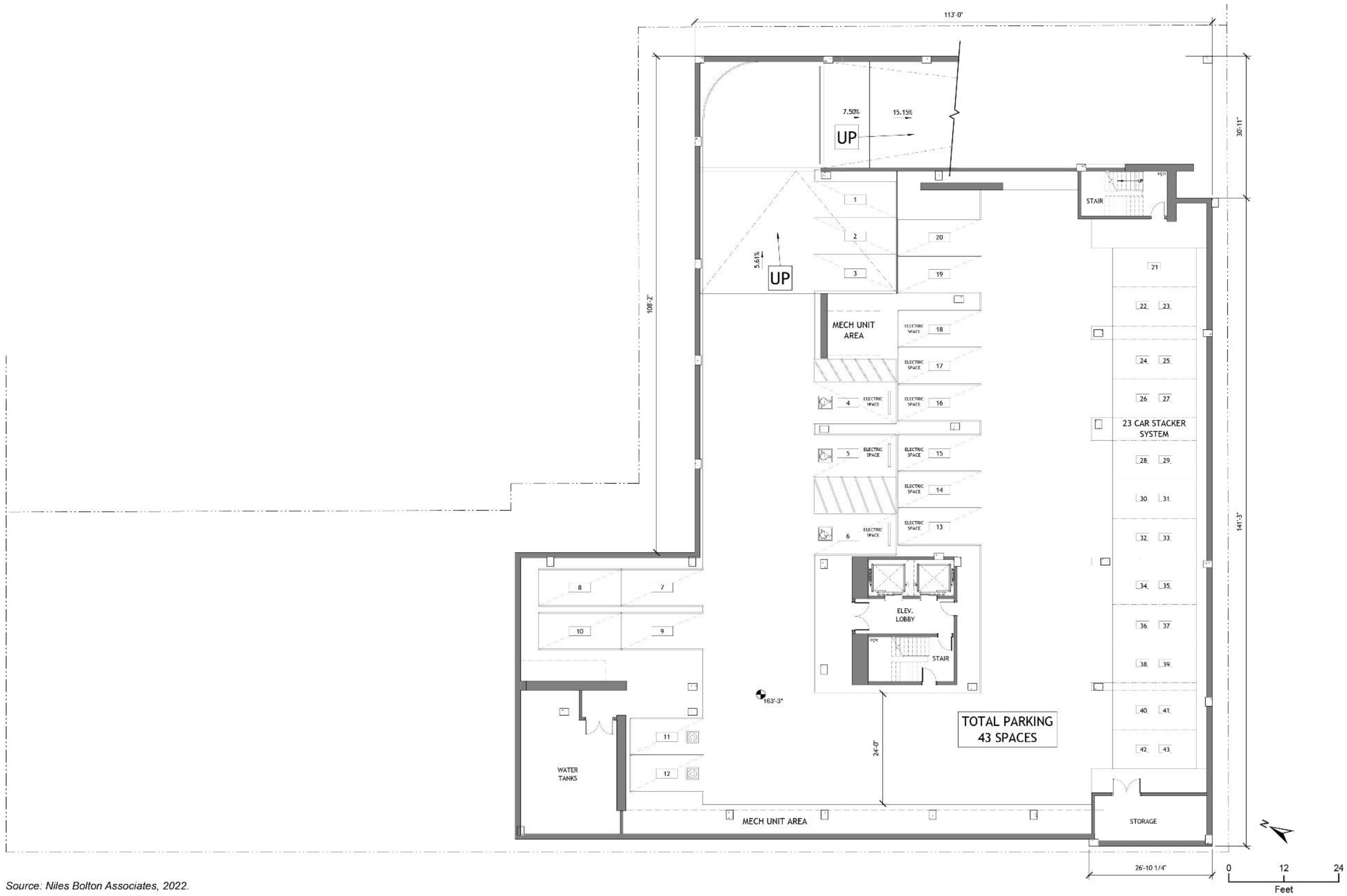
sf = square feet

Figure 1 Project Location

Imagery provided by Microsoft Bing and its licensors © 2022.

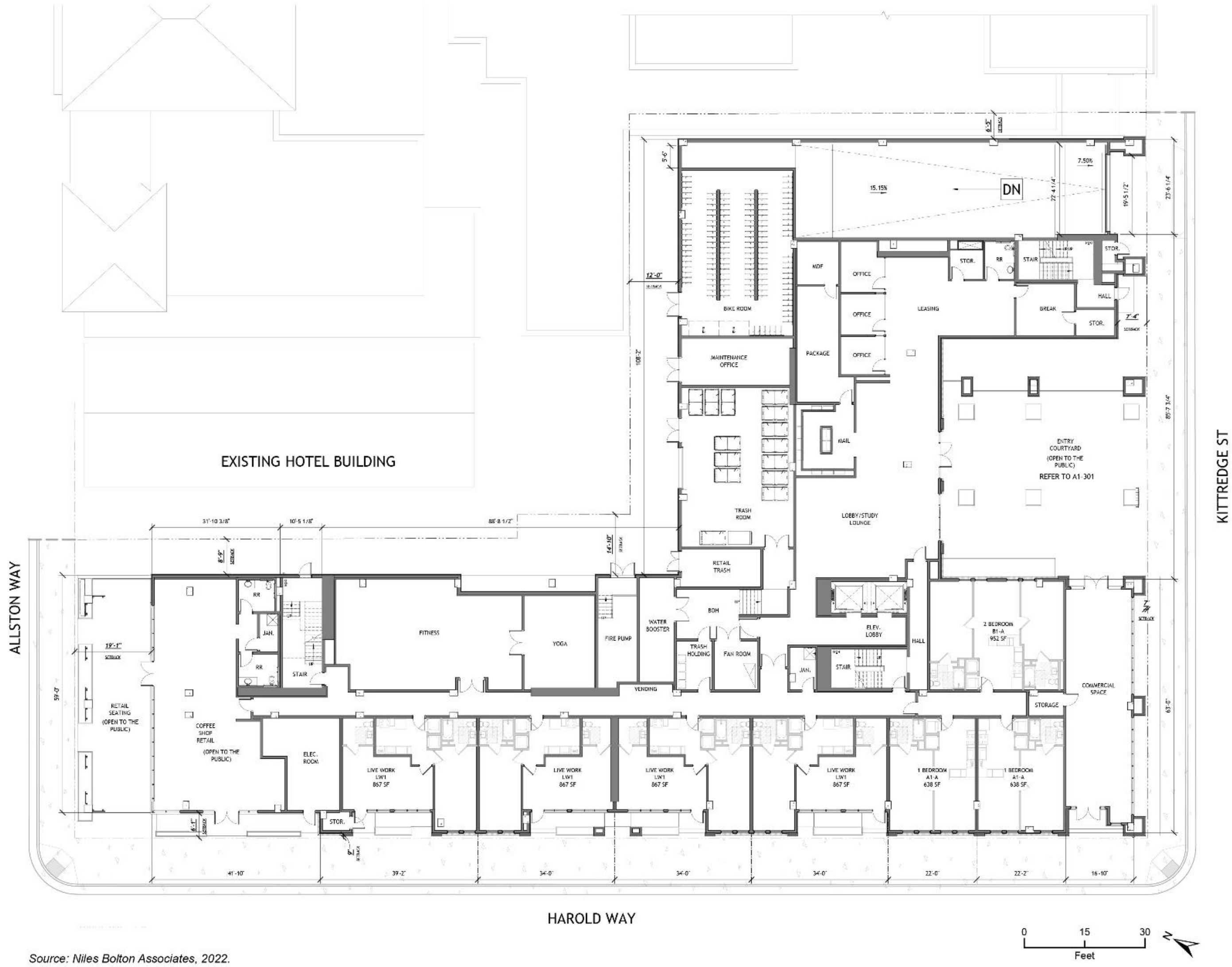
Fig 1 Project Location

Figure 2 Proposed Underground Level Floor Plan



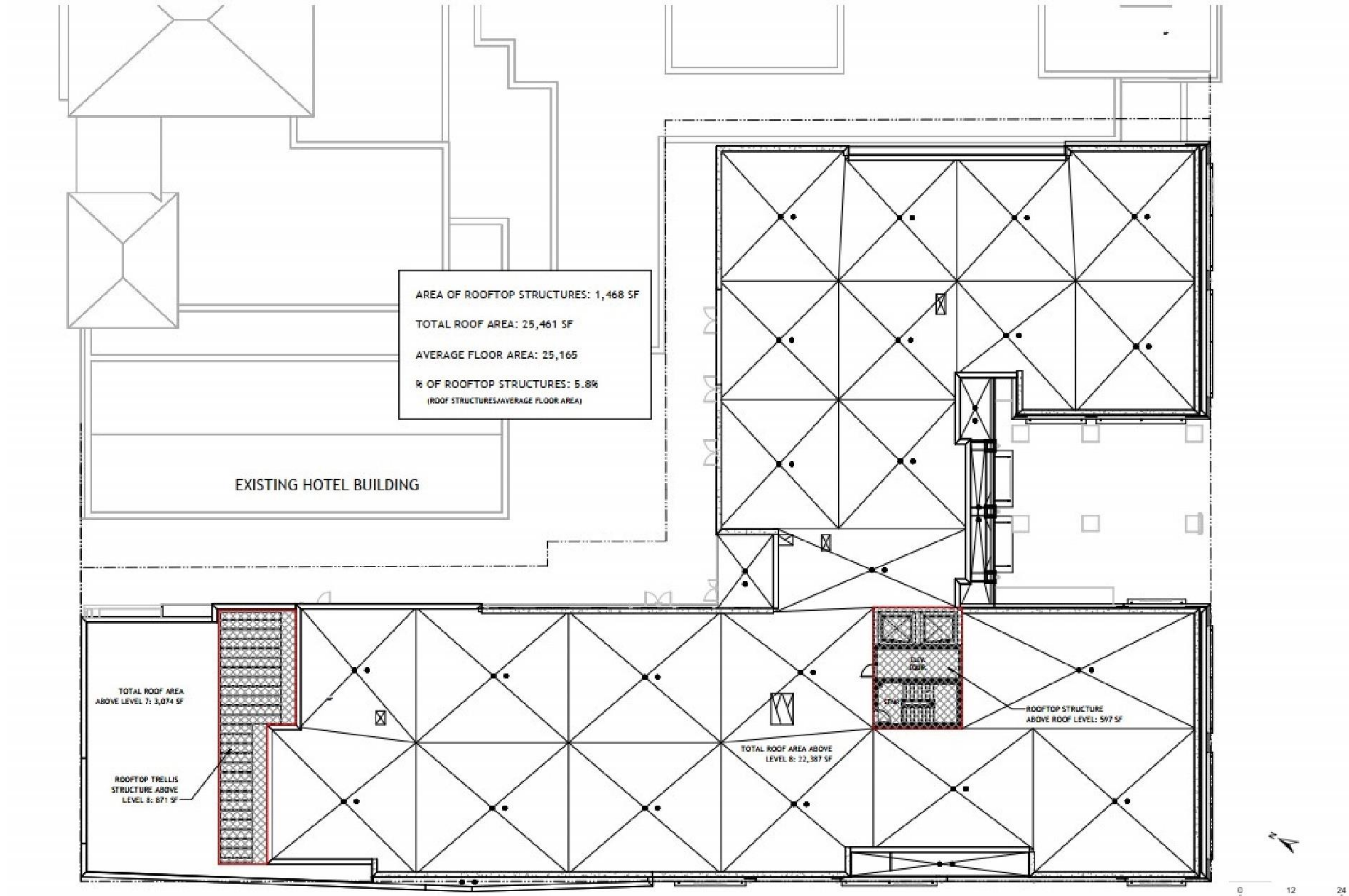
Source: Niles Bolton Associates, 2022.

Figure 3 Proposed Ground Floor Plan



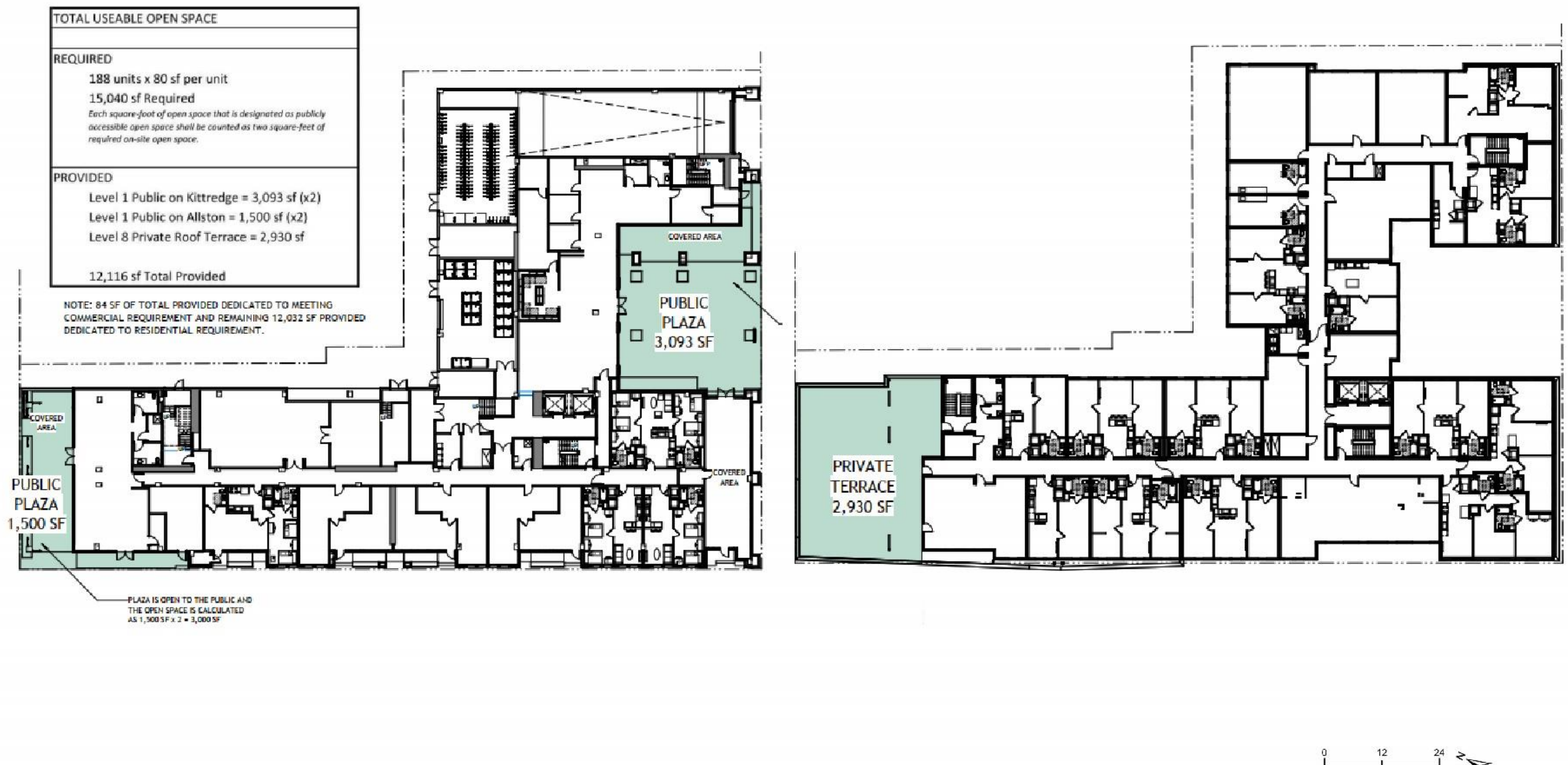
Source: Niles Bolton Associates, 2022.

Figure 4 Proposed Roof Plan



Source: Niles Bolton Associates, 2022.

Figure 5 Proposed Open Space Plan



Source: Niles Bolton Associates, 2022.

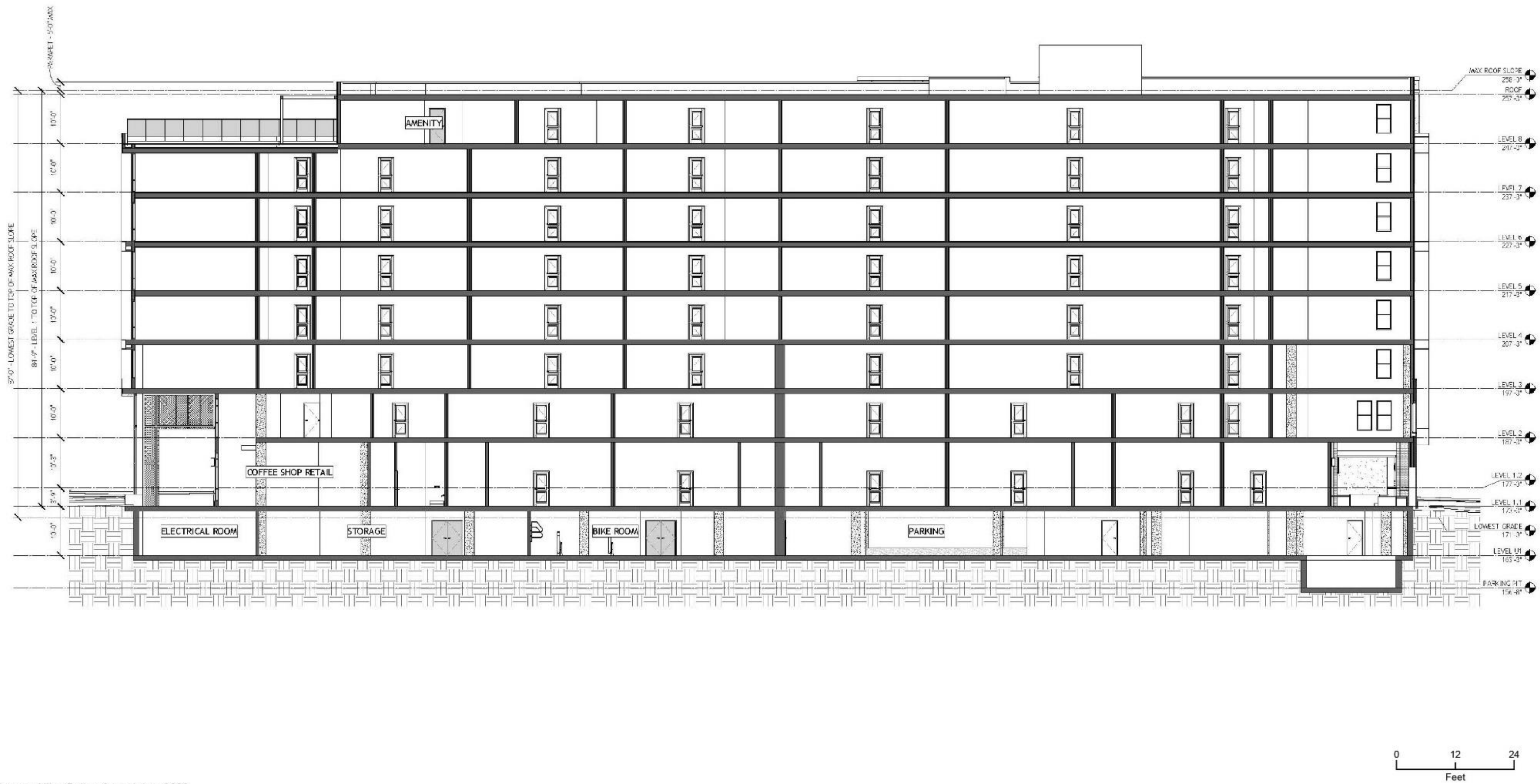
Figure 6 Proposed Architectural Rendering at Allston Way and Harold Way

Perspective - Allston Way and Harold Way Corner

Source: Niles Bolton Associates, 2022.

NOT TO SCALE

Figure 7 Proposed Building Section (North to South Perspective, West Elevation)



Source: Niles Bolton Associates, 2022.

3 Decision Not to Prepare Subsequent EIR

As outlined in Section 15164 of the *CEQA Guidelines*, a lead agency shall prepare an addendum to a previously certified EIR if some changes or additions are necessary, but none of the conditions described in *CEQA Guidelines* Section 15162 calling for preparation of a subsequent EIR have occurred.

The impact analysis that follows demonstrates that the modified project would not introduce new, significant environmental impacts beyond those that have already been identified and characterized in the Final EIR and that there are no substantial changes in the project or circumstances or substantially important new information that would cause the project to have significant new impacts or substantially increase previously identified significant impacts. None of the conditions described in *CEQA Guidelines* Section 15162 that would call for preparation of a subsequent EIR have occurred or would occur because of the modified project. Therefore, this addendum is the appropriate level of environmental documentation to provide under CEQA. The City of Berkeley will include this addendum, along with the Final EIR for the original project, in its consideration of the modified project.

4 Environmental Impacts of the Proposed Changes to the Original Project

This addendum evaluates the changes proposed under the modified project compared to the original project against the *CEQA Guidelines* Section 15162 criteria, to determine whether a subsequent EIR is necessary for the modified project. The existing environmental conditions on and around the project site are substantially the same under present conditions as those described in the Final EIR, with the exception of two relevant changes described below in Section 4.1. The analysis contained in this section provides updates where necessary to characterize potential impacts.

Appendix G of the *CEQA Guidelines* provides a checklist of environmental issues areas suggested for assessment in a CEQA analysis. The Final EIR addressed two of these environmental issue areas in detail (Cultural Resources and Transportation/Traffic), and the IEC (Appendix A to the Draft EIR) addressed the remainder. The issue areas studied included the following:

- Aesthetics
- Agricultural and Forest Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources
- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation/Traffic
- Utilities

To provide a thorough and conservative analysis of potential impacts associated with the modified project, this addendum addresses all 20 environmental issue areas included in Appendix G of the current *CEQA Guidelines*. These issue areas include tribal cultural resources, an issue area added to the *CEQA Guidelines* in September 2016 pursuant to Assembly Bill (AB) 52, after certification of the Final EIR. These issue areas also include energy and wildfire, which were added to the *CEQA Guidelines* in December 2018.

Potential environmental impacts of the modified project are analyzed to determine if they are consistent with the impact analysis provided in the Final EIR, including the previously prepared IEC, which was an attachment to the Final EIR, and if additional mitigation measures are required to minimize or avoid further potential impacts. Where the following analysis identifies impacts, discussion of previously identified mitigation measures from the Final EIR and/or IEC and existing applicable policies and regulations are discussed, as relevant, with respect to mitigating potential impacts from the modified project. Topics with the greatest potential for different impacts are addressed first, followed by briefer discussions of topics with minimal potential for different impacts, based on the scope and scale of the proposed project modifications.

4.1 Changes in Environmental Conditions

Most of the environmental conditions described in the Final EIR are substantially unchanged, but the Shattuck Avenue Reconfiguration and Pedestrian Safety Project was completed in December 2019. The planned improvements were accounted for during analysis of the original project, but the reconfiguration plans were refined after publication of the Final EIR. This change is discussed in Section 4.6, *Transportation*.

Between Allston Way and University Avenue, Shattuck Avenue was repaired and reconfigured such that the west (southbound) leg of Shattuck Avenue is a four-lane, two-way street; this eliminated the circuitous traffic movement at the intersection of Shattuck and University Avenues. A raised concrete median was installed at Shattuck Avenue and Center Street (east leg of Shattuck Avenue) to improved pedestrian safety by slowing vehicle speed at pedestrian crossings and encouraging vehicle traffic to use the west leg of Shattuck Avenue. The intersection of the eastern leg of Shattuck Avenue and Center Street is closed to traffic.

Several new buildings in the vicinity of the project site have either been constructed, are approved, or are pending approval. These buildings include 2129 Shattuck Avenue, a mixed-use hotel, which is already constructed; 2190 Shattuck Avenue, a mixed-use residential development, that is pending approval of a use permit modification; and 2128 Oxford Street through 2132-2154 Center Street, a mixed-use residential development that is pending approval.

4.2 Air Quality

Impacts Identified in the 2015 Final EIR and IEC

As discussed under Section III(a), *Air Quality*, of the 2015 IEC, the original project would contribute to population growth and associated criteria air pollutants from the automobiles new residents would drive, but the site is zoned Commercial Downtown Mixed Use District (C-DMU), and the modified project is consistent with this zoning designation, which in turn is consistent with the growth anticipated in the Berkeley General Plan and 2010 Climate Action Plan (CAP). Additionally, the original project included Transportation Demand Management measures to reduce reliance on parking, bicycle parking spaces, electric vehicle charging stations; LEED Gold certification; and roof gardens, rooftop solar panels, and solar shading, in compliance with 2010 CAP Control Measures. The original project would not disrupt implementation of CAP Control Measures and impacts would be less than significant. Furthermore, the original project would be consistent with Bay Area Air Quality Management District (BAAQMD) rules and regulations and would not disrupt efforts to reduce vehicle miles travelled.

As discussed under Section III (b-c) of the 2015 IEC, construction of the original project would result in the temporary generation of criteria air pollutants, which would affect local air quality. The construction and operational emissions of the original project is shown in Table 2. As shown therein, the original project would not have exceeded the BAAQMD construction threshold of 15 tons per year (tpy) for criteria air pollutants. Standard dust and diesel particulate matter reduction measures would be implemented pursuant to DAP EIR Mitigation Measure AIR-3, and impacts would be less than significant with mitigation. Operation of the original project would consume energy and result in new vehicle trips. Net new annual operational emissions are shown in Table 2. Therefore, the original project would not exceed the BAAQMD operation threshold of 15 tpy for criteria air pollutants and impacts would be less than significant.

Table 2 Previously Approved Project Air Quality Emissions

	ROG	NOx	CO	PM_{10}	$PM_{2.5}$
Construction Emissions (tpy)	6.1	5.2	5.1	0.7	0.4
Operational Emissions (tpy)	1.9	0.1	3.9	0.1	0.1

ROG = reactive organic gases; NOx = nitrous oxides; CO = carbon monoxide; PM_{10} = particulate matter less than 10 microns in diameter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; tpy = tons per year

As discussed under Section III(d) of the 2015 IEC, the original project does not include uses known to emit substantial quantities of toxic air contaminants (TACs). The original project is subject to DAP EIR Mitigation Measure AIR-2, which requires buffering sensitive receptors from TACs where possible. Therefore, impacts would be less than significant with mitigation.

As discussed under Section III(e) of the 2015 IEC, the original project's retail and restaurant uses could result in odors related to cooking and waste disposal. The project site is not located near existing odor-generating sources pursuant to the BAAQMD and *CEQA Guidelines*. The original project would be required to comply with standard permit conditions, which would control restaurant odors from becoming a nuisance. Therefore, impacts would be less than significant.

Impacts of the Modified Project

Since the Final EIR was certified, the modified project has been revised to include fewer residential units (reduced from 302 to 188 total units) and fewer parking spaces (reduced from 177 to 43 spaces), and to remove the cinema. The modified project would continue to include design features consistent with the 2010 CAP (which has not been updated since certification of the Final EIR), including low-energy-use appliances and lighting, Transportation Demand Management measures, improvements to the proposed solar system (compliance with 2019 CalGreen, which added solar requirements for some residential uses, including multifamily high rise under 10 stories, after certification of the original EIR), rainwater capture for landscape irrigation, and low-flow planter filtration system on roof terraces. The reduction in parking spaces and improvements to the solar system would improve its ability to meet 2010 CAP Control Measures, and impacts would not be greater than previously determined. The modified project would not substantially alter the previously proposed land uses and would continue to be consistent with the designated land use and zoning of the site. Overall, the modified project would be consistent with General Plan and 2010 CAP goals and policies, similar to the original project.

BAAQMD's thresholds have been updated from those used in the certified EIR. Daily construction air quality emission thresholds are 54 pounds per day (lb/day) for ROG, NOx, and $PM_{2.5}$ (exhaust) and 82 lb/day for PM_{10} (exhaust). The operational air quality emission thresholds set by the BAAQMD were lowered to 10 tpy for ROG, NOx, and $PM_{2.5}$ maximum annual emissions, with the PM_{10} maximum annual operational emission threshold remaining at 15 tpy. Additionally, since the Final EIR, a new version of California Emissions Estimator Model (CalEEMod) has been published. Based on these updates, updated emissions estimates for the modified project were calculated for this analysis.

The results of the modified project's CalEEMod modeling are provided in Table 3 and in Appendix B[1]. As shown in the table and in Appendix B, project air quality emissions would not exceed

[1] CalEEMod analysis is based on a previous site plan that included 191 units, no retail use, and the same amount of parking spaces. The reduction in units to 188 and addition of about 2,000 square feet of retail use would not substantially change emissions outputs.

BAAQMD construction thresholds and emissions are estimated to be lower than those reported in the Final EIR for the original project. Impacts would remain less than significant with required mitigation from the DAP EIR.

Table 3 Modified Project Air Quality Emissions

	ROG	NOx	CO	PM_{10}	$PM_{2.5}$
Construction Emissions (maximum tpy)[1]	0.7	2.2	2.5	0.1	0.1
Construction Emissions (maximum lb/day)	8.6	33.1	21.2	1.6	1.5
BAAQMD Threshold (lb/day)	**54**	**54**	**N/A**	**82**	**54**
Exceed Threshold?	No	No	No	No	No
Project Operational Emissions (tpy)	1.1	0.4	3.4	<0.1	<0.1
Existing On-Site Operational Emissions (tpy)[2]	1.5	3.3	12.0	1.1	0.3
Net Operational Emissions (tpy)[3]	-0.4	-2.9	-8.6	-1.1	-0.3
BAAQMD Threshold (tpy)	**10**	**10**	**N/A**	**15**	**10**
Exceed Threshold?	No	No	No	No	No

[1] Construction emissions in tpy are included as a comparison to the Final EIR CalEEMod results shown in Table 2; there is no BAAQMD threshold for construction emissions in tpy.

[2] The existing on-site emissions estimate were calculated as part of the Final EIR.

[3] The net operational emissions were calculated by subtracting existing on-site emissions from modified project operational emissions; therefore, negative numbers indicate a decrease in emissions from existing conditions, and not negative air quality emissions.

ROG = reactive organic gases; NOx = nitrous oxides; CO = carbon monoxide; PM_{10} = particulate matter less than 10 microns in diameter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; lb/day = pounds per day; tpy = tons per year

Source: Appendix B

From a construction standpoint, exhaust from construction equipment would be similar to or reduced as compared to the original project due to the use of newer and more efficient equipment. The proposed building under the modified project would have one subterranean level and eight floors, as compared to three subterranean levels and 18 floors under the original project. Excavation for the subterranean levels would be reduced from approximately 36,000 cubic yards to 12,000 cubic yards (assuming 12,000 cubic yards per floor), lowering emissions from excavation itself and from export of material. Modeling in CalEEMod for the certified EIR assumed site preparation and grading would take 30 days, but removal of material to construct a subterranean level for the proposed project would require additional time, about 60 days, based on estimates from the applicant. Similarly, architectural coating would take longer than modeled in CalEEMod for the certified EIR and would require about 255 days, instead of 40 days, based on estimates from the applicant. Fugitive dust generated during construction would be similar to the amount estimated under the original project, considering that the project site is the same size. Given the decreased excavation and use of more efficient construction equipment, emissions from construction would be reduced compared to those analyzed under the original project, as shown in Table 3.

Operationally, the modified project would have 38 percent fewer units and thereby accommodate fewer residents. Fewer residents would lead to lower mobile emissions, which would be further lowered by the reduction in parking spaces and increase in bicycle parking. A reduction in parking spaces and increase in bicycle parking would encourage residents to use transit or active transportation instead of driving. Additionally, vehicles have become more fuel efficient since certification of the Final EIR, due to altered fuel standards (such as stricter Corporate Average Fuel Economy standards) and increased market share of hybrid and electric vehicles. The building itself would be substantially smaller and thereby require less energy to operate than the original project. The original project would have adhered to 2013 CalGreen, while the modified project would be required to adhere to 2019 CalGreen, which requires more energy efficient building materials and appliances. Electricity delivered to the building constructed under the modified project would be through Pacific Gas & Electric (PG&E). The Energy Intensity Factor[2] of PG&E would be lower than 641.35 as was used on CalEEMod when analyzing the original project. The current PG&E Energy Intensity Factor is 203.98, which reflects PG&E's increased renewables procurement, pursuant to the California Public Utilities Commission Renewables Portfolio Standard. The reduction in residents, vehicle use, and building size, coupled with increased vehicle, building, and grid efficiency would reduce emissions as compared to those analyzed under the original project, as shown in Table 3.

The modified project does not include new facilities that would emit substantial quantities of TACs or odors not identified in the previous EIR. The prior analysis conducted in the Final EIR remains adequate and no new impacts would occur because of changes to the original project. The modified project would not introduce any new or substantially more severe significant impacts related to air quality and would be consistent with the impact analysis provided in the Final EIR.

Effects and Mitigation Measures

No new or substantially more severe significant effects would occur to air quality, and no new mitigation measures are necessary.

Conclusion

Impacts would be less than significant, similar to the original project.

4.3 Cultural Resources

Impacts Identified in the 2015 Final EIR and Attached IEC

As discussed under Impact CR-1 in Section 4.1.2(b), *Cultural Resources*, of the Final EIR, the original project would involve demolition of the 1959 Hink's Building and the 1926 addition to the Shattuck Hotel, partial removal of the 1913 addition to the Hotel, and remodeling of existing retail spaces at the northwest corner of Kittredge Street and Shattuck Avenue. The 1959 Hinks Building was determined not to be historically significant; therefore, its demolition would not be a significant historic resource impact. The Shattuck Hotel is a local landmark; therefore, its alteration would result in a significant historic resource impact. Mitigation measures CR-1(a) through CR-1(d) would require documentation, salvage, and onsite interpretation of the Shattuck Hotel, as well as contribution to the Historic Preservation Fund. Impacts would remain significant and unavoidable.

Impact CR-2 of the Final EIR states that the original project included design elements intended to enhance the compatibility with nearby historic resources, despite the difference in height between the proposed building and existing buildings. However, the original project was not entirely consistent with the Downtown Berkeley Design Guidelines and did not meet the Secretary of the

[2] The Energy Intensity Factor measures how much energy is consumed in the production and distribution process. A lower Energy Intensity Factor indicates that the production and distribution of energy is more efficient.

Interior's Standards and impacts would be potentially significant. Mitigation measures CR-2(a) through CR-2 (c) required final design revisions to reduce impacts to a less-than-significant level.

Impact CR-3 of the Final EIR describes the original project's obstruction of views of the San Francisco Bay from the UC Berkeley Campanile. However, the original project would not entirely block the existing view, and given the changes in Berkeley's skyline with increased development and landscape growth, the original project would not result in a substantial adverse change and impacts would be less than significant.

Impact CR-4 of the Final EIR states that construction of the original project could produce ground vibration or soil movement at the foundation of nearby historic resources, which could affect those resources' structural stability. Mitigation measures CR-4(a) through CR-4(c) required a foundations investigation, construction monitoring, and a worker training program. These measures would be sufficient to reduce impacts to less-than-significant levels.

As discussed under Section V (b-d), *Cultural Resources*, of the 2015 IEC, no archaeological or paleontological resources are known to exist in the project area. However, excavation related to the proposed basement could uncover previously unknown archaeological resources, paleontological resources, or human remains. DAP EIR mitigation measures CUL-3 through CUL-5 would apply to the original project and reduce impacts to less-than-significant levels.

Impacts of the Modified Project

The modified project would not involve additional demolition, alteration or removal of existing structures beyond what was proposed for the original project. The program of demolition and partial demolition would remain the same as for the original project. Therefore, impacts relating to demolition of historic structure would not be greater than those identified in the Final EIR. Mitigation measures CR-1(a) through CR-1(d) would still be required, and impacts would remain significant and unavoidable.

The analysis contained in the Cultural Resources Memorandum for the modified project, included as Appendix C to this addendum, concludes that the modified project includes changes to the original project that respond to the design-related mitigation measures included in the certified Final EIR to address impacts to the Shattuck Hotel and the setting of historic landmarks adjacent to the project. The modified project would be visually and physically separate from the Shattuck Hotel. The modified design has been substantially updated from the original design and Mitigation Measure CR-2(a), which required a modified design along Allston Way, no longer applies. The proposed projection above the street level entry would align with the cornice of the neighboring 1912 portion of the existing Shattuck Hotel but does not include a cornice element or belt course as directed in Mitigation Measure CR-2 (a). Nonetheless, the revised streetscape design further reinforces the harmony in scale between the proposed new building and the Shattuck Hotel and is more successful in meeting the Downtown Berkeley Design Guidelines.

In response to Mitigation Measure CR-2(b) in the Final EIR, the modified project design significantly reduces both the length and height the "hyphen" that separates the Shattuck Hotel from the proposed new construction, thereby avoiding a large blank wall surface. In lieu of a prominent two-story blank wall, the modified project design will include a double-volume, one-story hyphen with a stucco exterior finish. The hyphen would be slightly recessed from the elevation of the existing Shattuck Hotel and the adjoining proposed new construction. The recessed entry would include a paired metal door to provide access to an egress and service corridor for the retail spaces within the Shattuck Hotel and continue toward the Allston Way elevation, providing alley access beyond. The hyphen would separate the Shattuck Hotel from the new construction and reduce the extent of direct contact between the new construction and the adjacent hotel and would effectively distinguish the new construction from the historic building. The modified project design is consistent with the Downtown Berkeley Design Guidelines as it avoids a large blank wall surface and includes a perforation, provided in its paired entry door. Its proposed recessed entry further articulates the elevation in a way that maintains the active street frontage of the Shattuck Avenue Commercial Corridor. Therefore, Mitigation Measure CR-2 (b) is no longer applicable.

The revised modified project design, as suggested in Mitigation Measure CR-2 (c), has removed the large-scale use of glazed aluminum window systems and Mitigation Measure CR-2 (c) no longer applies. The proposed modified project design uses a variety of sash windows and largely mimics the rhythm of load-bearing walls and frames of the Downtown's historic buildings. The storefront systems have also been updated to reflect the fenestration of the historic street-level using structural bays and enframed storefronts along Kittredge Street. The use of punched openings in favor of curtain wall glazing in the proposed new design reduces the number of windows on upper floors and would be generally consistent with the Downton Berkeley Design Guidelines. The proposed new window design does not use light shelves, as proposed in the Design Guidelines, but does use a variety of window sizes, shapes, and configurations to successfully articulate the rhythm, scale, and reveal of traditional buildings. The modified project design includes many new design elements which have reduced potentially significant impacts; as such, Mitigation Measures CR-2(a) through CR-2(c) are no longer required.

The height of the modified project would be substantially decreased compared to the original project; therefore, potential impacts to scenic vistas from the UC Berkeley campus would be reduced and eliminated and would continue to be less than significant, similar to the original project.

Construction techniques utilized by the modified project would be the similar to those described for the original project, including foundation work that could cause vibration impacts, despite the removal of the originally proposed second and third basement level. Mitigation measures CR-4(a) through CR-4(c) would remain applicable to the project and would reduce potential vibration impacts on historic structures to a less-than-significant level, similar to the original project.

While there would be less excavation under the modified project because the second and third basement level are no longer proposed, the potential for construction to reveal previously unknown archaeological resources, paleontological resources, or human remains still exists. DAP EIR mitigation measures CUL-3 through CUL-5 would continue to apply to the modified project and would reduce impacts to less-than-significant levels, similar to the original project.

Effects and Mitigation Measures

No new or substantially more severe significant effects would occur to cultural resources, and no new mitigation measures are necessary. Design modifications include a reduction in building height, design strategies to break up massing with varied rooflines and materials, and the projection of the second floor level above the double-height street level, aligning with the cornice of the 1912 portion of the Shattuck Hotel; these design modifications have responded to the design measures adopted under Mitigation Measure CR-2(a) of the Final EIR, and this measure no longer applies as the modified project avoids impacts to the Allston Way elevation. The redesign of the Kittredge Street "hyphen" in the modified project has responded to Mitigation Measure CR-2(b) in the Final EIR, and this measure is no longer applicable to the modified Kittredge Street elevation. Similarly, the removal of the large-scale use of aluminum glazing systems in the modified design responded to

Mitigation Measure CR-2 (c) in the Final EIR and it no longer applies. All other measures adopted in the Final EIR for the purposes of mitigating cultural resources impacts remain applicable.

Conclusion

Similar to the original project, cultural resources impacts would be less than significant with mitigation, with the exception of impacts related to demolition and alteration of historic buildings, which would remain significant and unavoidable.

4.4 Greenhouse Gas Emissions

Impacts Identified in the 2015 Final EIR and Attached IEC

As discussed under Section VII (a), *Greenhouse Gas Emissions*, of the 2015 IEC, construction greenhouse gas (GHG) emissions were estimated at 1,064 metric tons (MT) of carbon dioxide equivalent (CO_2e) in total, and 21.3 MT CO_2e per year amortized over a 50-year period. Operational GHG emissions were estimated at 2,352 MT CO_2e per year, which includes the amortized construction GHG emissions estimate. The existing development was estimated to emit 1,729.3 MT CO_2e per year; therefore, the net increase in GHG emissions is approximately 637 MT CO_2e per year, which is below the BAAQMD threshold of 1,100 MT CO_2e per year. This impact was determined to be less than significant.

Section VII(b) of the 2015 IEC states the original project would comply with City policies and regulations regarding energy use and efficiency. The original project is also consistent with the zoning and land use designations, thus indicating it is represented in the growth assumptions of the General Plan and CAP. The original project included project design features such as providing AC Transit passes to residents and employees, bicycle parking spaces, a roof solar system, LEED Gold attainment, Transportation Demand Management features, landscaping and water conservation techniques, electric vehicle charging stations, and car share parking, in compliance with CAP and General Plan implementation strategies. Impacts were determined to be less than significant.

Impacts of the Modified Project

Since the Final EIR, the BAAQMD threshold of 1,100 MT CO_2e per year has not been changed. However, the 1,100 MT CO_2e annual threshold is based on achieving the state goal of meeting 1990 emissions by 2020. Since the project would be buildout subsequent to 2020, the 2030 goal of 40 percent below 1990 levels is more appropriate. Using the 1,000 MT CO_2e threshold as a baseline would result in a 2030 goal of 660 MT CO_2e per year threshold. Given the altered factors discussed under Section 4.2, *Air Quality*, GHG emissions from the modified project would be lower than the original project. Since the original project's emissions (637 MT CO_2e annually) would be below 2030 BAAQMD's threshold, the emissions of the modified project would be below the threshold, too.

In addition, the modified project maintains and improves upon, in compliance with the most recent CalGreen requirements, design features that were a part of the original project, including providing AC Transit passes, bicycle parking, rooftop solar, low energy use appliances and lighting, Transportation Demand Management features, landscaping and water conservation techniques, and electric vehicle charging, which demonstrate the modified project's compliance with CAP and General Plan goals, policies, and implementation strategies. Impacts would be less than significant.

Effects and Mitigation Measures

No new or substantially more severe significant effects would occur to GHG emissions, and no new mitigation measures are necessary.

Conclusion

Impacts would be less than significant, similar to the original project.

4.5 Noise

Impacts Identified in the 2015 Final EIR and Attached IEC

As discussed under Section XII (a, c), *Noise*, of the 2015 IEC, the original project would increase long-term operational noise, including traffic noise on area roadways, and would be consistent with the requirement in DAP Mitigation Measure NOI-1 that specified shared residential outdoor areas be located behind buildings or in courtyards, and terraces be oriented to alleyways rather than streets whenever possible. The original project would not include substantial loading or unloading activities; therefore, commercial and mechanical operational noise would be similar to that discussed in the DAP EIR, and impacts would be less than significant. While traffic would incrementally increase, the intensification of traffic noise was determined to be imperceptible and lower than anticipated in the DAP EIR. Impacts were determined to be less than significant.

Section XII (b, d) of the 2015 IEC states that intermittent high-noise levels and vibration could occur because of the original project, such as pile driving for construction of the underground parking garage, and work associated with excavation and foundations. DAP EIR Mitigation Measure NOI-6, requiring contingency planning for vibration-causing construction activities, would apply to the original project. Construction noise levels were estimated to be up to 94 dBA at 25 feet from the project site boundary. Mitigation Measure NOI-5 from the DAP EIR requires construction noise control measures be implemented, but construction noise impacts would remain significant. Restrictions in construction hours pursuant to the Berkeley Community Noise Ordinance would ensure vibration impacts on residential receptors are less than significant.

Section XII (e, f) of the 2015 IEC states the project site is not near or within an airport land use plan, public airport, or private airstrip, and no impact would occur.

Impacts of the Modified Project

As described in Section 4.6, *Transportation* and Appendix D, the modified project would result in a total of 392 daily trips, 1,965 fewer total trips, 60 fewer AM Peak Hour trips, and 126 fewer PM peak Hour trips compared to the original project. Similar to the Final EIR, project-added vehicle trips would not increase existing traffic beyond 40 percent, which less than doubles traffic on area roadways. Doubling of traffic noise would result in a 3-dBA increase in noise, which is the threshold of perceptibility. Therefore, the modified project would not result in a perceptible increase in traffic noise, and the noise increase from new trips would not result in a significant increase in traffic noise, similar to the original project. Overall, the modified project would reduce traffic noise as compared to the original project, due to fewer total trips.

Construction techniques utilized by the modified project would be similar as described for the original project, including foundation work that could cause vibration impacts, despite the reduction in the number of subterranean parking levels. The conclusions in the Final EIR regarding vibration impacts are similar but reduced, which were determined to remain significant despite implementation of DAP EIR Mitigation Measure NOI-5. Restrictions in construction hours pursuant to the Berkeley Community Noise Ordinance would ensure vibration impacts on residential receptors are less than significant, as with the original project.

The project site remains outside the vicinity of an airport land use plan, public airport, or private airstrip, and no impact would occur, same as for the original project.

Effects and Mitigation Measures

No new or substantially more severe significant effects would occur related to noise, and no new or revised mitigation measures are necessary. Mitigation Measures NOI-5 from the DAP EIR would continue to apply to the modified project. Operational impacts would remain less than significant and would not require mitigation.

Conclusion

Impacts during construction would be significant and unavoidable with mitigation, and impacts during operation would be less than significant, similar to the original project.

4.6 Transportation

Impacts Identified in the 2015 Final EIR and Attached IEC

As discussed under Impact T-1 of Section 4.2.2 (b), *Transportation/Traffic*, of the Final EIR, the original project would increase existing traffic levels, but intersections would operate at acceptable levels of service (LOS C or better), and impacts would be less than significant.

Impact T-2 of the Final EIR states that only one intersection (Shattuck Avenue and Durant Avenue) would exceed the acceptable LOS under the Year 2035 scenario, and mitigation requiring a northbound dedicated right-turn pocket would reduce this impact to less than significant.

Impact T-3 of the Final EIR states that impacts related to the Congestion Management Program network would be less than significant, because the original project would not generate enough trips to meet the 100-vehicle threshold for the PM Peak Hour.

As discussed under Section XVI (c), *Transportation/Traffic*, of the 2015 IEC, the original project would not alter air traffic patterns, and no impact would occur.

Section XVI (d) of the 2015 IEC states that roadway network changes would not incorporate hazardous design features that would result in transportation hazards, would install a speed table to calm traffic, and provides adequate sight distance at the project driveway. Impacts would be less than significant.

Section XVI (e) of the 2015 IEC states that the original project includes limited offsite public improvements but would not modify any existing roadway or emergency access route that would result in inadequate emergency access. Impacts would be less than significant.

Section XVI (f) of the 2015 IEC states that the original project had adequate pedestrian access, included offsite streetscape and mobility improvements for bicycle and pedestrian accommodation, and was located near AC Transit and UC Berkeley shuttle bus stops in addition to the Downtown Berkeley BART Station. These features are consistent with adopted policies, plans, and programs regarding alternative modes of transportation, and impacts would be less than significant.

Impacts of the Modified Project

A Traffic Impact Report was prepared for the modified project in December 2021 by Abrams Associates (Appendix D)[3], and described the effects of project changes on the traffic impact conclusions described in the previous 2014 Traffic and Parking Study (2014 Study). The revised trip generation of the modified project is provided in Table 4.

Table 4 Project Adjusted Trip Generation

	Daily	Total AM Peak Hour	Total PM Peak Hour
Original Project Trip Generation	2,357	96	164
Modified Project Trip Generation	392	36	38
Change in Trips	**-1,965**	**-60**	**-126**

Source: Appendix D

The Traffic Impact Report concludes that the trips generated by the modified project and project design would have no significant impacts according to the City's significance criteria, similar to the original project. The Traffic Impact Report also concluded the modified project would result in a less-than-significant impact in vehicle miles traveled in the area, which was a threshold that was not considered in the analysis of the original project (Appendix D) and is the current metric for assessing transportation impacts pursuant to CEQA.

As described in Section 4.1, *Changes in Environmental Setting*, the Shattuck Avenue Reconfiguration and Pedestrian Safety Project has been completed; these planned improvements were taken into account during analysis of the original project, but the reconfiguration plans were refined since that analysis. Most of the effects of the Shattuck Avenue Reconfiguration and Pedestrian Safety Project occur at intersections north of Center Street (e.g., Addison Street and University Avenue), which were not included in the traffic analysis due to the low potential for project-related impacts. Therefore, this change would not change the level of significance of the identified impacts, and the conclusions of the Final EIR remain accurate, and no new or substantially more severe impacts would occur because of the modified project.

As shown in Table 4, the modified project would not meet the 100-trip threshold for Congestion Management Program network impacts, and impacts would remain less than significant. The modified project would not alter air traffic patterns, incorporate hazardous design features, or modify roadway or emergency access routes. Impacts would remain less than significant. The bicycle and pedestrian access to the site would not be altered from the original project; therefore, impacts would remain less than significant, and no new or previously unidentified impacts would occur because of the modified project.

Effects and Mitigation Measures

No new or substantially more severe significant effects would occur to transportation and circulation, and no new or revised mitigation measures are necessary.

[3] The Traffic Impact Report is based on a previous site plan that included 191 units, no retail use, and the same amount of parking spaces. The reduction in units to 188 and addition of about 3,600 square feet of retail use would not change the conclusions of the Traffic Impact Report.

Conclusion

There would be no impact, or impacts would be less than significant, similar to the original project.

4.7 Utilities and Service Systems

Impacts Identified in the 2015 Final EIR and Attached IEC

As discussed under Section XVII (a-g), *Utilities and Service Systems*, of the 2015 IEC, the original project was within the projected buildout of the DAP, and included water use reductions from LEED Gold attainment, drought-tolerant landscaping, captured rainwater for irrigation, water-efficient fixtures, and other measures. Impacts would be less than significant.

The original project included a new sanitary sewer line leading to an existing line in Allston Way. The existing conveyance system had adequate capacity to serve the original project, and water conservation measures would reduce wastewater generation at the project site. Impacts would be less than significant.

The original project would not increase impervious surfaces on the site, as the site is already fully developed hardscape. The original project included stormwater runoff features that would reduce runoff volumes and improve water quality; impacts would be less than significant.

Street and sidewalk damage during construction would be repaired or replaced at the property owner's expense. Physical impacts to streets and sidewalks would be less than significant.

The original project was within the DAP EIR assumptions; therefore, project utilities demand was considered in the DAP EIR. Compliance with existing requirements and implementation of green building strategies would reduce gas, electricity, and telecommunications utility demands. Impacts would be less than significant.

The Vasco Road Landfill has sufficient capacity to accept solid waste from the project site. The original project would divert solid waste through its LEED certification, which includes a recycling collection area. Impacts would be less than significant.

Impacts of the Modified Project

Similar to the original project, the modified project would include installation of low energy-use appliances and lighting, and incorporate drought-tolerant landscaping, rainwater capture for irrigation, water-efficient features, and other water-use-reducing (and thus wastewater generation-reducing) features. The modified project would also incorporate a low-flow planter filtration system, which was not included as part of the original project. The modified project also redesigned the façade solar fins with a rooftop solar system with capacity in adherence to 2019 CalGreen, decreasing the net electricity demand of the modified project.

The modified project would reduce the number of residential units and remove the cinema use, which would result in reduced water demand, wastewater generation, gas demand, electricity demand, telecommunication demand, and solid waste generation than that assumed in the Final EIR. Additionally, stormwater runoff would not substantially change, as the proposed building footprint would be the same as the original project. The proposed low-flow planter system and rainwater capture would reduce stormwater runoff compared to the original project by collecting stormwater onsite. Impacts would be less than significant.

Effects and Mitigation Measures

No new or substantially more severe significant effects would occur to utilities and service systems, and no new mitigation measures are necessary.

Conclusion

Impacts would be less than significant, similar to the original project.

4.8 Other Impacts

As the reduced scope and scale of the modified project would decrease the depth and amount of excavation necessary (due to the elimination of the second and third basement level) while maintaining the original project's footprint and general shape, the following topics require only a brief discussion to compare impacts and assess whether new or increased significant impacts would occur. The previously identified impacts from the original project are described below, with analysis based on the modified project following.

Aesthetics

Final EIR Impact Summary: Section I, *Aesthetics*, of the 2015 IEC found that the original project would obstruct a scenic vista of Alcatraz Island from the UC Berkeley Campanile, but pursuant to state law (Senate Bill 743), this impact cannot be considered significant. The 2015 IEC also determined the original project generally falls in the scale and intensity assumed in the DAP EIR, and impacts to aesthetics would be less than significant.

Impacts of the Modified Project: The building under the modified project would not substantially differ in shape or location compared to the original project. However, the building would be 93 feet shorter, and therefore impacts associated with views through the site would be decreased. Similarly, the modified project would not introduce sources of light, shadow, or glare not analyzed previously. Therefore, no significant new aesthetics impacts or substantially increased aesthetics impacts would occur compared to the original project.

Agriculture and Forestry

Final EIR Impact Summary: Section II, *Agricultural and Forest Resources*, of the 2015 IEC found no impacts to agricultural and forest resources, the same as determined in the DAP EIR.

Impacts of the Modified Project: The project site remains in an urban, developed area, with no designated agricultural land or forest land on or adjacent to the site. Therefore, no significant new agriculture and forestry impacts or substantially increased agriculture and forestry impacts would occur compared to the original project.

Biological Resources

Final EIR Impact Summary: Section IV, *Biological Resources*, of the 2015 IEC found that the original project would have less-than-significant impacts on biological resources, the same as determined in the DAP EIR.

Impacts of the Modified Project: The project site is the same for the modified project as for the original project. The site does not contain riparian areas, wetlands, or other habitat suitable for special-status species. No significant new biological resource impacts or substantially increased biological resource impacts would occur compared to the original project.

Energy

Final EIR Impact Summary: This topic was not discussed in the Final EIR, but it was subsequently added to the *CEQA Guidelines* checklist.

Impacts of the Modified Project: The modified project includes energy-saving features, including solar energy generation, rainwater capture for landscape irrigation, a low-flow planter filtration system, compliance with 2019 CalGreen, drought-tolerant plants and materials, and Transportation Demand Management features. The modified project would reduce the intensity of development compared to the original project. Because the modified project would consume less energy than the original project due to fewer residential units, commercial space and parking, and because it would include energy-saving design features as discussed in the Project Description section, it would not involve the wasteful, inefficient, or unnecessary consumption of energy resources, similar to the original project.

Geology and Soils

Final EIR Impact Summary: Section VI, *Geology and Soils*, of the 2015 IEC found that the geologic setting had not changed since adoption of the DAP EIR, and impacts would be no greater than the less-than-significant impacts identified in the DAP EIR. Implementation of the project-specific geotechnical report's recommendations would reduce potential impacts to less-than-significant levels.

Impacts of the Modified Project: The modified project would be on the same site as the original project. The project site is outside of an Alquist-Priolo fault zone in an area not subject to liquefaction or landslides. A geotechnical report for the modified project was prepared by A3GEO in August 2021 and is included as Appendix E. The project site remains in an area of potential seismic shaking, and the project design includes seismic reinforcement of the proposed building with reinforced concrete on the lower portion of the building (including the subterranean level) and conventional lightweight framing on the upper portion of the building. The geotechnical report found that the project design is feasible and appropriate from a geotechnical standpoint, provided that recommendations in the report regarding seismic considerations, foundation support, undocumented fill, expansive soil, and groundwater are implemented (Appendix E). No significant new geology and soils impacts or substantially increased geology and soils impacts would occur because of implementation of the modified project.

Hazards and Hazardous Materials

Final EIR Impact Summary: Section VIII, *Hazards and Hazardous Materials*, of the 2015 IEC found that with existing regulations and normal standards of use, the original project would have no impacts greater than the less-than-significant impacts identified in the DAP EIR.

Impacts of the Modified Project: The modified project would utilize hazardous materials as described in the 2015 IEC for the original project and would continue to be subject to existing regulations and normal standards of use. The project site setting regarding proximity to schools, airports, and hazardous waste sites[4] has not changed since publication of the Final EIR. Therefore, no significant new hazardous materials impacts or substantially increased hazardous materials impacts would occur compared to the original project.

Hydrology and Water Quality

Final EIR Impact Summary: Section IX, *Hydrology and Water Quality*, of the 2015 IEC found that with existing regulations and normal standards of use, the original project would have no impacts greater than the less-than-significant impacts identified in the DAP EIR.

Impacts of the Modified Project: The modified project would continue to require coverage under the City's NPDES Permit. The reduction in the number of basement parking levels would reduce potential impacts related to the high-groundwater table. The modified project would have the same impacts related to groundwater recharge and impervious surfaces, as the footprint of the building would not substantially change. The project site remains outside a 100-year flood zone and not near water bodies that could tsunami or seiche or near an area that could mudflow. Therefore, no significant new hydrology or water quality impacts or substantially increased hydrology or water quality impacts would occur compared to the original project.

Land Use and Planning

Final EIR Impact Summary: Section X, *Land Use and Planning*, of the 2015 IEC found that the original project would have no impact, as identified in the DAP EIR, on dividing an established community or regarding Habitat Conservation Plans or Natural Community Conservation Plans. Impacts related to wind were determined to be less than significant, as a project-specific wind study was performed pursuant to the DAP EIR requirements. Impacts related to consistency with applicable General Plan and DAP policies related to preservation and protection of cultural resources were determined to be potentially significant. Impacts related to cultural resources were discussed in Section 4.1, *Cultural Resources* of the Final EIR and are summarized in Section 4.3, *Cultural Resources*, in this Addendum. Additionally, the original project was found to be inconsistent with General Plan Policy UD-31, regarding views, but as discussed in Section I, *Aesthetics*, of the 2015 IEC, aesthetics impacts of a mixed-use project on an infill site in a transit priority area may not be considered to have a significant aesthetic impacts pursuant to California law.

Impacts of the Modified Project: The modified project would not modify the proposed land uses of the original project and would include façade refinements to be more consistent with the historic character of the Civic Center Historic District, which would increase the overall project consistency with General Plan and DAP policies compared to the original project. Please refer to Section 4.3, *Cultural Resources*, for a discussion of potential impacts to cultural and historic resources. Therefore, no significant new land use and planning impacts or substantially increased land use and planning impacts would occur compared to the original project.

Mineral Resources

Final EIR Impact Summary: Section XI, *Mineral Resources*, of the 2015 IEC found that the original project would have no impact, as identified in the DAP EIR.

[4] The following databases were checked for new hazardous waste sites in April 2022: State Water Resources Control Board's Geotracker, Department of Toxic Substances Control's EnviroStor and Cortese List, and United States Environmental Protection Agency's Envirofacts.

Impacts of the Modified Project: The project site remains in an urbanized area without known mineral resources of value. Therefore, no significant new mineral resource impacts or substantially increased mineral resource impacts would occur compared to the original project.

Population and Housing

Final EIR Impact Summary: Section XIII, *Population and Housing*, of the 2015 IEC found that the original project would have a less-than-significant impact and would be within the impacts identified in the DAP EIR.

Impacts of the Modified Project: The project would directly increase population by developing residential units, but the total number of units would be decreased compared to the original project. Therefore, no significant new population and housing impacts or substantially increased population and housing impacts would occur compared to the original project.

Public Services

Final EIR Impact Summary: Section XIV, *Public Services*, of the 2015 IEC found that the original project would have a less-than-significant impact, the same as identified in the DAP EIR.

Impacts of the Modified Project: The project would directly increase population by developing residential units, but the total number of units would be decreased compared to the original project. Therefore, no significant new public services impacts or substantially increased public services impacts from a population increase above the original project would occur.

Recreation

Final EIR Impact Summary: Section XV, *Recreation*, of the 2015 IEC found that the original project would have no impact on recreational facilities, the same as identified in the DAP EIR.

Impacts of the Modified Project: The project would directly increase population by developing residential units, but the total number of units would be decreased compared to the original project. Therefore, no significant new recreation impacts or substantially increased recreation impacts from a population increase above the original project would occur.

Tribal Cultural Resources

Final EIR Impact Summary: This topic was not discussed in the Final EIR but was subsequently added to the *CEQA Guidelines* checklist.

Impacts of the Modified Project: As the Notice of Preparation for the EIR for the original project was published before July 1, 2015, AB 52 consultation was not required. Addenda do not require AB 52 consultation. No cultural resources of Native American origin were identified onsite, and Section V, *Cultural Resources*, of the 2015 IEC analyzes the potential for possible disturbance of previously unidentified resources and includes mitigation to reduce these impacts to a less-than-significant level. Mitigation Measures CUL-3 and CUL-5 address impacts to cultural resources, including those of Native American origin. If cultural resources of Native American origin are identified, relevant portions of AB 52 would apply.

Wildfire

Final EIR Impact Summary: Section VIII, *Hazards and Hazardous Materials*, of the 2015 IEC found that the original project would have no impacts greater than the less-than-significant impacts identified in the DAP EIR.

Impacts of the Modified Project: The nearest Very High Fire Hazard Severity Zone is located approximately 0.75 mile from the project site (California Department of Forestry and Fire Protection 2007). Although the site is near a Very High Fire Hazard Severity Zone, the immediate surrounding area is developed with urban land uses and is generally flat and not sloped. The modified project would not cause significant effects related to wildfire and would not impede the implementation of an emergency response or evacuation plan.

Effects and Mitigation Measures

No new or substantially more severe significant effects would occur related to aesthetics, agriculture and forestry, biological resources, energy, geology and soils, hazards and hazardous materials, hydrology and water quality, land use and planning, mineral resources, population and housing, public services, recreation, tribal cultural resources, and wildfire. No new mitigation measures are necessary.

Conclusion

Impacts would be less than significant with mitigation, similar to the original project.

5 Conclusion

As discussed in detail in the preceding sections, potential impacts associated with the modified project are consistent with potential impacts characterized and mitigated for in the Final EIR. Substantive revisions to the Final EIR are not necessary because no new significant impacts or significant impacts of substantially greater severity than previously described would occur because of the modified project. Although this addendum includes an analysis of energy, tribal cultural resources, and wildfire, which were not included in the Final EIR, no significant impacts were found to occur. Thus, the conditions outlined in *CEQA Guidelines* Section 15162(3)(A) and (D) requiring preparation of a subsequent EIR would not be met.

Based on the analysis contained herein, the following determinations are applicable:

- No further evaluation of environmental impacts is required for the modified project.
- No subsequent EIR is necessary pursuant to *CEQA Guidelines* Section 15162.
- This addendum is the appropriate level of environmental analysis and documentation for the modified project pursuant to *CEQA Guidelines* Section 15164.

Pursuant to *CEQA Guidelines* Section 15164(c), this addendum will be included in the public record for the Final EIR. Documents related to this addendum will be available at the City of Berkeley Planning & Development Department, located at 1947 Center Street in Berkeley, California 94704.

6 References and Preparers

References

Berkeley, City of. 2012a. Downtown Area Plan. Berkeley, California.

______. 2012b. Downtown Berkeley Design Guidelines. Berkeley, California.

California Department of Forestry and Fire Protection. 2007. FHSZ Viewer. https://egis.fire.ca.gov/FHSZ/ (accessed March 2022).

List of Preparers

Rincon prepared this addendum under contract to the City of Berkeley. Persons and firms involved in data gathering, analysis, project management, and quality control include:

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Appendix A

Structural Feasibility Letter

October 22, 2021

Niles Bolton Associates
Attn: Mohamed Mohsen
3060 Peachtree Rd, NW
Atlanta, GA 30305

Re: Berkeley Plaza

Dear Mohamed:

We understand that the City of Berkeley requires a structural feasibility letter indicating that the existing to remain structures for the proposed Berkeley Plaza project have been reviewed for the proposed separation / demolition of adjacently built structures. This letter serves to indicate that DCI Engineers has in fact reviewed the proposed ramifications and believes the historic structures will not be materially impacted. The attached sketch shows the current adjacent buildings as viewed from along Kittredge street at the dividing property line along with the superimposed new building and how they will be separated.

The new building foundations will be separate and far enough away from the existing building foundations so as not to impact them. A small portion of the existing building will be demolished back from the property line so it can be restructured back to the property line with a new basement wall and foundation. A new façade will be installed on the interior of the site where one did not exist before to enclose the existing structure.

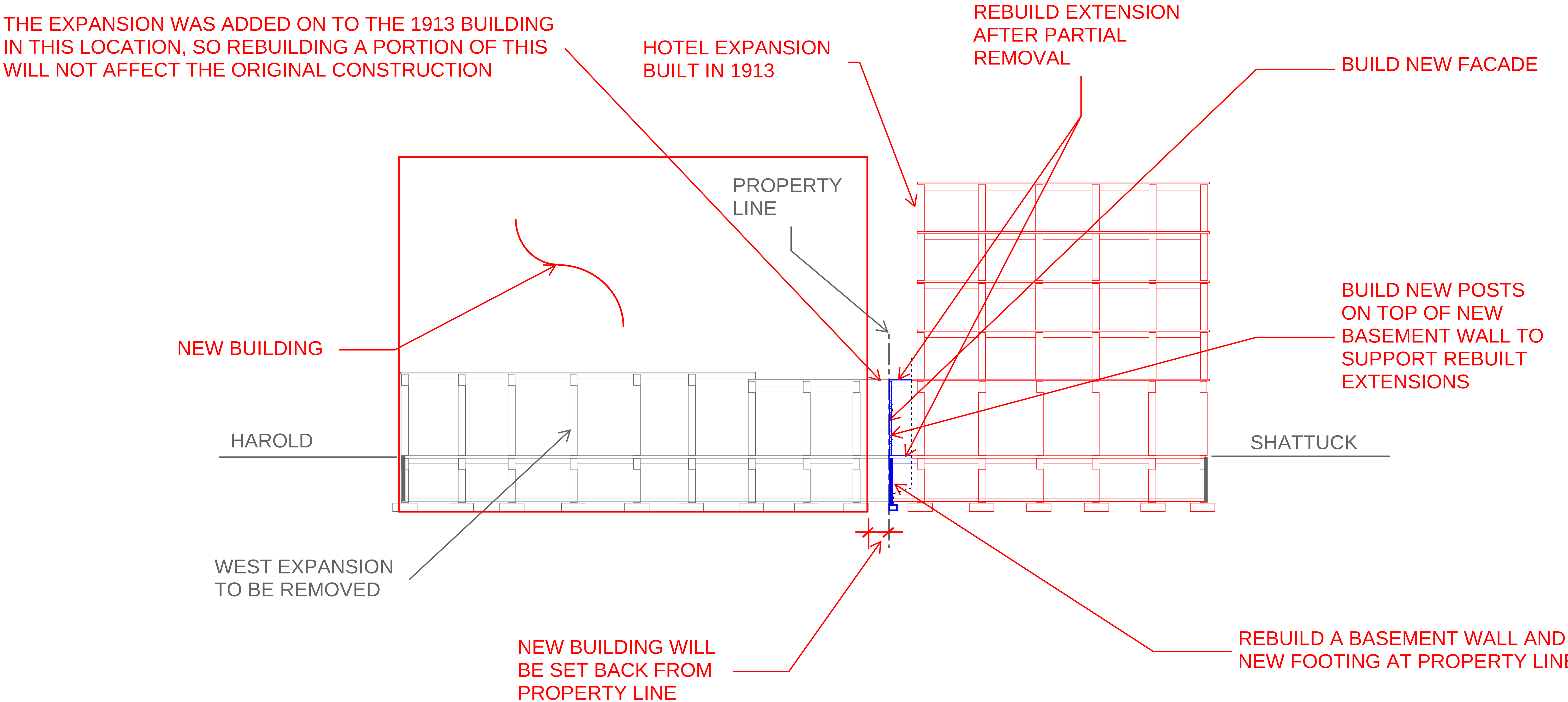
The new building will be set back above grade such that there is separation from the existing building and new building to preserve the character of the historic building.

We hope this helps clarify the intent of this new project. If there are any questions, please feel free to reach out to discuss.

Sincerely,
DCI Engineers

Scott D. Erickson PE, SE
Principal

DCI ENGINEERS



VIEW FROM KITTREDGE

Feasibility Study Sketch
DCI
10/22/21

Appendix B

California Emissions Estimator Model Results

2065 Kittredge Mixed-Use Project

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking with Elevator	43.00	Space	0.39	17,200.00	0
Fast Food Restaurant w/o Drive Thru	1.60	1000sqft	0.04	1,600.00	0
Apartments Mid Rise	190.00	Dwelling Unit	5.00	149,301.00	543

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 2.2 **Precipitation Freq (Days)** 63

Climate Zone 5 **Operational Year** 2025

Utility Company Pacific Gas and Electric Company

CO2 Intensity (lb/MWhr) 203.98 **CH4 Intensity (lb/MWhr)** 0.033 **N2O Intensity (lb/MWhr)** 0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - square footage adjusted

Construction Phase - Applicant provided timeline

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - Default

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Trips and VMT - Haul trips for excavation moved to grading phase. All defaults otherwise

Grading - 12,000 cubic yards for one subterranean level

Woodstoves - Woodstoves and fireplaces not allowed per BAAQMD Rules

Area Coating -

Energy Use - defaults

Mobile Commute Mitigation -

Energy Mitigation -

Demolition - square footage of existing building. All would be demolished

On-road Fugitive Dust -

Architectural Coating -

Vehicle Trips - Differ from traffic study, but land use mitigation accounts for some reductions in trip rate

Water And Wastewater - defaults

Solid Waste - defaults

Mobile Land Use Mitigation - 0.8 acre lot, 190 units

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	800	801
tblAreaCoating	Area_Nonresidential_Interior	2400	2402
tblAreaCoating	Area_Residential_Exterior	100778	128250
tblAreaCoating	Area_Residential_Interior	302335	384750
tblConstructionPhase	NumDays	20.00	60.00
tblConstructionPhase	NumDays	10.00	30.00
tblConstructionPhase	NumDays	20.00	30.00
tblConstructionPhase	NumDays	230.00	375.00
tblConstructionPhase	NumDays	20.00	30.00
tblConstructionPhase	NumDays	20.00	255.00
tblFireplaces	FireplaceDayYear	11.14	0.00
tblFireplaces	FireplaceHourDay	3.50	0.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	28.50	0.00

tblFireplaces	NumberNoFireplace	7.60	190.00
tblFireplaces	NumberWood	32.30	0.00
tblFleetMix	HHD	0.01	0.00
tblFleetMix	LDA	0.57	0.00
tblFleetMix	LDT1	0.06	0.00
tblFleetMix	LDT2	0.18	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	5.2110e-003	0.00
tblFleetMix	MCY	0.02	0.00
tblFleetMix	MDV	0.11	0.00
tblFleetMix	MH	2.4230e-003	0.00
tblFleetMix	MHD	0.01	0.00
tblFleetMix	OBUS	7.9000e-004	0.00
tblFleetMix	SBUS	3.4300e-004	0.00
tblFleetMix	UBUS	5.6000e-004	0.00
tblGrading	MaterialExported	0.00	12,000.00
tblLandUse	LandUseSquareFeet	190,000.00	149,301.00
tblWoodstoves	NumberCatalytic	3.80	0.00
tblWoodstoves	NumberNoncatalytic	3.80	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00
tblWoodstoves	WoodstoveWoodMass	582.40	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.1249	1.2557	0.9078	1.8600e-003	0.3237	0.0594	0.3831	0.1462	0.0550	0.2012	0.0000	164.7707	164.7707	0.0437	2.2200e-003	166.5233
2023	0.2561	2.1857	2.5218	5.6500e-003	0.3199	0.0952	0.4150	0.1126	0.0893	0.2018	0.0000	505.5672	505.5672	0.0815	0.0174	512.7777
2024	0.5129	1.2831	1.7673	3.5900e-003	0.1074	0.0559	0.1633	0.0288	0.0526	0.0814	0.0000	318.7580	318.7580	0.0534	6.8200e-003	322.1245
2025	0.7331	0.1015	0.2032	4.1000e-004	0.0196	4.5000e-003	0.0241	5.2200e-003	4.4900e-003	9.7000e-003	0.0000	36.5444	36.5444	1.5700e-003	3.7000e-004	36.6953
Maximum	**0.7331**	**2.1857**	**2.5218**	**5.6500e-003**	**0.3237**	**0.0952**	**0.4150**	**0.1462**	**0.0893**	**0.2018**	**0.0000**	**505.5672**	**505.5672**	**0.0815**	**0.0174**	**512.7777**

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.1249	1.2557	0.9078	1.8600e-003	0.3237	0.0594	0.3831	0.1462	0.0550	0.2012	0.0000	164.7705	164.7705	0.0437	2.2200e-003	166.5231
2023	0.2561	2.1857	2.5217	5.6500e-003	0.3199	0.0952	0.4150	0.1126	0.0893	0.2018	0.0000	505.5668	505.5668	0.0815	0.0174	512.7774
2024	0.5129	1.2831	1.7673	3.5900e-003	0.1074	0.0559	0.1633	0.0288	0.0526	0.0814	0.0000	318.7578	318.7578	0.0534	6.8200e-003	322.1243
2025	0.7331	0.1015	0.2032	4.1000e-004	0.0196	4.5000e-003	0.0241	5.2200e-003	4.4900e-003	9.7000e-003	0.0000	36.5443	36.5443	1.5700e-003	3.7000e-004	36.6952
Maximum	**0.7331**	**2.1857**	**2.5217**	**5.6500e-003**	**0.3237**	**0.0952**	**0.4150**	**0.1462**	**0.0893**	**0.2018**	**0.0000**	**505.5668**	**505.5668**	**0.0815**	**0.0174**	**512.7774**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**9-1-2022**	**11-30-2022**	0.9810	0.9810
2	**12-1-2022**	**2-28-2023**	0.9256	0.9256
3	**3-1-2023**	**5-31-2023**	0.5791	0.5791
4	**6-1-2023**	**8-31-2023**	0.5778	0.5778
5	**9-1-2023**	**11-30-2023**	0.5741	0.5741
6	**12-1-2023**	**2-29-2024**	0.5519	0.5519
7	**3-1-2024**	**5-31-2024**	0.5432	0.5432
8	**6-1-2024**	**8-31-2024**	0.4616	0.4616

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

9	**9-1-2024**	**11-30-2024**	0.3215	0.3215
10	**12-1-2024**	**2-28-2025**	0.3151	0.3151
11	**3-1-2025**	**5-31-2025**	0.3208	0.3208
12	**6-1-2025**	**8-31-2025**	0.3068	0.3068
		Highest	0.9810	0.9810

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.7678	0.0162	1.4098	7.0000e-005		7.8200e-003	7.8200e-003		7.8200e-003	7.8200e-003	0.0000	2.3053	2.3053	2.2100e-003	0.0000	2.3605
Energy	0.0101	0.0871	0.0425	5.5000e-004		6.9700e-003	6.9700e-003		6.9700e-003	6.9700e-003	0.0000	181.1329	181.1329	0.0151	3.4200e-003	182.5298
Mobile	0.3827	0.4780	3.5590	7.7100e-003	1.1786	5.8100e-003	1.1844	0.3075	5.4200e-003	0.3129	0.0000	729.7823	729.7823	0.0452	0.0373	742.0334
Waste						0.0000	0.0000		0.0000	0.0000	21.4825	0.0000	21.4825	1.2696	0.0000	53.2221
Water						0.0000	0.0000		0.0000	0.0000	4.0815	8.9781	13.0596	0.4207	0.0101	26.5781
Total	**1.1605**	**0.5813**	**5.0114**	**8.3300e-003**	**1.1786**	**0.0206**	**1.1992**	**0.3075**	**0.0202**	**0.3277**	**25.5640**	**922.1986**	**947.7625**	**1.7527**	**0.0508**	**1,006.7239**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.7678	0.0162	1.4098	7.0000e-005		7.8200e-003	7.8200e-003		7.8200e-003	7.8200e-003	0.0000	2.3053	2.3053	2.2100e-003	0.0000	2.3605
Energy	0.0101	0.0871	0.0425	5.5000e-004		6.9700e-003	6.9700e-003		6.9700e-003	6.9700e-003	0.0000	181.1329	181.1329	0.0151	3.4200e-003	182.5298
Mobile	0.2770	0.2580	1.9278	3.0000e-003	0.4326	2.5600e-003	0.4352	0.1129	2.3800e-003	0.1152	0.0000	283.7236	283.7236	0.0287	0.0198	290.3287
Waste						0.0000	0.0000		0.0000	0.0000	10.7413	0.0000	10.7413	0.6348	0.0000	26.6110
Water						0.0000	0.0000		0.0000	0.0000	4.0815	8.3438	12.4252	0.4206	0.0101	25.9375
Total	**1.0549**	**0.3613**	**3.3802**	**3.6200e-003**	**0.4326**	**0.0174**	**0.4500**	**0.1129**	**0.0172**	**0.1300**	**14.8227**	**475.5055**	**490.3282**	**1.1013**	**0.0332**	**527.7675**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**9.10**	**37.84**	**32.55**	**56.54**	**63.29**	**15.78**	**62.48**	**63.29**	**15.04**	**60.32**	**42.02**	**48.44**	**48.26**	**37.17**	**34.58**	**47.58**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	9/1/2022	11/23/2022	5	60	
2	Site Preparation	Site Preparation	11/24/2022	1/4/2023	5	30	
3	Grading	Grading	1/5/2023	2/15/2023	5	30	

4	Building Construction	Building Construction	2/16/2023	7/24/2024	5	375	
5	Paving	Paving	7/25/2024	9/4/2024	5	30	
6	Architectural Coating	Architectural Coating	9/5/2024	8/27/2025	5	255	

Acres of Grading (Site Preparation Phase): 45

Acres of Grading (Grading Phase): 30

Acres of Paving: 0.39

Residential Indoor: 302,335; Residential Outdoor: 100,778; Non-Residential Indoor: 2,400; Non-Residential Outdoor: 800; Striped Parking Area: 1,032 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38

Architectural Coating	Air Compressors		1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	432.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	1,500.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	145.00	23.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	29.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0468	0.0000	0.0468	7.0800e-003	0.0000	7.0800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0792	0.7716	0.6178	1.1600e-003		0.0373	0.0373		0.0347	0.0347	0.0000	101.9707	101.9707	0.0286	0.0000	102.6868
Total	**0.0792**	**0.7716**	**0.6178**	**1.1600e-003**	**0.0468**	**0.0373**	**0.0840**	**7.0800e-003**	**0.0347**	**0.0417**	**0.0000**	**101.9707**	**101.9707**	**0.0286**	**0.0000**	**102.6868**

3.2 Demolition - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.9000e-004	0.0361	7.4300e-003	1.4000e-004	3.6600e-003	3.3000e-004	3.9900e-003	1.0100e-003	3.2000e-004	1.3300e-003	0.0000	13.2242	13.2242	2.9000e-004	2.0900e-003	13.8538
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2700e-003	9.1000e-004	0.0108	3.0000e-005	3.5600e-003	2.0000e-005	3.5800e-003	9.5000e-004	2.0000e-005	9.6000e-004	0.0000	2.8783	2.8783	9.0000e-005	8.0000e-005	2.9056
Total	**2.2600e-003**	**0.0370**	**0.0183**	**1.7000e-004**	**7.2200e-003**	**3.5000e-004**	**7.5700e-003**	**1.9600e-003**	**3.4000e-004**	**2.2900e-003**	**0.0000**	**16.1025**	**16.1025**	**3.8000e-004**	**2.1700e-003**	**16.7594**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0468	0.0000	0.0468	7.0800e-003	0.0000	7.0800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0792	0.7716	0.6178	1.1600e-003		0.0373	0.0373		0.0347	0.0347	0.0000	101.9706	101.9706	0.0286	0.0000	102.6866
Total	**0.0792**	**0.7716**	**0.6178**	**1.1600e-003**	**0.0468**	**0.0373**	**0.0840**	**7.0800e-003**	**0.0347**	**0.0417**	**0.0000**	**101.9706**	**101.9706**	**0.0286**	**0.0000**	**102.6866**

3.2 Demolition - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.9000e-004	0.0361	7.4300e-003	1.4000e-004	3.6600e-003	3.3000e-004	3.9900e-003	1.0100e-003	3.2000e-004	1.3300e-003	0.0000	13.2242	13.2242	2.9000e-004	2.0900e-003	13.8538
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2700e-003	9.1000e-004	0.0108	3.0000e-005	3.5600e-003	2.0000e-005	3.5800e-003	9.5000e-004	2.0000e-005	9.6000e-004	0.0000	2.8783	2.8783	9.0000e-005	8.0000e-005	2.9056
Total	**2.2600e-003**	**0.0370**	**0.0183**	**1.7000e-004**	**7.2200e-003**	**3.5000e-004**	**7.5700e-003**	**1.9600e-003**	**3.4000e-004**	**2.2900e-003**	**0.0000**	**16.1025**	**16.1025**	**3.8000e-004**	**2.1700e-003**	**16.7594**

3.3 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2678	0.0000	0.2678	0.1366	0.0000	0.1366	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0428	0.4466	0.2659	5.1000e-004		0.0218	0.0218		0.0200	0.0200	0.0000	45.1432	45.1432	0.0146	0.0000	45.5082
Total	**0.0428**	**0.4466**	**0.2659**	**5.1000e-004**	**0.2678**	**0.0218**	**0.2895**	**0.1366**	**0.0200**	**0.1567**	**0.0000**	**45.1432**	**45.1432**	**0.0146**	**0.0000**	**45.5082**

3.3 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.8000e-004	4.9000e-004	5.8500e-003	2.0000e-005	1.9200e-003	1.0000e-005	1.9300e-003	5.1000e-004	1.0000e-005	5.2000e-004	0.0000	1.5543	1.5543	5.0000e-005	5.0000e-005	1.5690
Total	**6.8000e-004**	**4.9000e-004**	**5.8500e-003**	**2.0000e-005**	**1.9200e-003**	**1.0000e-005**	**1.9300e-003**	**5.1000e-004**	**1.0000e-005**	**5.2000e-004**	**0.0000**	**1.5543**	**1.5543**	**5.0000e-005**	**5.0000e-005**	**1.5690**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2678	0.0000	0.2678	0.1366	0.0000	0.1366	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0428	0.4466	0.2659	5.1000e-004		0.0218	0.0218		0.0200	0.0200	0.0000	45.1431	45.1431	0.0146	0.0000	45.5081
Total	**0.0428**	**0.4466**	**0.2659**	**5.1000e-004**	**0.2678**	**0.0218**	**0.2895**	**0.1366**	**0.0200**	**0.1567**	**0.0000**	**45.1431**	**45.1431**	**0.0146**	**0.0000**	**45.5081**

3.3 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.8000e-004	4.9000e-004	5.8500e-003	2.0000e-005	1.9200e-003	1.0000e-005	1.9300e-003	5.1000e-004	1.0000e-005	5.2000e-004	0.0000	1.5543	1.5543	5.0000e-005	5.0000e-005	1.5690
Total	**6.8000e-004**	**4.9000e-004**	**5.8500e-003**	**2.0000e-005**	**1.9200e-003**	**1.0000e-005**	**1.9300e-003**	**5.1000e-004**	**1.0000e-005**	**5.2000e-004**	**0.0000**	**1.5543**	**1.5543**	**5.0000e-005**	**5.0000e-005**	**1.5690**

3.3 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0510	0.0000	0.0510	0.0175	0.0000	0.0175	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.9900e-003	0.0413	0.0274	6.0000e-005		1.9000e-003	1.9000e-003		1.7500e-003	1.7500e-003	0.0000	5.0176	5.0176	1.6200e-003	0.0000	5.0582
Total	**3.9900e-003**	**0.0413**	**0.0274**	**6.0000e-005**	**0.0510**	**1.9000e-003**	**0.0529**	**0.0175**	**1.7500e-003**	**0.0192**	**0.0000**	**5.0176**	**5.0176**	**1.6200e-003**	**0.0000**	**5.0582**

3.3 Site Preparation - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-005	5.0000e-005	6.0000e-004	0.0000	2.1000e-004	0.0000	2.1000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1683	0.1683	0.0000	0.0000	0.1698
Total	**7.0000e-005**	**5.0000e-005**	**6.0000e-004**	**0.0000**	**2.1000e-004**	**0.0000**	**2.1000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.1683**	**0.1683**	**0.0000**	**0.0000**	**0.1698**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0510	0.0000	0.0510	0.0175	0.0000	0.0175	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.9900e-003	0.0413	0.0274	6.0000e-005		1.9000e-003	1.9000e-003		1.7500e-003	1.7500e-003	0.0000	5.0176	5.0176	1.6200e-003	0.0000	5.0582
Total	**3.9900e-003**	**0.0413**	**0.0274**	**6.0000e-005**	**0.0510**	**1.9000e-003**	**0.0529**	**0.0175**	**1.7500e-003**	**0.0192**	**0.0000**	**5.0176**	**5.0176**	**1.6200e-003**	**0.0000**	**5.0582**

3.3 Site Preparation - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-005	5.0000e-005	6.0000e-004	0.0000	2.1000e-004	0.0000	2.1000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1683	0.1683	0.0000	0.0000	0.1698
Total	**7.0000e-005**	**5.0000e-005**	**6.0000e-004**	**0.0000**	**2.1000e-004**	**0.0000**	**2.1000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.1683**	**0.1683**	**0.0000**	**0.0000**	**0.1698**

3.4 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1069	0.0000	0.1069	0.0515	0.0000	0.0515	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0257	0.2690	0.2213	4.4000e-004		0.0116	0.0116		0.0107	0.0107	0.0000	39.0909	39.0909	0.0126	0.0000	39.4070
Total	**0.0257**	**0.2690**	**0.2213**	**4.4000e-004**	**0.1069**	**0.0116**	**0.1185**	**0.0515**	**0.0107**	**0.0622**	**0.0000**	**39.0909**	**39.0909**	**0.0126**	**0.0000**	**39.4070**

3.4 Grading - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.5500e-003	0.0985	0.0224	4.5000e-004	0.0127	8.4000e-004	0.0136	3.5000e-003	8.0000e-004	4.3000e-003	0.0000	43.7021	43.7021	9.3000e-004	6.9000e-003	45.7829
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.9000e-004	4.0000e-004	5.0200e-003	2.0000e-005	1.7800e-003	1.0000e-005	1.7900e-003	4.7000e-004	1.0000e-005	4.8000e-004	0.0000	1.4026	1.4026	4.0000e-005	4.0000e-005	1.4152
Total	**2.1400e-003**	**0.0989**	**0.0274**	**4.7000e-004**	**0.0145**	**8.5000e-004**	**0.0153**	**3.9700e-003**	**8.1000e-004**	**4.7800e-003**	**0.0000**	**45.1047**	**45.1047**	**9.7000e-004**	**6.9400e-003**	**47.1981**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1069	0.0000	0.1069	0.0515	0.0000	0.0515	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0257	0.2690	0.2213	4.4000e-004		0.0116	0.0116		0.0107	0.0107	0.0000	39.0909	39.0909	0.0126	0.0000	39.4069
Total	**0.0257**	**0.2690**	**0.2213**	**4.4000e-004**	**0.1069**	**0.0116**	**0.1185**	**0.0515**	**0.0107**	**0.0622**	**0.0000**	**39.0909**	**39.0909**	**0.0126**	**0.0000**	**39.4069**

3.4 Grading - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.5500e-003	0.0985	0.0224	4.5000e-004	0.0127	8.4000e-004	0.0136	3.5000e-003	8.0000e-004	4.3000e-003	0.0000	43.7021	43.7021	9.3000e-004	6.9000e-003	45.7829
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.9000e-004	4.0000e-004	5.0200e-003	2.0000e-005	1.7800e-003	1.0000e-005	1.7900e-003	4.7000e-004	1.0000e-005	4.8000e-004	0.0000	1.4026	1.4026	4.0000e-005	4.0000e-005	1.4152
Total	**2.1400e-003**	**0.0989**	**0.0274**	**4.7000e-004**	**0.0145**	**8.5000e-004**	**0.0153**	**3.9700e-003**	**8.1000e-004**	**4.7800e-003**	**0.0000**	**45.1047**	**45.1047**	**9.7000e-004**	**6.9400e-003**	**47.1981**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1785	1.6327	1.8437	3.0600e-003		0.0794	0.0794		0.0747	0.0747	0.0000	263.0984	263.0984	0.0626	0.0000	264.6631
Total	**0.1785**	**1.6327**	**1.8437**	**3.0600e-003**		**0.0794**	**0.0794**		**0.0747**	**0.0747**	**0.0000**	**263.0984**	**263.0984**	**0.0626**	**0.0000**	**264.6631**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.6400e-003	0.1142	0.0345	5.2000e-004	0.0172	6.9000e-004	0.0178	4.9600e-003	6.6000e-004	5.6200e-003	0.0000	50.4982	50.4982	6.9000e-004	7.5600e-003	52.7687
Worker	0.0431	0.0295	0.3669	1.1000e-003	0.1301	6.8000e-004	0.1308	0.0346	6.2000e-004	0.0352	0.0000	102.5891	102.5891	3.0200e-003	2.8500e-003	103.5129
Total	**0.0457**	**0.1437**	**0.4014**	**1.6200e-003**	**0.1473**	**1.3700e-003**	**0.1486**	**0.0396**	**1.2800e-003**	**0.0409**	**0.0000**	**153.0873**	**153.0873**	**3.7100e-003**	**0.0104**	**156.2816**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1785	1.6327	1.8437	3.0600e-003		0.0794	0.0794		0.0747	0.0747	0.0000	263.0981	263.0981	0.0626	0.0000	264.6628
Total	**0.1785**	**1.6327**	**1.8437**	**3.0600e-003**		**0.0794**	**0.0794**		**0.0747**	**0.0747**	**0.0000**	**263.0981**	**263.0981**	**0.0626**	**0.0000**	**264.6628**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.6400e-003	0.1142	0.0345	5.2000e-004	0.0172	6.9000e-004	0.0178	4.9600e-003	6.6000e-004	5.6200e-003	0.0000	50.4982	50.4982	6.9000e-004	7.5600e-003	52.7687
Worker	0.0431	0.0295	0.3669	1.1000e-003	0.1301	6.8000e-004	0.1308	0.0346	6.2000e-004	0.0352	0.0000	102.5891	102.5891	3.0200e-003	2.8500e-003	103.5129
Total	**0.0457**	**0.1437**	**0.4014**	**1.6200e-003**	**0.1473**	**1.3700e-003**	**0.1486**	**0.0396**	**1.2800e-003**	**0.0409**	**0.0000**	**153.0873**	**153.0873**	**3.7100e-003**	**0.0104**	**156.2816**

3.5 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1089	0.9948	1.1963	1.9900e-003		0.0454	0.0454		0.0427	0.0427	0.0000	171.5683	171.5683	0.0406	0.0000	172.5826
Total	**0.1089**	**0.9948**	**1.1963**	**1.9900e-003**		**0.0454**	**0.0454**		**0.0427**	**0.0427**	**0.0000**	**171.5683**	**171.5683**	**0.0406**	**0.0000**	**172.5826**

3.5 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.6800e-003	0.0747	0.0221	3.3000e-004	0.0112	4.5000e-004	0.0116	3.2300e-003	4.3000e-004	3.6700e-003	0.0000	32.4160	32.4160	4.5000e-004	4.8600e-003	33.8745
Worker	0.0262	0.0172	0.2235	7.0000e-004	0.0848	4.2000e-004	0.0853	0.0226	3.9000e-004	0.0230	0.0000	65.2370	65.2370	1.7900e-003	1.7300e-003	65.7973
Total	**0.0279**	**0.0919**	**0.2455**	**1.0300e-003**	**0.0960**	**8.7000e-004**	**0.0969**	**0.0258**	**8.2000e-004**	**0.0266**	**0.0000**	**97.6530**	**97.6530**	**2.2400e-003**	**6.5900e-003**	**99.6719**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1089	0.9948	1.1963	1.9900e-003		0.0454	0.0454		0.0427	0.0427	0.0000	171.5681	171.5681	0.0406	0.0000	172.5824
Total	**0.1089**	**0.9948**	**1.1963**	**1.9900e-003**		**0.0454**	**0.0454**		**0.0427**	**0.0427**	**0.0000**	**171.5681**	**171.5681**	**0.0406**	**0.0000**	**172.5824**

3.5 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.6800e-003	0.0747	0.0221	3.3000e-004	0.0112	4.5000e-004	0.0116	3.2300e-003	4.3000e-004	3.6700e-003	0.0000	32.4160	32.4160	4.5000e-004	4.8600e-003	33.8745
Worker	0.0262	0.0172	0.2235	7.0000e-004	0.0848	4.2000e-004	0.0853	0.0226	3.9000e-004	0.0230	0.0000	65.2370	65.2370	1.7900e-003	1.7300e-003	65.7973
Total	**0.0279**	**0.0919**	**0.2455**	**1.0300e-003**	**0.0960**	**8.7000e-004**	**0.0969**	**0.0258**	**8.2000e-004**	**0.0266**	**0.0000**	**97.6530**	**97.6530**	**2.2400e-003**	**6.5900e-003**	**99.6719**

3.6 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0148	0.1429	0.2194	3.4000e-004		7.0300e-003	7.0300e-003		6.4700e-003	6.4700e-003	0.0000	30.0398	30.0398	9.7200e-003	0.0000	30.2827
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0148**	**0.1429**	**0.2194**	**3.4000e-004**		**7.0300e-003**	**7.0300e-003**		**6.4700e-003**	**6.4700e-003**	**0.0000**	**30.0398**	**30.0398**	**9.7200e-003**	**0.0000**	**30.2827**

3.6 Paving - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.5000e-004	3.6000e-004	4.6900e-003	1.0000e-005	1.7800e-003	1.0000e-005	1.7900e-003	4.7000e-004	1.0000e-005	4.8000e-004	0.0000	1.3680	1.3680	4.0000e-005	4.0000e-005	1.3797
Total	**5.5000e-004**	**3.6000e-004**	**4.6900e-003**	**1.0000e-005**	**1.7800e-003**	**1.0000e-005**	**1.7900e-003**	**4.7000e-004**	**1.0000e-005**	**4.8000e-004**	**0.0000**	**1.3680**	**1.3680**	**4.0000e-005**	**4.0000e-005**	**1.3797**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0148	0.1429	0.2194	3.4000e-004		7.0300e-003	7.0300e-003		6.4700e-003	6.4700e-003	0.0000	30.0398	30.0398	9.7200e-003	0.0000	30.2827
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0148**	**0.1429**	**0.2194**	**3.4000e-004**		**7.0300e-003**	**7.0300e-003**		**6.4700e-003**	**6.4700e-003**	**0.0000**	**30.0398**	**30.0398**	**9.7200e-003**	**0.0000**	**30.2827**

3.6 Paving - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.5000e-004	3.6000e-004	4.6900e-003	1.0000e-005	1.7800e-003	1.0000e-005	1.7900e-003	4.7000e-004	1.0000e-005	4.8000e-004	0.0000	1.3680	1.3680	4.0000e-005	4.0000e-005	1.3797
Total	**5.5000e-004**	**3.6000e-004**	**4.6900e-003**	**1.0000e-005**	**1.7800e-003**	**1.0000e-005**	**1.7900e-003**	**4.7000e-004**	**1.0000e-005**	**4.8000e-004**	**0.0000**	**1.3680**	**1.3680**	**4.0000e-005**	**4.0000e-005**	**1.3797**

3.7 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.3501					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.5900e-003	0.0512	0.0760	1.2000e-004		2.5600e-003	2.5600e-003		2.5600e-003	2.5600e-003	0.0000	10.7237	10.7237	6.0000e-004	0.0000	10.7388
Total	**0.3577**	**0.0512**	**0.0760**	**1.2000e-004**		**2.5600e-003**	**2.5600e-003**		**2.5600e-003**	**2.5600e-003**	**0.0000**	**10.7237**	**10.7237**	**6.0000e-004**	**0.0000**	**10.7388**

3.7 Architectural Coating - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9800e-003	1.9500e-003	0.0254	8.0000e-005	9.6300e-003	5.0000e-005	9.6800e-003	2.5600e-003	4.0000e-005	2.6100e-003	0.0000	7.4053	7.4053	2.0000e-004	2.0000e-004	7.4689
Total	**2.9800e-003**	**1.9500e-003**	**0.0254**	**8.0000e-005**	**9.6300e-003**	**5.0000e-005**	**9.6800e-003**	**2.5600e-003**	**4.0000e-005**	**2.6100e-003**	**0.0000**	**7.4053**	**7.4053**	**2.0000e-004**	**2.0000e-004**	**7.4689**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.3501					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.5900e-003	0.0512	0.0760	1.2000e-004		2.5600e-003	2.5600e-003		2.5600e-003	2.5600e-003	0.0000	10.7237	10.7237	6.0000e-004	0.0000	10.7388
Total	**0.3577**	**0.0512**	**0.0760**	**1.2000e-004**		**2.5600e-003**	**2.5600e-003**		**2.5600e-003**	**2.5600e-003**	**0.0000**	**10.7237**	**10.7237**	**6.0000e-004**	**0.0000**	**10.7388**

3.7 Architectural Coating - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9800e-003	1.9500e-003	0.0254	8.0000e-005	9.6300e-003	5.0000e-005	9.6800e-003	2.5600e-003	4.0000e-005	2.6100e-003	0.0000	7.4053	7.4053	2.0000e-004	2.0000e-004	7.4689
Total	**2.9800e-003**	**1.9500e-003**	**0.0254**	**8.0000e-005**	**9.6300e-003**	**5.0000e-005**	**9.6800e-003**	**2.5600e-003**	**4.0000e-005**	**2.6100e-003**	**0.0000**	**7.4053**	**7.4053**	**2.0000e-004**	**2.0000e-004**	**7.4689**

3.7 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.7128					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0146	0.0979	0.1547	2.5000e-004		4.4000e-003	4.4000e-003		4.4000e-003	4.4000e-003	0.0000	21.8303	21.8303	1.1900e-003	0.0000	21.8601
Total	**0.7274**	**0.0979**	**0.1547**	**2.5000e-004**		**4.4000e-003**	**4.4000e-003**		**4.4000e-003**	**4.4000e-003**	**0.0000**	**21.8303**	**21.8303**	**1.1900e-003**	**0.0000**	**21.8601**

3.7 Architectural Coating - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.6900e-003	3.5800e-003	0.0485	1.6000e-004	0.0196	9.0000e-005	0.0197	5.2200e-003	9.0000e-005	5.3000e-003	0.0000	14.7140	14.7140	3.8000e-004	3.7000e-004	14.8352
Total	**5.6900e-003**	**3.5800e-003**	**0.0485**	**1.6000e-004**	**0.0196**	**9.0000e-005**	**0.0197**	**5.2200e-003**	**9.0000e-005**	**5.3000e-003**	**0.0000**	**14.7140**	**14.7140**	**3.8000e-004**	**3.7000e-004**	**14.8352**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.7128					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0146	0.0979	0.1547	2.5000e-004		4.4000e-003	4.4000e-003		4.4000e-003	4.4000e-003	0.0000	21.8303	21.8303	1.1900e-003	0.0000	21.8601
Total	**0.7274**	**0.0979**	**0.1547**	**2.5000e-004**		**4.4000e-003**	**4.4000e-003**		**4.4000e-003**	**4.4000e-003**	**0.0000**	**21.8303**	**21.8303**	**1.1900e-003**	**0.0000**	**21.8601**

3.7 Architectural Coating - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.6900e-003	3.5800e-003	0.0485	1.6000e-004	0.0196	9.0000e-005	0.0197	5.2200e-003	9.0000e-005	5.3000e-003	0.0000	14.7140	14.7140	3.8000e-004	3.7000e-004	14.8352
Total	**5.6900e-003**	**3.5800e-003**	**0.0485**	**1.6000e-004**	**0.0196**	**9.0000e-005**	**0.0197**	**5.2200e-003**	**9.0000e-005**	**5.3000e-003**	**0.0000**	**14.7140**	**14.7140**	**3.8000e-004**	**3.7000e-004**	**14.8352**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Density

Increase Diversity

Improve Walkability Design

Improve Destination Accessibility

Integrate Below Market Rate Housing

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.2770	0.2580	1.9278	3.0000e-003	0.4326	2.5600e-003	0.4352	0.1129	2.3800e-003	0.1152	0.0000	283.7236	283.7236	0.0287	0.0198	290.3287
Unmitigated	0.3827	0.4780	3.5590	7.7100e-003	1.1786	5.8100e-003	1.1844	0.3075	5.4200e-003	0.3129	0.0000	729.7823	729.7823	0.0452	0.0373	742.0334

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	1,033.60	932.90	777.10	2,269,354	832,971
Enclosed Parking with Elevator	0.00	0.00	0.00		
Fast Food Restaurant w/o Drive Thru	553.97	1,113.60	800.00	1,078,910	396,016
Total	1,587.57	2,046.50	1,577.10	3,348,264	1,228,987

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Fast Food Restaurant w/o Drive Thru	9.50	7.30	7.30	1.50	79.50	19.00	51	37	12

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.570753	0.056481	0.179220	0.111941	0.020784	0.005211	0.013984	0.013033	0.000790	0.000560	0.024477	0.000343	0.002423
Enclosed Parking with Elevator	0.570753	0.056481	0.179220	0.111941	0.020784	0.005211	0.013984	0.013033	0.000790	0.000560	0.024477	0.000343	0.002423

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Fast Food Restaurant w/o Drive Thru	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	81.2250	81.2250	0.0131	1.5900e-003	82.0282
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	81.2250	81.2250	0.0131	1.5900e-003	82.0282
NaturalGas Mitigated	0.0101	0.0871	0.0425	5.5000e-004		6.9700e-003	6.9700e-003		6.9700e-003	6.9700e-003	0.0000	99.9079	99.9079	1.9100e-003	1.8300e-003	100.5016
NaturalGas Unmitigated	0.0101	0.0871	0.0425	5.5000e-004		6.9700e-003	6.9700e-003		6.9700e-003	6.9700e-003	0.0000	99.9079	99.9079	1.9100e-003	1.8300e-003	100.5016

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	1.60417e+006	8.6500e-003	0.0739	0.0315	4.7000e-004		5.9800e-003	5.9800e-003		5.9800e-003	5.9800e-003	0.0000	85.6047	85.6047	1.6400e-003	1.5700e-003	86.1134
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant w/o Drive Thru	268032	1.4500e-003	0.0131	0.0110	8.0000e-005		1.0000e-003	1.0000e-003		1.0000e-003	1.0000e-003	0.0000	14.3032	14.3032	2.7000e-004	2.6000e-004	14.3882
Total		**0.0101**	**0.0871**	**0.0425**	**5.5000e-004**		**6.9800e-003**	**6.9800e-003**		**6.9800e-003**	**6.9800e-003**	**0.0000**	**99.9079**	**99.9079**	**1.9100e-003**	**1.8300e-003**	**100.5016**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	1.60417e+006	8.6500e-003	0.0739	0.0315	4.7000e-004		5.9800e-003	5.9800e-003		5.9800e-003	5.9800e-003	0.0000	85.6047	85.6047	1.6400e-003	1.5700e-003	86.1134
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant w/o Drive Thru	268032	1.4500e-003	0.0131	0.0110	8.0000e-005		1.0000e-003	1.0000e-003		1.0000e-003	1.0000e-003	0.0000	14.3032	14.3032	2.7000e-004	2.6000e-004	14.3882
Total		**0.0101**	**0.0871**	**0.0425**	**5.5000e-004**		**6.9800e-003**	**6.9800e-003**		**6.9800e-003**	**6.9800e-003**	**0.0000**	**99.9079**	**99.9079**	**1.9100e-003**	**1.8300e-003**	**100.5016**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	738410	68.3205	0.0111	1.3400e-003	68.9961
Enclosed Parking with Elevator	93568	8.6573	1.4000e-003	1.7000e-004	8.7429
Fast Food Restaurant w/o Drive Thru	45904	4.2472	6.9000e-004	8.0000e-005	4.2892
Total		**81.2250**	**0.0131**	**1.5900e-003**	**82.0282**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	738410	68.3205	0.0111	1.3400e-003	68.9961
Enclosed Parking with Elevator	93568	8.6573	1.4000e-003	1.7000e-004	8.7429
Fast Food Restaurant w/o Drive Thru	45904	4.2472	6.9000e-004	8.0000e-005	4.2892
Total		**81.2250**	**0.0131**	**1.5900e-003**	**82.0282**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.7678	0.0162	1.4098	7.0000e-005		7.8200e-003	7.8200e-003		7.8200e-003	7.8200e-003	0.0000	2.3053	2.3053	2.2100e-003	0.0000	2.3605
Unmitigated	0.7678	0.0162	1.4098	7.0000e-005		7.8200e-003	7.8200e-003		7.8200e-003	7.8200e-003	0.0000	2.3053	2.3053	2.2100e-003	0.0000	2.3605

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1349					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.5905					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0424	0.0162	1.4098	7.0000e-005		7.8200e-003	7.8200e-003		7.8200e-003	7.8200e-003	0.0000	2.3053	2.3053	2.2100e-003	0.0000	2.3605
Total	**0.7678**	**0.0162**	**1.4098**	**7.0000e-005**		**7.8200e-003**	**7.8200e-003**		**7.8200e-003**	**7.8200e-003**	**0.0000**	**2.3053**	**2.3053**	**2.2100e-003**	**0.0000**	**2.3605**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1349					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.5905					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0424	0.0162	1.4098	7.0000e-005		7.8200e-003	7.8200e-003		7.8200e-003	7.8200e-003	0.0000	2.3053	2.3053	2.2100e-003	0.0000	2.3605
Total	**0.7678**	**0.0162**	**1.4098**	**7.0000e-005**		**7.8200e-003**	**7.8200e-003**		**7.8200e-003**	**7.8200e-003**	**0.0000**	**2.3053**	**2.3053**	**2.2100e-003**	**0.0000**	**2.3605**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	12.4252	0.4206	0.0101	25.9375
Unmitigated	13.0596	0.4207	0.0101	26.5781

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	12.3793 / 7.80432	12.6523	0.4048	9.7000e-003	25.6614
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant w/o Drive Thru	0.485654 / 0.0309992	0.4073	0.0159	3.8000e-004	0.9167
Total		**13.0596**	**0.4207**	**0.0101**	**26.5781**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	12.3793 / 5.85324	12.0205	0.4047	9.6800e-003	25.0233
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant w/o Drive Thru	0.485654 / 0.0232494	0.4048	0.0159	3.8000e-004	0.9142
Total		**12.4252**	**0.4206**	**0.0101**	**25.9375**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	10.7413	0.6348	0.0000	26.6110
Unmitigated	21.4825	1.2696	0.0000	53.2221

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	87.4	17.7414	1.0485	0.0000	43.9536
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant w/o Drive Thru	18.43	3.7411	0.2211	0.0000	9.2685
Total		**21.4825**	**1.2696**	**0.0000**	**53.2221**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	43.7	8.8707	0.5242	0.0000	21.9768
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant w/o Drive Thru	9.215	1.8706	0.1106	0.0000	4.6342
Total		**10.7413**	**0.6348**	**0.0000**	**26.6110**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2065 Kittredge Mixed-Use Project

Alameda County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking with Elevator	43.00	Space	0.39	17,200.00	0
Fast Food Restaurant w/o Drive Thru	1.60	1000sqft	0.04	1,600.00	0
Apartments Mid Rise	190.00	Dwelling Unit	5.00	149,301.00	543

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	5			**Operational Year**	2025
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - square footage adjusted

Construction Phase - Applicant provided timeline

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - Default

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Trips and VMT - Haul trips for excavation moved to grading phase. All defaults otherwise

Grading - 12,000 cubic yards for one subterranean level

Woodstoves - Woodstoves and fireplaces not allowed per BAAQMD Rules

Area Coating -

Energy Use - defaults

Mobile Commute Mitigation -

Energy Mitigation -

Demolition - square footage of existing building. All would be demolished

On-road Fugitive Dust -

Architectural Coating -

Vehicle Trips - Differ from traffic study, but land use mitigation accounts for some reductions in trip rate

Water And Wastewater - defaults

Solid Waste - defaults

Mobile Land Use Mitigation - 0.8 acre lot, 190 units

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	800	801
tblAreaCoating	Area_Nonresidential_Interior	2400	2402
tblAreaCoating	Area_Residential_Exterior	100778	128250
tblAreaCoating	Area_Residential_Interior	302335	384750
tblConstructionPhase	NumDays	20.00	60.00
tblConstructionPhase	NumDays	10.00	30.00
tblConstructionPhase	NumDays	20.00	30.00
tblConstructionPhase	NumDays	230.00	375.00
tblConstructionPhase	NumDays	20.00	30.00
tblConstructionPhase	NumDays	20.00	255.00
tblFireplaces	FireplaceDayYear	11.14	0.00
tblFireplaces	FireplaceHourDay	3.50	0.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	28.50	0.00

tblFireplaces	NumberNoFireplace	7.60	190.00
tblFireplaces	NumberWood	32.30	0.00
tblFleetMix	HHD	0.01	0.00
tblFleetMix	LDA	0.57	0.00
tblFleetMix	LDT1	0.06	0.00
tblFleetMix	LDT2	0.18	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	5.2110e-003	0.00
tblFleetMix	MCY	0.02	0.00
tblFleetMix	MDV	0.11	0.00
tblFleetMix	MH	2.4230e-003	0.00
tblFleetMix	MHD	0.01	0.00
tblFleetMix	OBUS	7.9000e-004	0.00
tblFleetMix	SBUS	3.4300e-004	0.00
tblFleetMix	UBUS	5.6000e-004	0.00
tblGrading	MaterialExported	0.00	12,000.00
tblLandUse	LandUseSquareFeet	190,000.00	149,301.00
tblWoodstoves	NumberCatalytic	3.80	0.00
tblWoodstoves	NumberNoncatalytic	3.80	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00
tblWoodstoves	WoodstoveWoodMass	582.40	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.2240	33.1157	21.2298	0.0444	19.8049	1.6134	21.4182	10.1417	1.4843	11.6260	0.0000	4,345.782 3	4,345.782 3	1.1959	0.0796	4,396.144 5
2023	2.7095	27.5527	20.0267	0.0605	19.8049	1.2668	21.0716	10.1417	1.1654	11.3071	0.0000	6,193.050 2	6,193.050 2	1.1959	0.5098	6,369.971 1
2024	8.5927	14.6224	19.7060	0.0416	1.3470	0.6251	1.9721	0.3608	0.5880	0.9488	0.0000	4,077.849 2	4,077.849 2	0.7165	0.0960	4,122.343 2
2025	8.5781	1.1824	2.4173	4.9200e-003	0.2382	0.0526	0.2908	0.0632	0.0525	0.1157	0.0000	484.3664	484.3664	0.0198	4.4500e-003	486.1879
Maximum	**8.5927**	**33.1157**	**21.2298**	**0.0605**	**19.8049**	**1.6134**	**21.4182**	**10.1417**	**1.4843**	**11.6260**	**0.0000**	**6,193.050 2**	**6,193.050 2**	**1.1959**	**0.5098**	**6,369.971 1**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.2240	33.1157	21.2298	0.0444	19.8049	1.6134	21.4182	10.1417	1.4843	11.6260	0.0000	4,345.782 3	4,345.782 3	1.1959	0.0796	4,396.144 5
2023	2.7095	27.5527	20.0267	0.0605	19.8049	1.2668	21.0716	10.1417	1.1654	11.3071	0.0000	6,193.050 2	6,193.050 2	1.1959	0.5098	6,369.971 1
2024	8.5927	14.6224	19.7060	0.0416	1.3470	0.6251	1.9721	0.3608	0.5880	0.9488	0.0000	4,077.849 2	4,077.849 2	0.7165	0.0960	4,122.343 2
2025	8.5781	1.1824	2.4173	4.9200e-003	0.2382	0.0526	0.2908	0.0632	0.0525	0.1157	0.0000	484.3664	484.3664	0.0198	4.4500e-003	486.1879
Maximum	**8.5927**	**33.1157**	**21.2298**	**0.0605**	**19.8049**	**1.6134**	**21.4182**	**10.1417**	**1.4843**	**11.6260**	**0.0000**	**6,193.050 2**	**6,193.050 2**	**1.1959**	**0.5098**	**6,369.971 1**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.4454	0.1804	15.6649	8.3000e-004		0.0869	0.0869		0.0869	0.0869	0.0000	28.2347	28.2347	0.0271	0.0000	28.9111
Energy	0.0553	0.4770	0.2328	3.0200e-003		0.0382	0.0382		0.0382	0.0382		603.4501	603.4501	0.0116	0.0111	607.0361
Mobile	2.4800	2.5493	20.3913	0.0470	8.2882	0.0336	8.3218	2.1393	0.0313	2.1707		4,903.0430	4,903.0430	0.2677	0.2264	4,977.1877
Total	**6.9807**	**3.2068**	**36.2890**	**0.0509**	**8.2882**	**0.1587**	**8.4469**	**2.1393**	**0.1565**	**2.2958**	**0.0000**	**5,534.7278**	**5,534.7278**	**0.3064**	**0.2374**	**5,613.1348**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.4454	0.1804	15.6649	8.3000e-004		0.0869	0.0869		0.0869	0.0869	0.0000	28.2347	28.2347	0.0271	0.0000	28.9111
Energy	0.0553	0.4770	0.2328	3.0200e-003		0.0382	0.0382		0.0382	0.0382		603.4501	603.4501	0.0116	0.0111	607.0361
Mobile	1.8826	1.3741	10.3033	0.0182	3.0422	0.0148	3.0570	0.7852	0.0138	0.7990		1,899.0667	1,899.0667	0.1624	0.1186	1,938.4604
Total	**6.3833**	**2.0316**	**26.2011**	**0.0221**	**3.0422**	**0.1399**	**3.1821**	**0.7852**	**0.1389**	**0.9241**	**0.0000**	**2,530.7514**	**2,530.7514**	**0.2011**	**0.1296**	**2,574.4076**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	8.56	36.65	27.80	56.64	63.29	11.86	62.33	63.29	11.24	59.75	0.00	54.28	54.28	34.37	45.40	54.14

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	9/1/2022	11/23/2022	5	60	
2	Site Preparation	Site Preparation	11/24/2022	1/4/2023	5	30	
3	Grading	Grading	1/5/2023	2/15/2023	5	30	
4	Building Construction	Building Construction	2/16/2023	7/24/2024	5	375	
5	Paving	Paving	7/25/2024	9/4/2024	5	30	
6	Architectural Coating	Architectural Coating	9/5/2024	8/27/2025	5	255	

Acres of Grading (Site Preparation Phase): 45

Acres of Grading (Grading Phase): 30

Acres of Paving: 0.39

Residential Indoor: 302,335; Residential Outdoor: 100,778; Non-Residential Indoor: 2,400; Non-Residential Outdoor: 800; Striped Parking Area: 1,032 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37

Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	432.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	1,500.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	145.00	23.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	29.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.5586	0.0000	1.5586	0.2360	0.0000	0.2360			0.0000			0.0000
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553		3,746.781 2	3,746.781 2	1.0524		3,773.092 0
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**	**1.5586**	**1.2427**	**2.8012**	**0.2360**	**1.1553**	**1.3912**		**3,746.781 2**	**3,746.781 2**	**1.0524**		**3,773.092 0**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0334	1.1608	0.2458	4.5100e-003	0.1261	0.0111	0.1372	0.0346	0.0106	0.0452		485.8198	485.8198	0.0106	0.0767	508.9480
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0449	0.0268	0.3899	1.1100e-003	0.1232	6.5000e-004	0.1239	0.0327	6.0000e-004	0.0333		113.1814	113.1814	3.1400e-003	2.8300e-003	114.1045
Total	**0.0783**	**1.1876**	**0.6357**	**5.6200e-003**	**0.2493**	**0.0118**	**0.2611**	**0.0673**	**0.0112**	**0.0785**		**599.0012**	**599.0012**	**0.0137**	**0.0796**	**623.0525**

3.2 Demolition - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.5586	0.0000	1.5586	0.2360	0.0000	0.2360			0.0000			0.0000
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553	0.0000	3,746.781 2	3,746.781 2	1.0524		3,773.092 0
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**	**1.5586**	**1.2427**	**2.8012**	**0.2360**	**1.1553**	**1.3912**	**0.0000**	**3,746.781 2**	**3,746.781 2**	**1.0524**		**3,773.092 0**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0334	1.1608	0.2458	4.5100e-003	0.1261	0.0111	0.1372	0.0346	0.0106	0.0452		485.8198	485.8198	0.0106	0.0767	508.9480
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0449	0.0268	0.3899	1.1100e-003	0.1232	6.5000e-004	0.1239	0.0327	6.0000e-004	0.0333		113.1814	113.1814	3.1400e-003	2.8300e-003	114.1045
Total	**0.0783**	**1.1876**	**0.6357**	**5.6200e-003**	**0.2493**	**0.0118**	**0.2611**	**0.0673**	**0.0112**	**0.0785**		**599.0012**	**599.0012**	**0.0137**	**0.0796**	**623.0525**

3.3 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836		3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**19.6570**	**1.6126**	**21.2696**	**10.1025**	**1.4836**	**11.5860**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0539	0.0321	0.4679	1.3400e-003	0.1479	7.8000e-004	0.1487	0.0392	7.2000e-004	0.0399		135.8176	135.8176	3.7600e-003	3.4000e-003	136.9254
Total	**0.0539**	**0.0321**	**0.4679**	**1.3400e-003**	**0.1479**	**7.8000e-004**	**0.1487**	**0.0392**	**7.2000e-004**	**0.0399**		**135.8176**	**135.8176**	**3.7600e-003**	**3.4000e-003**	**136.9254**

3.3 Site Preparation - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**19.6570**	**1.6126**	**21.2696**	**10.1025**	**1.4836**	**11.5860**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0539	0.0321	0.4679	1.3400e-003	0.1479	7.8000e-004	0.1487	0.0392	7.2000e-004	0.0399		135.8176	135.8176	3.7600e-003	3.4000e-003	136.9254
Total	**0.0539**	**0.0321**	**0.4679**	**1.3400e-003**	**0.1479**	**7.8000e-004**	**0.1487**	**0.0392**	**7.2000e-004**	**0.0399**		**135.8176**	**135.8176**	**3.7600e-003**	**3.4000e-003**	**136.9254**

3.3 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647		3,687.3081	3,687.3081	1.1926		3,717.1219
Total	**2.6595**	**27.5242**	**18.2443**	**0.0381**	**19.6570**	**1.2660**	**20.9230**	**10.1025**	**1.1647**	**11.2672**		**3,687.3081**	**3,687.3081**	**1.1926**		**3,717.1219**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0501	0.0285	0.4324	1.2900e-003	0.1479	7.4000e-004	0.1486	0.0392	6.8000e-004	0.0399		132.3399	132.3399	3.3900e-003	3.1600e-003	133.3652
Total	**0.0501**	**0.0285**	**0.4324**	**1.2900e-003**	**0.1479**	**7.4000e-004**	**0.1486**	**0.0392**	**6.8000e-004**	**0.0399**		**132.3399**	**132.3399**	**3.3900e-003**	**3.1600e-003**	**133.3652**

3.3 Site Preparation - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647	0.0000	3,687.308 1	3,687.308 1	1.1926		3,717.121 9
Total	**2.6595**	**27.5242**	**18.2443**	**0.0381**	**19.6570**	**1.2660**	**20.9230**	**10.1025**	**1.1647**	**11.2672**	**0.0000**	**3,687.308 1**	**3,687.308 1**	**1.1926**		**3,717.121 9**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0501	0.0285	0.4324	1.2900e-003	0.1479	7.4000e-004	0.1486	0.0392	6.8000e-004	0.0399		132.3399	132.3399	3.3900e-003	3.1600e-003	133.3652
Total	**0.0501**	**0.0285**	**0.4324**	**1.2900e-003**	**0.1479**	**7.4000e-004**	**0.1486**	**0.0392**	**6.8000e-004**	**0.0399**		**132.3399**	**132.3399**	**3.3900e-003**	**3.1600e-003**	**133.3652**

3.4 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.1278	0.0000	7.1278	3.4316	0.0000	3.4316			0.0000			0.0000
Off-Road	1.7109	17.9359	14.7507	0.0297		0.7749	0.7749		0.7129	0.7129		2,872.6910	2,872.6910	0.9291		2,895.9182
Total	**1.7109**	**17.9359**	**14.7507**	**0.0297**	**7.1278**	**0.7749**	**7.9027**	**3.4316**	**0.7129**	**4.1445**		**2,872.6910**	**2,872.6910**	**0.9291**		**2,895.9182**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1061	6.3282	1.4820	0.0298	0.8758	0.0560	0.9318	0.2402	0.0536	0.2937		3,210.0760	3,210.0760	0.0683	0.5072	3,362.9153
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0417	0.0237	0.3603	1.0800e-003	0.1232	6.2000e-004	0.1238	0.0327	5.7000e-004	0.0333		110.2833	110.2833	2.8300e-003	2.6300e-003	111.1377
Total	**0.1478**	**6.3519**	**1.8423**	**0.0308**	**0.9990**	**0.0566**	**1.0556**	**0.2729**	**0.0541**	**0.3270**		**3,320.3592**	**3,320.3592**	**0.0711**	**0.5098**	**3,474.0529**

3.4 Grading - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.1278	0.0000	7.1278	3.4316	0.0000	3.4316			0.0000			0.0000
Off-Road	1.7109	17.9359	14.7507	0.0297		0.7749	0.7749		0.7129	0.7129	0.0000	2,872.6910	2,872.6910	0.9291		2,895.9182
Total	**1.7109**	**17.9359**	**14.7507**	**0.0297**	**7.1278**	**0.7749**	**7.9027**	**3.4316**	**0.7129**	**4.1445**	**0.0000**	**2,872.6910**	**2,872.6910**	**0.9291**		**2,895.9182**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1061	6.3282	1.4820	0.0298	0.8758	0.0560	0.9318	0.2402	0.0536	0.2937		3,210.0760	3,210.0760	0.0683	0.5072	3,362.9153
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0417	0.0237	0.3603	1.0800e-003	0.1232	6.2000e-004	0.1238	0.0327	5.7000e-004	0.0333		110.2833	110.2833	2.8300e-003	2.6300e-003	111.1377
Total	**0.1478**	**6.3519**	**1.8423**	**0.0308**	**0.9990**	**0.0566**	**1.0556**	**0.2729**	**0.0541**	**0.3270**		**3,320.3592**	**3,320.3592**	**0.0711**	**0.5098**	**3,474.0529**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0238	0.9699	0.2995	4.5900e-003	0.1559	6.0600e-003	0.1619	0.0449	5.8000e-003	0.0507		490.0925	490.0925	6.7100e-003	0.0734	512.1172
Worker	0.4033	0.2294	3.4832	0.0104	1.1911	5.9700e-003	1.1971	0.3160	5.5000e-003	0.3215		1,066.0716	1,066.0716	0.0273	0.0254	1,074.3307
Total	**0.4271**	**1.1993**	**3.7827**	**0.0150**	**1.3470**	**0.0120**	**1.3591**	**0.3608**	**0.0113**	**0.3721**		**1,556.1641**	**1,556.1641**	**0.0341**	**0.0988**	**1,586.4478**

3.5 Building Construction - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0238	0.9699	0.2995	4.5900e-003	0.1559	6.0600e-003	0.1619	0.0449	5.8000e-003	0.0507		490.0925	490.0925	6.7100e-003	0.0734	512.1172
Worker	0.4033	0.2294	3.4832	0.0104	1.1911	5.9700e-003	1.1971	0.3160	5.5000e-003	0.3215		1,066.0716	1,066.0716	0.0273	0.0254	1,074.3307
Total	**0.4271**	**1.1993**	**3.7827**	**0.0150**	**1.3470**	**0.0120**	**1.3591**	**0.3608**	**0.0113**	**0.3721**		**1,556.1641**	**1,556.1641**	**0.0341**	**0.0988**	**1,586.4478**

3.5 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.698 9	2,555.698 9	0.6044		2,570.807 7
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.698 9**	**2,555.698 9**	**0.6044**		**2,570.807 7**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0233	0.9737	0.2939	4.5200e-003	0.1559	6.1200e-003	0.1620	0.0449	5.8500e-003	0.0507		482.5281	482.5281	6.7000e-003	0.0723	504.2293
Worker	0.3762	0.2050	3.2453	0.0101	1.1911	5.6900e-003	1.1968	0.3160	5.2400e-003	0.3212		1,039.622 3	1,039.622 3	0.0247	0.0237	1,047.306 3
Total	**0.3995**	**1.1786**	**3.5392**	**0.0146**	**1.3470**	**0.0118**	**1.3588**	**0.3608**	**0.0111**	**0.3719**		**1,522.150 3**	**1,522.150 3**	**0.0314**	**0.0960**	**1,551.535 6**

3.5 Building Construction - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**	**0.0000**	**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0233	0.9737	0.2939	4.5200e-003	0.1559	6.1200e-003	0.1620	0.0449	5.8500e-003	0.0507		482.5281	482.5281	6.7000e-003	0.0723	504.2293
Worker	0.3762	0.2050	3.2453	0.0101	1.1911	5.6900e-003	1.1968	0.3160	5.2400e-003	0.3212		1,039.6223	1,039.6223	0.0247	0.0237	1,047.3063
Total	**0.3995**	**1.1786**	**3.5392**	**0.0146**	**1.3470**	**0.0118**	**1.3588**	**0.3608**	**0.0111**	**0.3719**		**1,522.1503**	**1,522.1503**	**0.0314**	**0.0960**	**1,551.5356**

3.6 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310		2,207.547 2	2,207.547 2	0.7140		2,225.396 3
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9882**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**		**2,207.547 2**	**2,207.547 2**	**0.7140**		**2,225.396 3**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0389	0.0212	0.3357	1.0400e-003	0.1232	5.9000e-004	0.1238	0.0327	5.4000e-004	0.0332		107.5471	107.5471	2.5600e-003	2.4500e-003	108.3420
Total	**0.0389**	**0.0212**	**0.3357**	**1.0400e-003**	**0.1232**	**5.9000e-004**	**0.1238**	**0.0327**	**5.4000e-004**	**0.0332**		**107.5471**	**107.5471**	**2.5600e-003**	**2.4500e-003**	**108.3420**

3.6 Paving - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310	0.0000	2,207.547 2	2,207.547 2	0.7140		2,225.396 3
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9882**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**	**0.0000**	**2,207.547 2**	**2,207.547 2**	**0.7140**		**2,225.396 3**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0389	0.0212	0.3357	1.0400e-003	0.1232	5.9000e-004	0.1238	0.0327	5.4000e-004	0.0332		107.5471	107.5471	2.5600e-003	2.4500e-003	108.3420
Total	**0.0389**	**0.0212**	**0.3357**	**1.0400e-003**	**0.1232**	**5.9000e-004**	**0.1238**	**0.0327**	**5.4000e-004**	**0.0332**		**107.5471**	**107.5471**	**2.5600e-003**	**2.4500e-003**	**108.3420**

3.7 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	8.3366					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**8.5174**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0753	0.0410	0.6491	2.0200e-003	0.2382	1.1400e-003	0.2394	0.0632	1.0500e-003	0.0642		207.9245	207.9245	4.9500e-003	4.7400e-003	209.4613
Total	**0.0753**	**0.0410**	**0.6491**	**2.0200e-003**	**0.2382**	**1.1400e-003**	**0.2394**	**0.0632**	**1.0500e-003**	**0.0642**		**207.9245**	**207.9245**	**4.9500e-003**	**4.7400e-003**	**209.4613**

3.7 Architectural Coating - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	8.3366					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**8.5174**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0753	0.0410	0.6491	2.0200e-003	0.2382	1.1400e-003	0.2394	0.0632	1.0500e-003	0.0642		207.9245	207.9245	4.9500e-003	4.7400e-003	209.4613
Total	**0.0753**	**0.0410**	**0.6491**	**2.0200e-003**	**0.2382**	**1.1400e-003**	**0.2394**	**0.0632**	**1.0500e-003**	**0.0642**		**207.9245**	**207.9245**	**4.9500e-003**	**4.7400e-003**	**209.4613**

3.7 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	8.3366					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**8.5075**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0706	0.0369	0.6082	1.9500e-003	0.2382	1.0900e-003	0.2393	0.0632	1.0000e-003	0.0642		202.9183	202.9183	4.4900e-003	4.4500e-003	204.3560
Total	**0.0706**	**0.0369**	**0.6082**	**1.9500e-003**	**0.2382**	**1.0900e-003**	**0.2393**	**0.0632**	**1.0000e-003**	**0.0642**		**202.9183**	**202.9183**	**4.4900e-003**	**4.4500e-003**	**204.3560**

3.7 Architectural Coating - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	8.3366					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**8.5075**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0706	0.0369	0.6082	1.9500e-003	0.2382	1.0900e-003	0.2393	0.0632	1.0000e-003	0.0642		202.9183	202.9183	4.4900e-003	4.4500e-003	204.3560
Total	**0.0706**	**0.0369**	**0.6082**	**1.9500e-003**	**0.2382**	**1.0900e-003**	**0.2393**	**0.0632**	**1.0000e-003**	**0.0642**		**202.9183**	**202.9183**	**4.4900e-003**	**4.4500e-003**	**204.3560**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Density

Increase Diversity

Improve Walkability Design

Improve Destination Accessibility

Integrate Below Market Rate Housing

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.8826	1.3741	10.3033	0.0182	3.0422	0.0148	3.0570	0.7852	0.0138	0.7990		1,899.0667	1,899.0667	0.1624	0.1186	1,938.4604
Unmitigated	2.4800	2.5493	20.3913	0.0470	8.2882	0.0336	8.3218	2.1393	0.0313	2.1707		4,903.0430	4,903.0430	0.2677	0.2264	4,977.1877

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	1,033.60	932.90	777.10	2,269,354	832,971
Enclosed Parking with Elevator	0.00	0.00	0.00		
Fast Food Restaurant w/o Drive Thru	553.97	1,113.60	800.00	1,078,910	396,016
Total	1,587.57	2,046.50	1,577.10	3,348,264	1,228,987

4.3 Trip Type Information

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Fast Food Restaurant w/o Drive	9.50	7.30	7.30	1.50	79.50	19.00	51	37	12

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.570753	0.056481	0.179220	0.111941	0.020784	0.005211	0.013984	0.013033	0.000790	0.000560	0.024477	0.000343	0.002423
Enclosed Parking with Elevator	0.570753	0.056481	0.179220	0.111941	0.020784	0.005211	0.013984	0.013033	0.000790	0.000560	0.024477	0.000343	0.002423
Fast Food Restaurant w/o Drive Thru	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0553	0.4770	0.2328	3.0200e-003		0.0382	0.0382		0.0382	0.0382		603.4501	603.4501	0.0116	0.0111	607.0361
NaturalGas Unmitigated	0.0553	0.4770	0.2328	3.0200e-003		0.0382	0.0382		0.0382	0.0382		603.4501	603.4501	0.0116	0.0111	607.0361

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	4394.99	0.0474	0.4050	0.1724	2.5900e-003		0.0328	0.0328		0.0328	0.0328		517.0578	517.0578	9.9100e-003	9.4800e-003	520.1304
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant w/o Drive Thru	734.334	7.9200e-003	0.0720	0.0605	4.3000e-004		5.4700e-003	5.4700e-003		5.4700e-003	5.4700e-003		86.3923	86.3923	1.6600e-003	1.5800e-003	86.9057
Total		**0.0553**	**0.4770**	**0.2328**	**3.0200e-003**		**0.0382**	**0.0382**		**0.0382**	**0.0382**		**603.4501**	**603.4501**	**0.0116**	**0.0111**	**607.0361**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	4.39499	0.0474	0.4050	0.1724	2.5900e-003		0.0328	0.0328		0.0328	0.0328		517.0578	517.0578	9.9100e-003	9.4800e-003	520.1304
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant w/o Drive Thru	0.734334	7.9200e-003	0.0720	0.0605	4.3000e-004		5.4700e-003	5.4700e-003		5.4700e-003	5.4700e-003		86.3923	86.3923	1.6600e-003	1.5800e-003	86.9057
Total		**0.0553**	**0.4770**	**0.2328**	**3.0200e-003**		**0.0382**	**0.0382**		**0.0382**	**0.0382**		**603.4501**	**603.4501**	**0.0116**	**0.0111**	**607.0361**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	4.4454	0.1804	15.6649	8.3000e-004		0.0869	0.0869		0.0869	0.0869	0.0000	28.2347	28.2347	0.0271	0.0000	28.9111
Unmitigated	4.4454	0.1804	15.6649	8.3000e-004		0.0869	0.0869		0.0869	0.0869	0.0000	28.2347	28.2347	0.0271	0.0000	28.9111

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.7394					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.2354					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.4706	0.1804	15.6649	8.3000e-004		0.0869	0.0869		0.0869	0.0869		28.2347	28.2347	0.0271		28.9111
Total	**4.4454**	**0.1804**	**15.6649**	**8.3000e-004**		**0.0869**	**0.0869**		**0.0869**	**0.0869**	**0.0000**	**28.2347**	**28.2347**	**0.0271**	**0.0000**	**28.9111**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.7394					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.2354					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.4706	0.1804	15.6649	8.3000e-004		0.0869	0.0869		0.0869	0.0869		28.2347	28.2347	0.0271		28.9111
Total	**4.4454**	**0.1804**	**15.6649**	**8.3000e-004**		**0.0869**	**0.0869**		**0.0869**	**0.0869**	**0.0000**	**28.2347**	**28.2347**	**0.0271**	**0.0000**	**28.9111**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

2065 Kittredge Mixed-Use Project

Alameda County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking with Elevator	43.00	Space	0.39	17,200.00	0
Fast Food Restaurant w/o Drive Thru	1.60	1000sqft	0.04	1,600.00	0
Apartments Mid Rise	190.00	Dwelling Unit	5.00	149,301.00	543

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	5			**Operational Year**	2025
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - square footage adjusted

Construction Phase - Applicant provided timeline

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - Default

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Trips and VMT - Haul trips for excavation moved to grading phase. All defaults otherwise

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Grading - 12,000 cubic yards for one subterranean level

Woodstoves - Woodstoves and fireplaces not allowed per BAAQMD Rules

Area Coating -

Energy Use - defaults

Mobile Commute Mitigation -

Energy Mitigation -

Demolition - square footage of existing building. All would be demolished

On-road Fugitive Dust -

Architectural Coating -

Vehicle Trips - Differ from traffic study, but land use mitigation accounts for some reductions in trip rate

Water And Wastewater - defaults

Solid Waste - defaults

Mobile Land Use Mitigation - 0.8 acre lot, 190 units

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	800	801
tblAreaCoating	Area_Nonresidential_Interior	2400	2402
tblAreaCoating	Area_Residential_Exterior	100778	128250
tblAreaCoating	Area_Residential_Interior	302335	384750
tblConstructionPhase	NumDays	20.00	60.00
tblConstructionPhase	NumDays	10.00	30.00
tblConstructionPhase	NumDays	20.00	30.00
tblConstructionPhase	NumDays	230.00	375.00
tblConstructionPhase	NumDays	20.00	30.00
tblConstructionPhase	NumDays	20.00	255.00
tblFireplaces	FireplaceDayYear	11.14	0.00
tblFireplaces	FireplaceHourDay	3.50	0.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	28.50	0.00

tblFireplaces	NumberNoFireplace	7.60	190.00
tblFireplaces	NumberWood	32.30	0.00
tblFleetMix	HHD	0.01	0.00
tblFleetMix	LDA	0.57	0.00
tblFleetMix	LDT1	0.06	0.00
tblFleetMix	LDT2	0.18	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	5.2110e-003	0.00
tblFleetMix	MCY	0.02	0.00
tblFleetMix	MDV	0.11	0.00
tblFleetMix	MH	2.4230e-003	0.00
tblFleetMix	MHD	0.01	0.00
tblFleetMix	OBUS	7.9000e-004	0.00
tblFleetMix	SBUS	3.4300e-004	0.00
tblFleetMix	UBUS	5.6000e-004	0.00
tblGrading	MaterialExported	0.00	12,000.00
tblLandUse	LandUseSquareFeet	190,000.00	149,301.00
tblWoodstoves	NumberCatalytic	3.80	0.00
tblWoodstoves	NumberNoncatalytic	3.80	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00
tblWoodstoves	WoodstoveWoodMass	582.40	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.2247	33.1234	21.2174	0.0444	19.8049	1.6134	21.4182	10.1417	1.4843	11.6260	0.0000	4,337.854 5	4,337.854 5	1.1964	0.0800	4,388.369 7
2023	2.7103	27.5595	19.9003	0.0605	19.8049	1.2668	21.0716	10.1417	1.1654	11.3071	0.0000	6,188.666 3	6,188.666 3	1.1964	0.5108	6,365.881 8
2024	8.5941	14.7298	19.6002	0.0408	1.3470	0.6251	1.9722	0.3608	0.5880	0.9488	0.0000	4,004.280 7	4,004.280 7	0.7169	0.0999	4,050.019 2
2025	8.5797	1.1914	2.3974	4.7800e-003	0.2382	0.0526	0.2908	0.0632	0.0525	0.1157	0.0000	469.8739	469.8739	0.0205	5.1400e-003	471.9182
Maximum	**8.5941**	**33.1234**	**21.2174**	**0.0605**	**19.8049**	**1.6134**	**21.4182**	**10.1417**	**1.4843**	**11.6260**	**0.0000**	**6,188.666 3**	**6,188.666 3**	**1.1964**	**0.5108**	**6,365.881 8**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.2247	33.1234	21.2174	0.0444	19.8049	1.6134	21.4182	10.1417	1.4843	11.6260	0.0000	4,337.8545	4,337.8545	1.1964	0.0800	4,388.3697
2023	2.7103	27.5595	19.9003	0.0605	19.8049	1.2668	21.0716	10.1417	1.1654	11.3071	0.0000	6,188.6663	6,188.6663	1.1964	0.5108	6,365.8818
2024	8.5941	14.7298	19.6002	0.0408	1.3470	0.6251	1.9722	0.3608	0.5880	0.9488	0.0000	4,004.2807	4,004.2807	0.7169	0.0999	4,050.0192
2025	8.5797	1.1914	2.3974	4.7800e-003	0.2382	0.0526	0.2908	0.0632	0.0525	0.1157	0.0000	469.8739	469.8739	0.0205	5.1400e-003	471.9182
Maximum	**8.5941**	**33.1234**	**21.2174**	**0.0605**	**19.8049**	**1.6134**	**21.4182**	**10.1417**	**1.4843**	**11.6260**	**0.0000**	**6,188.6663**	**6,188.6663**	**1.1964**	**0.5108**	**6,365.8818**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.4454	0.1804	15.6649	8.3000e-004		0.0869	0.0869		0.0869	0.0869	0.0000	28.2347	28.2347	0.0271	0.0000	28.9111
Energy	0.0553	0.4770	0.2328	3.0200e-003		0.0382	0.0382		0.0382	0.0382		603.4501	603.4501	0.0116	0.0111	607.0361
Mobile	2.2078	2.9150	21.9985	0.0444	8.2882	0.0336	8.3218	2.1393	0.0314	2.1707		4,633.3936	4,633.3936	0.3051	0.2465	4,714.4759
Total	**6.7085**	**3.5724**	**37.8963**	**0.0483**	**8.2882**	**0.1588**	**8.4469**	**2.1393**	**0.1565**	**2.2958**	**0.0000**	**5,265.0784**	**5,265.0784**	**0.3438**	**0.2576**	**5,350.4230**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.4454	0.1804	15.6649	8.3000e-004		0.0869	0.0869		0.0869	0.0869	0.0000	28.2347	28.2347	0.0271	0.0000	28.9111
Energy	0.0553	0.4770	0.2328	3.0200e-003		0.0382	0.0382		0.0382	0.0382		603.4501	603.4501	0.0116	0.0111	607.0361
Mobile	1.5785	1.5789	12.2507	0.0173	3.0422	0.0148	3.0570	0.7852	0.0138	0.7990		1,803.2895	1,803.2895	0.1981	0.1312	1,847.3418
Total	**6.0792**	**2.2364**	**28.1484**	**0.0211**	**3.0422**	**0.1399**	**3.1821**	**0.7852**	**0.1389**	**0.9242**	**0.0000**	**2,434.9743**	**2,434.9743**	**0.2368**	**0.1423**	**2,483.2890**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	9.38	37.40	25.72	56.22	63.29	11.85	62.33	63.29	11.23	59.75	0.00	53.75	53.75	31.12	44.76	53.59

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	9/1/2022	11/23/2022	5	60	
2	Site Preparation	Site Preparation	11/24/2022	1/4/2023	5	30	
3	Grading	Grading	1/5/2023	2/15/2023	5	30	
4	Building Construction	Building Construction	2/16/2023	7/24/2024	5	375	
5	Paving	Paving	7/25/2024	9/4/2024	5	30	
6	Architectural Coating	Architectural Coating	9/5/2024	8/27/2025	5	255	

Acres of Grading (Site Preparation Phase): 45

Acres of Grading (Grading Phase): 30

Acres of Paving: 0.39

Residential Indoor: 302,335; Residential Outdoor: 100,778; Non-Residential Indoor: 2,400; Non-Residential Outdoor: 800; Striped Parking Area: 1,032 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37

Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

<u>Trips and VMT</u>

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	432.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	1,500.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	145.00	23.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	29.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.5586	0.0000	1.5586	0.2360	0.0000	0.2360			0.0000			0.0000
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553		3,746.7812	3,746.7812	1.0524		3,773.0920
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**	**1.5586**	**1.2427**	**2.8012**	**0.2360**	**1.1553**	**1.3912**		**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0326	1.2259	0.2502	4.5100e-003	0.1261	0.0111	0.1372	0.0346	0.0106	0.0452		486.0291	486.0291	0.0105	0.0768	509.1669
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0455	0.0333	0.3731	1.0300e-003	0.1232	6.5000e-004	0.1239	0.0327	6.0000e-004	0.0333		105.0442	105.0442	3.5700e-003	3.2800e-003	106.1108
Total	**0.0781**	**1.2591**	**0.6233**	**5.5400e-003**	**0.2493**	**0.0118**	**0.2611**	**0.0673**	**0.0112**	**0.0785**		**591.0733**	**591.0733**	**0.0141**	**0.0800**	**615.2777**

3.2 Demolition - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.5586	0.0000	1.5586	0.2360	0.0000	0.2360			0.0000			0.0000
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553	0.0000	3,746.781 2	3,746.781 2	1.0524		3,773.092 0
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**	**1.5586**	**1.2427**	**2.8012**	**0.2360**	**1.1553**	**1.3912**	**0.0000**	**3,746.781 2**	**3,746.781 2**	**1.0524**		**3,773.092 0**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0326	1.2259	0.2502	4.5100e-003	0.1261	0.0111	0.1372	0.0346	0.0106	0.0452		486.0291	486.0291	0.0105	0.0768	509.1669
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0455	0.0333	0.3731	1.0300e-003	0.1232	6.5000e-004	0.1239	0.0327	6.0000e-004	0.0333		105.0442	105.0442	3.5700e-003	3.2800e-003	106.1108
Total	**0.0781**	**1.2591**	**0.6233**	**5.5400e-003**	**0.2493**	**0.0118**	**0.2611**	**0.0673**	**0.0112**	**0.0785**		**591.0733**	**591.0733**	**0.0141**	**0.0800**	**615.2777**

3.3 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836		3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**19.6570**	**1.6126**	**21.2696**	**10.1025**	**1.4836**	**11.5860**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0546	0.0399	0.4477	1.2400e-003	0.1479	7.8000e-004	0.1487	0.0392	7.2000e-004	0.0399		126.0531	126.0531	4.2800e-003	3.9400e-003	127.3330
Total	**0.0546**	**0.0399**	**0.4477**	**1.2400e-003**	**0.1479**	**7.8000e-004**	**0.1487**	**0.0392**	**7.2000e-004**	**0.0399**		**126.0531**	**126.0531**	**4.2800e-003**	**3.9400e-003**	**127.3330**

3.3 Site Preparation - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**19.6570**	**1.6126**	**21.2696**	**10.1025**	**1.4836**	**11.5860**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0546	0.0399	0.4477	1.2400e-003	0.1479	7.8000e-004	0.1487	0.0392	7.2000e-004	0.0399		126.0531	126.0531	4.2800e-003	3.9400e-003	127.3330
Total	**0.0546**	**0.0399**	**0.4477**	**1.2400e-003**	**0.1479**	**7.8000e-004**	**0.1487**	**0.0392**	**7.2000e-004**	**0.0399**		**126.0531**	**126.0531**	**4.2800e-003**	**3.9400e-003**	**127.3330**

3.3 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647		3,687.308 1	3,687.308 1	1.1926		3,717.121 9
Total	**2.6595**	**27.5242**	**18.2443**	**0.0381**	**19.6570**	**1.2660**	**20.9230**	**10.1025**	**1.1647**	**11.2672**		**3,687.308 1**	**3,687.308 1**	**1.1926**		**3,717.121 9**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0509	0.0354	0.4155	1.2000e-003	0.1479	7.4000e-004	0.1486	0.0392	6.8000e-004	0.0399		122.8501	122.8501	3.8800e-003	3.6500e-003	124.0345
Total	**0.0509**	**0.0354**	**0.4155**	**1.2000e-003**	**0.1479**	**7.4000e-004**	**0.1486**	**0.0392**	**6.8000e-004**	**0.0399**		**122.8501**	**122.8501**	**3.8800e-003**	**3.6500e-003**	**124.0345**

3.3 Site Preparation - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647	0.0000	3,687.3081	3,687.3081	1.1926		3,717.1219
Total	**2.6595**	**27.5242**	**18.2443**	**0.0381**	**19.6570**	**1.2660**	**20.9230**	**10.1025**	**1.1647**	**11.2672**	**0.0000**	**3,687.3081**	**3,687.3081**	**1.1926**		**3,717.1219**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0509	0.0354	0.4155	1.2000e-003	0.1479	7.4000e-004	0.1486	0.0392	6.8000e-004	0.0399		122.8501	122.8501	3.8800e-003	3.6500e-003	124.0345
Total	**0.0509**	**0.0354**	**0.4155**	**1.2000e-003**	**0.1479**	**7.4000e-004**	**0.1486**	**0.0392**	**6.8000e-004**	**0.0399**		**122.8501**	**122.8501**	**3.8800e-003**	**3.6500e-003**	**124.0345**

3.4 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.1278	0.0000	7.1278	3.4316	0.0000	3.4316			0.0000			0.0000
Off-Road	1.7109	17.9359	14.7507	0.0297		0.7749	0.7749		0.7129	0.7129		2,872.6910	2,872.6910	0.9291		2,895.9182
Total	**1.7109**	**17.9359**	**14.7507**	**0.0297**	**7.1278**	**0.7749**	**7.9027**	**3.4316**	**0.7129**	**4.1445**		**2,872.6910**	**2,872.6910**	**0.9291**		**2,895.9182**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0991	6.7004	1.5037	0.0298	0.8758	0.0560	0.9318	0.2402	0.0536	0.2938		3,213.6002	3,213.6002	0.0679	0.5077	3,366.6016
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0424	0.0295	0.3462	1.0000e-003	0.1232	6.2000e-004	0.1238	0.0327	5.7000e-004	0.0333		102.3751	102.3751	3.2300e-003	3.0400e-003	103.3621
Total	**0.1415**	**6.7299**	**1.8499**	**0.0308**	**0.9990**	**0.0567**	**1.0557**	**0.2729**	**0.0542**	**0.3270**		**3,315.9753**	**3,315.9753**	**0.0711**	**0.5108**	**3,469.9637**

3.4 Grading - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.1278	0.0000	7.1278	3.4316	0.0000	3.4316			0.0000			0.0000
Off-Road	1.7109	17.9359	14.7507	0.0297		0.7749	0.7749		0.7129	0.7129	0.0000	2,872.6910	2,872.6910	0.9291		2,895.9182
Total	**1.7109**	**17.9359**	**14.7507**	**0.0297**	**7.1278**	**0.7749**	**7.9027**	**3.4316**	**0.7129**	**4.1445**	**0.0000**	**2,872.6910**	**2,872.6910**	**0.9291**		**2,895.9182**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0991	6.7004	1.5037	0.0298	0.8758	0.0560	0.9318	0.2402	0.0536	0.2938		3,213.6002	3,213.6002	0.0679	0.5077	3,366.6016
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0424	0.0295	0.3462	1.0000e-003	0.1232	6.2000e-004	0.1238	0.0327	5.7000e-004	0.0333		102.3751	102.3751	3.2300e-003	3.0400e-003	103.3621
Total	**0.1415**	**6.7299**	**1.8499**	**0.0308**	**0.9990**	**0.0567**	**1.0557**	**0.2729**	**0.0542**	**0.3270**		**3,315.9753**	**3,315.9753**	**0.0711**	**0.5108**	**3,469.9637**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0227	1.0276	0.3095	4.6000e-003	0.1559	6.0800e-003	0.1620	0.0449	5.8200e-003	0.0507		490.9170	490.9170	6.6400e-003	0.0735	512.9965
Worker	0.4099	0.2849	3.3468	9.6700e-003	1.1911	5.9700e-003	1.1971	0.3160	5.5000e-003	0.3215		989.6259	989.6259	0.0312	0.0294	999.1669
Total	**0.4326**	**1.3125**	**3.6563**	**0.0143**	**1.3470**	**0.0121**	**1.3591**	**0.3608**	**0.0113**	**0.3722**		**1,480.5429**	**1,480.5429**	**0.0379**	**0.1029**	**1,512.1634**

3.5 Building Construction - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0227	1.0276	0.3095	4.6000e-003	0.1559	6.0800e-003	0.1620	0.0449	5.8200e-003	0.0507		490.9170	490.9170	6.6400e-003	0.0735	512.9965
Worker	0.4099	0.2849	3.3468	9.6700e-003	1.1911	5.9700e-003	1.1971	0.3160	5.5000e-003	0.3215		989.6259	989.6259	0.0312	0.0294	999.1669
Total	**0.4326**	**1.3125**	**3.6563**	**0.0143**	**1.3470**	**0.0121**	**1.3591**	**0.3608**	**0.0113**	**0.3722**		**1,480.5429**	**1,480.5429**	**0.0379**	**0.1029**	**1,512.1634**

3.5 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0221	1.0316	0.3037	4.5300e-003	0.1559	6.1400e-003	0.1620	0.0449	5.8700e-003	0.0508		483.3486	483.3486	6.6300e-003	0.0724	505.1025
Worker	0.3836	0.2544	3.1297	9.3600e-003	1.1911	5.6900e-003	1.1968	0.3160	5.2400e-003	0.3212		965.2333	965.2333	0.0284	0.0274	974.1090
Total	**0.4058**	**1.2860**	**3.4334**	**0.0139**	**1.3470**	**0.0118**	**1.3589**	**0.3608**	**0.0111**	**0.3719**		**1,448.5818**	**1,448.5818**	**0.0350**	**0.0999**	**1,479.2115**

3.5 Building Construction - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**	**0.0000**	**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0221	1.0316	0.3037	4.5300e-003	0.1559	6.1400e-003	0.1620	0.0449	5.8700e-003	0.0508		483.3486	483.3486	6.6300e-003	0.0724	505.1025
Worker	0.3836	0.2544	3.1297	9.3600e-003	1.1911	5.6900e-003	1.1968	0.3160	5.2400e-003	0.3212		965.2333	965.2333	0.0284	0.0274	974.1090
Total	**0.4058**	**1.2860**	**3.4334**	**0.0139**	**1.3470**	**0.0118**	**1.3589**	**0.3608**	**0.0111**	**0.3719**		**1,448.5818**	**1,448.5818**	**0.0350**	**0.0999**	**1,479.2115**

3.6 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310		2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9882**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**		**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0397	0.0263	0.3238	9.7000e-004	0.1232	5.9000e-004	0.1238	0.0327	5.4000e-004	0.0332		99.8517	99.8517	2.9300e-003	2.8400e-003	100.7699
Total	**0.0397**	**0.0263**	**0.3238**	**9.7000e-004**	**0.1232**	**5.9000e-004**	**0.1238**	**0.0327**	**5.4000e-004**	**0.0332**		**99.8517**	**99.8517**	**2.9300e-003**	**2.8400e-003**	**100.7699**

3.6 Paving - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9882	9.5246	14.6258	0.0228		0.4685	0.4685		0.4310	0.4310	0.0000	2,207.5472	2,207.5472	0.7140		2,225.3963
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9882**	**9.5246**	**14.6258**	**0.0228**		**0.4685**	**0.4685**		**0.4310**	**0.4310**	**0.0000**	**2,207.5472**	**2,207.5472**	**0.7140**		**2,225.3963**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0397	0.0263	0.3238	9.7000e-004	0.1232	5.9000e-004	0.1238	0.0327	5.4000e-004	0.0332		99.8517	99.8517	2.9300e-003	2.8400e-003	100.7699
Total	**0.0397**	**0.0263**	**0.3238**	**9.7000e-004**	**0.1232**	**5.9000e-004**	**0.1238**	**0.0327**	**5.4000e-004**	**0.0332**		**99.8517**	**99.8517**	**2.9300e-003**	**2.8400e-003**	**100.7699**

3.7 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	8.3366					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**8.5174**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0767	0.0509	0.6259	1.8700e-003	0.2382	1.1400e-003	0.2394	0.0632	1.0500e-003	0.0642		193.0467	193.0467	5.6700e-003	5.4800e-003	194.8218
Total	**0.0767**	**0.0509**	**0.6259**	**1.8700e-003**	**0.2382**	**1.1400e-003**	**0.2394**	**0.0632**	**1.0500e-003**	**0.0642**		**193.0467**	**193.0467**	**5.6700e-003**	**5.4800e-003**	**194.8218**

3.7 Architectural Coating - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	8.3366					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**8.5174**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0767	0.0509	0.6259	1.8700e-003	0.2382	1.1400e-003	0.2394	0.0632	1.0500e-003	0.0642		193.0467	193.0467	5.6700e-003	5.4800e-003	194.8218
Total	**0.0767**	**0.0509**	**0.6259**	**1.8700e-003**	**0.2382**	**1.1400e-003**	**0.2394**	**0.0632**	**1.0500e-003**	**0.0642**		**193.0467**	**193.0467**	**5.6700e-003**	**5.4800e-003**	**194.8218**

3.7 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	8.3366					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**8.5075**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0722	0.0459	0.5883	1.8100e-003	0.2382	1.0900e-003	0.2393	0.0632	1.0000e-003	0.0642		188.4258	188.4258	5.1600e-003	5.1400e-003	190.0863
Total	**0.0722**	**0.0459**	**0.5883**	**1.8100e-003**	**0.2382**	**1.0900e-003**	**0.2393**	**0.0632**	**1.0000e-003**	**0.0642**		**188.4258**	**188.4258**	**5.1600e-003**	**5.1400e-003**	**190.0863**

3.7 Architectural Coating - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	8.3366					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**8.5075**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0722	0.0459	0.5883	1.8100e-003	0.2382	1.0900e-003	0.2393	0.0632	1.0000e-003	0.0642		188.4258	188.4258	5.1600e-003	5.1400e-003	190.0863
Total	**0.0722**	**0.0459**	**0.5883**	**1.8100e-003**	**0.2382**	**1.0900e-003**	**0.2393**	**0.0632**	**1.0000e-003**	**0.0642**		**188.4258**	**188.4258**	**5.1600e-003**	**5.1400e-003**	**190.0863**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Density

Increase Diversity

Improve Walkability Design

Improve Destination Accessibility

Integrate Below Market Rate Housing

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.5785	1.5789	12.2507	0.0173	3.0422	0.0148	3.0570	0.7852	0.0138	0.7990		1,803.289 5	1,803.289 5	0.1981	0.1312	1,847.341 8
Unmitigated	2.2078	2.9150	21.9985	0.0444	8.2882	0.0336	8.3218	2.1393	0.0314	2.1707		4,633.393 6	4,633.393 6	0.3051	0.2465	4,714.475 9

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	1,033.60	932.90	777.10	2,269,354	832,971
Enclosed Parking with Elevator	0.00	0.00	0.00		
Fast Food Restaurant w/o Drive Thru	553.97	1,113.60	800.00	1,078,910	396,016
Total	1,587.57	2,046.50	1,577.10	3,348,264	1,228,987

4.3 Trip Type Information

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Fast Food Restaurant w/o Drive	9.50	7.30	7.30	1.50	79.50	19.00	51	37	12

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.570753	0.056481	0.179220	0.111941	0.020784	0.005211	0.013984	0.013033	0.000790	0.000560	0.024477	0.000343	0.002423
Enclosed Parking with Elevator	0.570753	0.056481	0.179220	0.111941	0.020784	0.005211	0.013984	0.013033	0.000790	0.000560	0.024477	0.000343	0.002423
Fast Food Restaurant w/o Drive Thru	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0553	0.4770	0.2328	3.0200e-003		0.0382	0.0382		0.0382	0.0382		603.4501	603.4501	0.0116	0.0111	607.0361
NaturalGas Unmitigated	0.0553	0.4770	0.2328	3.0200e-003		0.0382	0.0382		0.0382	0.0382		603.4501	603.4501	0.0116	0.0111	607.0361

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	4394.99	0.0474	0.4050	0.1724	2.5900e-003		0.0328	0.0328		0.0328	0.0328		517.0578	517.0578	9.9100e-003	9.4800e-003	520.1304
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant w/o Drive Thru	734.334	7.9200e-003	0.0720	0.0605	4.3000e-004		5.4700e-003	5.4700e-003		5.4700e-003	5.4700e-003		86.3923	86.3923	1.6600e-003	1.5800e-003	86.9057
Total		**0.0553**	**0.4770**	**0.2328**	**3.0200e-003**		**0.0382**	**0.0382**		**0.0382**	**0.0382**		**603.4501**	**603.4501**	**0.0116**	**0.0111**	**607.0361**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	4.39499	0.0474	0.4050	0.1724	2.5900e-003		0.0328	0.0328		0.0328	0.0328		517.0578	517.0578	9.9100e-003	9.4800e-003	520.1304
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Fast Food Restaurant w/o Drive Thru	0.734334	7.9200e-003	0.0720	0.0605	4.3000e-004		5.4700e-003	5.4700e-003		5.4700e-003	5.4700e-003		86.3923	86.3923	1.6600e-003	1.5800e-003	86.9057
Total		**0.0553**	**0.4770**	**0.2328**	**3.0200e-003**		**0.0382**	**0.0382**		**0.0382**	**0.0382**		**603.4501**	**603.4501**	**0.0116**	**0.0111**	**607.0361**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	4.4454	0.1804	15.6649	8.3000e-004		0.0869	0.0869		0.0869	0.0869	0.0000	28.2347	28.2347	0.0271	0.0000	28.9111
Unmitigated	4.4454	0.1804	15.6649	8.3000e-004		0.0869	0.0869		0.0869	0.0869	0.0000	28.2347	28.2347	0.0271	0.0000	28.9111

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.7394					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.2354					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.4706	0.1804	15.6649	8.3000e-004		0.0869	0.0869		0.0869	0.0869		28.2347	28.2347	0.0271		28.9111
Total	**4.4454**	**0.1804**	**15.6649**	**8.3000e-004**		**0.0869**	**0.0869**		**0.0869**	**0.0869**	**0.0000**	**28.2347**	**28.2347**	**0.0271**	**0.0000**	**28.9111**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.7394					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.2354					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.4706	0.1804	15.6649	8.3000e-004		0.0869	0.0869		0.0869	0.0869		28.2347	28.2347	0.0271		28.9111
Total	**4.4454**	**0.1804**	**15.6649**	**8.3000e-004**		**0.0869**	**0.0869**		**0.0869**	**0.0869**	**0.0000**	**28.2347**	**28.2347**	**0.0271**	**0.0000**	**28.9111**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Appendix C

Cultural Resources Technical Memorandum

Rincon Consultants, Inc.

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July 19, 2022
Project No: 21-12367

Sharon Gong, Principal Planner
City of Berkeley
1947 Center Street, 2nd Floor
Berkeley, California 94704
Via Email: SGong@cityofberkeley.info

Subject: Cultural Resources Memorandum – 2065 Kittredge Street Mixed-Use Project – Revised

Dear Ms. Gong:

Rincon Consultants, Inc. (Rincon) was retained to prepare a memorandum to establish the updated conditions for cultural resources and identify any potential new impacts or increased magnitude of impacts for the proposed 2065 Kittredge Street Mixed Use Project. These efforts have been completed in support of an addendum to the previously certified *2211 Harold Way Mixed-Use Project Final Environmental Impact Report (Final EIR)* (State Clearinghouse #2014052063) for the 2211 Harold Way Mixed-Use Project, hereinafter referred to as "the original project." The 2065 Kittredge Street Residential Project (hereinafter referred to as "the modified project") would involve changes to the previously approved original project considered under the Final EIR. Therefore, some modifications and additions are necessary to the previously certified Final EIR for the original project.

The current memorandum was prepared to establish the updated existing conditions for cultural resources and to determine if there are any new or increased impacts to cultural resources beyond those identified in the 2015 Final EIR. Methods for the current assessment included a review of previous documentation, including the Historical Resources Technical Report prepared by Architectural Resources Group in September 2014, the revised project plans, and relevant historic documentation and preparation of this memorandum to present the results.

Rincon Architectural Historian JulieAnn Murphy, MS, managed this assessment, conducted a site visit, and assessed the potential impacts of the revised project to the historical resource with oversight from Senior Architectural Historian Steven Treffers, MHP. Andrew Pulcheon, MA, RPA provided additional oversight. Rincon Principal Shannon Carmack reviewed this assessment for quality control. All contributors to this assessment meet the Secretary of the Interior's *Professional Qualifications Standards* in their respective fields (36 CFR Part 61).

Project Description and Background

The modified project is a proposed mixed-use development in Downtown Berkeley. The modified project's primary street frontage would be along Harold Way, although it would also front on portions of Allston Way and Kittredge Street. Similar to the original project, the existing structures on the site would be altered or demolished to accommodate the modified project, as detailed in the Final EIR for the original project (hereby incorporated by reference).

The modified project would alter some components of the original project, including a reduction in the building height, number of proposed residential units, the amount of commercial/retail space, and the number of parking spaces; demolition of the existing movie theater, rather than retaining/modifying it; and changes in the architectural design. These modifications are described in more detail below. The proposed modifications would not substantially expand, intensify, or change the use of the proposed building, and the modified project would continue to comply with the Berkeley Municipal Code. The proposed modifications would result in a smaller and less intensive mixed-use project than the original project.

Site preparation, construction procedures, and proposed utility connections would remain similar to the original project. However, subsurface work would be significantly reduced under the modified project due to the reduction in subterranean levels from three to one. Nearby historic buildings and existing building foundations would not be additionally impacted by construction of the modified project.

The modified project's applicant would comply with the City's Housing Mitigation Fee Ordinance by restricting rental rates according to the California State Density Bonus law. The project would include nine very low income units in order to qualify for density bonus units, as well as one incentive/concession and waivers (for height, setbacks, encroachments, and open space) under the State Density Bonus Law (Government Code section 65915). The proposed level of affordability is at 5 percent of the base project (168 units) at very low-income levels. The number of very low-income units would be nine units and these units would be of comparable size, and would contain, on average, the same number of bedrooms, and have comparable appearance, materials and finish quality as the market rate units in the project. These units would also have access to the same common areas and amenities as the market rate units. The 20 percent density bonus would allow for up to 34 additional units, but only 22 of those bonus units are included in the project for a final total of 190 units.

Both the original and modified project involve changes to the Shattuck Hotel, which was previously determined eligible for inclusion in the National Register of Historic Places (NRHP) and the California Register of Historical Resources (CRHR) by the City of Berkeley as part of the Final EIR for the original project. Shattuck Hotel is also listed as a City of Berkeley Landmark (Landmark #70). As a result of its eligibility for the NRHP, designation in the CRHR, and status as a City of Berkeley Landmark, the building is a qualifying historical resource pursuant to the California Environmental Quality Act (CEQA) as defined by Section 15064.5 of the CEQA Guidelines.

Methods and Findings

Cultural Resources Records Search

To identify previously conducted cultural resources studies and previously recorded cultural resources within the project site and a 0.5-mile radius, Rincon performed a search of the California Historic Resource Inventory System (CHRIS) at the Northwest Information Center (NWIC) at Sonoma State University on March 2, 2022. The CHRIS records search also included a review of the National Register of Historic Places (NRHP), the California Register of Historical Resources (CRHR), the California Points of Historical Interest list, the California Historical Landmarks list, the Archaeological Determinations of Eligibility list, and the California Built Environment Resource Directory (BERD).

The NWIC records search identified 31 previous studies within a 0.5-mile radius of the project site. Two of the reports were located within the project site. The NWIC records search identified 100 previously recorded cultural resources within a 0.5-mile radius of the project site, most of which consist of historic age buildings. It also identified five prehistoric sites, none of which were within or immediately adjacent to the project site. Of 100 resources identified within the 0.5-mile radius, only one was located within the project site – the Shattuck Hotel. The BERD did not identify any additional previously recorded cultural resources within or adjacent to the project site. A detailed summary of the results of the CHRIS search is included in the Attachment A.

Sacred Lands File Search

Rincon contacted the Native American Heritage Commission (NAHC) on February 23, 2022 to request a search of the Sacred Lands File (SLF), as well a contact list of Native Americans culturally affiliated with the project site vicinity at the NAHC (Attachment B). On April 5, 2022, the NAHC responded to Rincon's SLF request, stating results of the SLF were positive, indicating the presence of cultural resources known to the NAHC within the United States Geological Survey (USGS) *Oakland West* Quadrangle, within which the project site is also located. USGS quadrangles cover an area of approximately 50 to 70 square miles and the NAHC does not provide specific locations of cultural resources as part of the SLF search. Therefore, a positive SLF search alone does not indicate the presence of cultural resources within the project site or its immediate vicinity

Built Environment Site Visit

On March 16, 2022, Rincon Architectural Historian JulieAnn Murphy conducted a site visit of the project site. Ms. Murphy completed a visual inspection of all built environment features on the project site to assess their overall condition and integrity, and to identify and document any changes to the building since it was last recorded. This site visit was performed in accordance with the guidelines of the California Office of Historic Preservation, which states that information about historical resources should be regularly updated to ensure its accuracy. The project site was recorded on California Department Parks and Recreation (DPR) 523 series forms, which are included as an attachment (Attachment C).

Since the property was last evaluated in 2015, there have been no visible alterations and there is no evidence to suggest that it would no longer be eligible for federal, state, or local designation. In concurrence with the previous evaluations, this study recommends the Shattuck Hotel remains eligible for listing in the NRHP, CRHR, and for local designation as a City of Berkeley Landmark. Rincon similarly concurs with the 2014 Architectural Resources Group determination that the 1959 Hink's Building, occupying the corner of Allston and Harold Ways is a non-contributing element of the historical resource.

Project Impacts Analysis

CEQA Section 21084.1 requires a lead agency determine whether a project may have a significant effect on the environment, which includes historical resources. Impacts to a historical resource occurs when there is a substantial adverse change in the significance of a resource such that it is materially impaired. Material impairment is defined as demolition or alteration "in an adverse manner [of] those characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for inclusion in, the [CRHR]."[1] Under Section 10564.5(b)(3) of the CEQA Guidelines, a project that is found to conform with the Secretary of the Interior's Standards for Rehabilitation is generally found to not result in significant impacts to historic resources under CEQA.

Impacts of the Original Project

As discussed under Impact CR-1 of Section 4.1.2(b), *Cultural Resources*, of the Final EIR, the original project would demolish the 1959 Hink's Building, demolish the 1926 addition to the Shattuck Hotel, partially remove the 1913 addition to the Hotel, and remodel existing retail spaces at the northwest corner of Kittredge Street and Shattuck Avenue. The 1959 Hink's Building was determined not to be historically significant; therefore, its demolition would not be a significant historical resource impact. Shattuck Hotel is a historical resource; therefore, its demolition and partial removal would result in a significant impact. Mitigation Measures CR-1(a) through CR-1(d) would require documentation, salvage, and on-site interpretation of the Shattuck Hotel, as well as contribution to the Historic Preservation Fund. Even with implementation of these mitigation measures, impacts would remain significant and unavoidable.

Impact CR-2 of the Final EIR states the original project includes design elements intended to enhance the compatibility with nearby historic resources, despite the difference in height between the proposed building and existing buildings. However, the original project was not entirely consistent with the Downtown Berkeley Design Guidelines and did not meet the Secretary of the Interior's Standards and impacts would be potentially significant. Mitigation Measures CR-2(a) through CR-2(c) required final design revisions to reduce impacts to a less than significant level.

Impact CR-3 of the Final EIR describes the original project's obstruction of views of the San Francisco Bay from the UC Berkeley Campanile. However, the original project would not entirely block the existing view, and given the changes in Berkeley's skyline with increased development and landscape growth, the original project would not result in a substantial adverse change and impacts would be less than significant.

Impact CR-4 of the Final EIR states construction of the original project could produce ground vibration or soil movement at the foundation of nearby historic resources, which could affect those resources' structural stability. Mitigation Measures CR-4(a) through CR-4(c) require a foundations investigation, construction monitoring, and a worker training program. These measures would be sufficient to reduce impacts to less than significant.

As discussed under Section V (b-d), *Cultural Resources*, of the IEC, no archaeological or paleontological resources are known to exist in the project area. However, excavation related to the proposed basement could uncover previously unknown archaeological resources, paleontological resources, or human remains. DAP EIR Mitigation Measures CUL-3 through CUL-5 would apply to the original project and reduce impacts to less than significant.

As a result of its eligibility for the NRHP, designation in the CRHR, and status as a City of Berkeley Landmark, the Shattuck Hotel is a qualifying historical resource pursuant to the California Environmental Quality Act (CEQA) as defined by Section 15064.5 of the CEQA Guidelines. As described above, the 1959

[1] CEQA Guidelines Section 15064.5[b][2][A].

Hink's Building is not a contributing element to the Shattuck Hotel and is therefore not a historical resource for the purposes of CEQA.

Impacts of the Modified Project

Impact CR-1

The Shattuck Hotel remains eligible for listing in the NRHP and continues to be designed in the CRHR and as a City of Berkeley Landmark; is a qualifying historical resource pursuant to the California Environmental Quality Act (CEQA) as defined by Section 15064.5 of the CEQA Guidelines. The modified project, similar to the original project, includes the demolition of the 1926 addition and the partial demolition of the 1913 addition of the Shattuck Hotel, both of which are contributing elements of the historical resource. The proposed demolition would result in a substantial adverse change in the significance of a resource such that it is materially impaired. Material impairment is defined as demolition or alteration "in an adverse manner [of] those characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for inclusion in, the [CRHR]."[2] The proposed treatment would not result in any new or increased impacts and would continue to be significant and unavoidable. Mitigation Measures CR-1(a) through CR-1(d) would continue to apply to the modified project and impacts would be significant and unavoidable even with their adoption.

Impact CR-2

Similar to the design of the original project, the proposed design of the modified project would be kept visually and physically separate from the Shattuck Hotel and would be consistent with the Downtown Berkeley Design Guidelines and the Secretary of the Interior's Standards for Rehabilitation. Furthermore, the existing alley would continue to be retained, and the new construction would be separated from the Shattuck Hotel by a two-story hyphen. These elements would all continue to distinguish the new construction from the historic building.

The overall project height has been reduced from 19 stories to 9 stories, and the modified project is more aligned with the massing and scale of surrounding historic buildings, including the Shattuck Hotel, and it is more successful at meeting the Downtown Design Guidelines including the following:

- *Respect the height of neighboring buildings, and provide a sense of continuity and enclosure which avoids abrupt changes in height.*
- *New buildings should step down to respect the height of existing residential buildings where they are on parcels with a residential zoning designation.*

Additionally, the proposed new design incorporates strategies to break up the massing with varied rooflines and materials to prevent the new construction from presenting a massive appearance.

The redesigned Allston Way elevation more closely complies with following the Downtown Berkeley Design Guidelines:

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[2] CEQA Guidelines Section 15064.5[b][2][A].

- *Reflect and reinforce the scale, massing, proportions, rhythm and attention to detailing which are established by the facades of Landmark and Significant buildings*
- *Incorporate elements which break up façade planes and create a visual play of light and shadow. Avoid long, uninterrupted horizontal surfaces. Consider the use of bay windows, balconies and architectural projections*
- *Vertical divisions of ground and upper floors should be consistent. Generally maintain a cornice that projects horizontally between the ground floor (and its mezzanines) and upper stories. Align the cornice and other horizontal ground floor elements (like awnings and sign bands) with similar features on neighboring buildings and storefronts, if feasible*

The Allston Way elevation exterior as redesigned in the modified project more closely meets the requirements of the Downtown Berkeley Design Guidelines and includes a mix of elevation materials, like different color stucco and cement fiber board on upper stories, thereby reinforcing the massing, proportions, and rhythm of facades of Landmark and Significant buildings. The new design avoids large façade planes through the use of different materials and architectural projections, including a projection of the second floor level above the double-height street level. The modified design has been substantially updated from the original design and Mitigation Measure CR-2 (a) is no longer applicable. The projection above the street level entry aligns with the cornice of the neighboring 1912 portion of the existing Shattuck Hotel, but does not include a cornice element or belt course as directed in Mitigation Measure CR-2 (a). Nonetheless, the revised streetscape design further reinforces the harmony in scale between the proposed new building and the Shattuck Hotel, and is more successful in meeting the Downtown Berkeley Design Guidelines.

The Kittredge Street elevation design, as provided in Mitigation Measure CR-2 (b), has been updated to be more consistent with the following Downtown Berkeley Design Guidelines:

- *Articulate side and rear facades in a manner compatible with the design of the front façade. Avoid large blank wall surfaces on side and rear facades which are visible from public areas. In these locations, display windows, store entrances, and upper windows are encouraged. When this is not feasible, consider the use of ornament, murals, or landscaping along large blank walls.*

In response to Mitigation Measure CR-2 (b), the modified project design significantly reduces both the length and height the "hyphen" that separates the Shattuck Hotel from the proposed new construction, thereby avoiding a large blank wall surface. In lieu of a prominent two-story blank wall, the modified project design will include a double-volume, one-story hyphen with a stucco exterior finish. The hyphen would be slightly recessed from the elevation of the existing Shattuck Hotel and the adjoining proposed new construction. The recessed entry would include a paired metal door to provide access to an egress and service corridor for the retail spaces within the Shattuck Hotel and continue toward the Allston Way elevation, providing alley access beyond. The hyphen would separate the Shattuck Hotel from the new construction and reduce the extent of direct contact between the new construction and the adjacent hotel and would effectively distinguish the new construction from the historic building. The modified project design is consistent with the Downtown Berkeley Design Guidelines as it avoids a large blank wall surface and includes a perforation, provided in its paired entry door. Its proposed recessed entry further articulates the elevation in a way that maintains the active street frontage of the Shattuck Avenue Commercial Corridor. Therefore, Mitigation Measure CR-2 (b) is no longer applicable.

The revised modified project design, as suggested in Mitigation Measure CR-2 (c), has removed the large-scale use of glazed aluminum window systems and Mitigation Measure CR-2 (c) no longer applies. The original design was not consistent with the following Downtown Berkeley Design Guidelines:

- *The facades of Downtown's historic buildings are comprised of load-bearing walls and frames, the limits of which give similar scale and expression. Maintain the typical rhythm of structural bays and enframed storefronts of 15-30 feet spacing at ground level, in order to enhance visual continuity with existing buildings and pedestrian scale. Curtain walls, if used, should be designed with rhythm, patterns and modulation to be visually interesting*
- *Windows should comprise 25-50% of upper facades visible from public areas, and should reflect the rhythm, scale, proportion, and detailing of upper windows of Landmark and Significant buildings*
- *Frame windows and use light shelves and other articulation to emulate the rhythm, scale, and reveal (shadow) of traditional buildings*

The proposed modified project design uses a variety of sash windows, and largely mimics the rhythm of load-bearing walls and frames of the Downtown's historic buildings. The storefront systems have also been updated to reflect the fenestration of the historic street-level using structural bays and enframed storefronts along Kittredge Street. The use of punched openings in favor of curtain wall glazing in the proposed new design reduces the number of windows on upper floors and will be consistent with the Downton Berkeley Design Guidelines. The proposed new window design does not use light shelves, as proposed in the Design Guidelines, but does use a variety of window sizes, shapes, and configurations to successfully articulate the rhythm, scale, and reveal of traditional buildings.

Additionally, Policy LU-4.2 in the Downtown Area Plan, stipulates that "[t]he size and placement of new buildings should: reduce street level shadow, view, and wind impacts to acceptable levels; and maintain compatible relationships with historic resources (such as streetwall continuity in commercial areas)."

As detailed above, the modified project design includes many new design elements which have reduced potentially significant impacts; as such, Mitigation Measures CR-2(a) through CR-2(c) are no longer required.

Impact CR-3

As discussed under Impact CR-3 of Section 4.1.2(b), *Cultural Resources*, of the Final EIR, the original design was found to partially obscure potentially historic views of the San Francisco Bay and Golden Gate from the base of UC Berkeley's Campanile, but would not significantly impair the view and would result in less than significant impacts. The proposed new design is reduced in height and scale. As a result, there would be no new or increased impacts and would continue to result in less than significant impacts to historic features of the UC Berkeley Campus.

Impact CR-4

As described under Impact CR-4 of Section 4.1.2(b), *Cultural Resources*, of the Final EIR, the construction activities associated with the demolition of the 1959 Hink's Building, the 1926 Shattuck Hotel, and partial removal of the 1913 addition to the Shattuck Hotel would result in significant but mitigatable impacts because of potential ground vibration or soil movement under existing foundation of nearby historical resources, compromising the historic building's structural stability. While there would be less excavation under the modified project because the second and third basement levels have been removed, the modified project would continue to include the removal of building elements and would also include construction of one basement level. As a result, there would be no new or increased impacts and impacts would continue to be potentially significant. Implementation of Mitigation Measures CR-4(a) through CR-4(c) continue to apply and would reduce the project's impacts to historic structures in the vicinity of the project site to a less than significant level.

Archaeological Resources

The Initial Study prepared for the original project determined it would not have adverse effects regarding archaeological resources, paleontological resources, or human remains that were not already adequately addressed in the Downtown Aera Plan (DAP) EIR. On April 5, 2022, the NAHC responded to Rincon's SLF request, stating results of the SLF were positive, indicating the presence of cultural resources known to the NAHC within the United States Geological Survey (USGS) *Oakland West* Quadrangle, within which the project site is also located. USGS quadrangles cover an area of approximately 50 to 70 square miles and the NAHC does not provide specific locations of cultural resources as part of the SLF search. Therefore, a positive SLF search alone does not indicate the presence of cultural resources within the project site or its immediate vicinity. The CHRIS search did not identify any new recorded archaeological resources and no archaeological resources are known to exist in the project area. However, excavation related to the proposed basement and parking structure could uncover previously unknown archaeological resources, or human remains. The modified project would not result in new or increased impacts, and DAP EIR Mitigation Measures CUL-3 through CUL-5 would apply to the modified project and reduce impacts to less than significant.

Conclusions

The current analysis confirmed there is no new information of substantial importance relating to the existing cultural resources conditions of the project site. The Shattuck Hotel remains eligible for listing NRHP, CRHR, and local designation as a City of Berkeley Landmark and as a historical resource pursuant to the CEQA Guidelines and there are no known archaeological resources within or adjacent to the project site. The modified project would alter some components of the original project, as described, including a reduction in the building height, number of proposed residential units, the amount of commercial/retail space, and the number of parking spaces, and changes in the architectural design. The proposed new design, however, would not result in new or increased impacts and the mitigation measures provided in the certified 2015 EIR that still apply remain accurate and adequate.

Sincerely,

Rincon Consultants, Inc.

JulieAnn Murphy
Architectural Historian Project Manager

Andrew Pulcheon
Andrew Pulcheon, RPA, AICP, CEP
Principal

Attachment A: CHRIS Search Results
Attachment B: SLF Request and Results
Attachment C: California 523 DPR Form

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
S-000445	Submitter - ARS 76-73	1977	Katherine Flynn	Preliminary Archaeological Reconnaissance of 5 proposed locations for the new Engineering Building, University of California, Berkeley - ARS 76-73 (letter report)	Archaeological Resource Service	
S-000779	Voided - S-12958	1977	David Chavez	Preliminary Cultural Resources Assessment of the East Bay Municipal Utility District (EBMUD) Wet Weather Facilities/Overflow Project Facilities Sites, Alameda and Contra Costa Counties, California		01-000082, 01-000086, 01-000087, 01-000088, 01-000089, 01-000090, 01-000097, 01-000098, 01-000099, 01-000233, 01-010839, 07-000046, 07-000178, 07-000179, 07-000180
S-000779a		1979	David Chavez	Supplement to Preliminary Cultural Resources Assessment of the East Bay Municipal Utility District (EBMUD) Wet Water Facilities/Overflow Project Facilities Sites, Alameda County, California		
S-005625	Submitter - ARS 82-39	1982	William Roop	Archaeological Reconnaissance of the Proposed Biological Sciences Construction and Alterations Project, University of California at Berkeley (letter report)	Archaeological Resource Service	
S-024284		2001	Chris Jensen and Lorna Billat	Proposed Cellular Facility (Nextel Site Number: CA-067G/South Berkeley) in Downtown Berkeley, California (letter report)	EarthTouch, LLC	01-005706
S-026399		2002	Carolyn Losee	Cultural Resources Analysis for Cingular Site No. PL-059-02, City Parking Berkeley Site (letter report)	Archaeological Resources Technology	01-000242
S-028215		2004	Diana J. Painter	Architectural Resource Evaluation for Cingular Wireless Installation PL-059-03, Durant and Telegraph (letter report)	Painter Preservation & Planning	01-005619, 01-010659
S-029541	Other - PL-386-02	2000	Allen G. Pastron and R. Keith Brown	Historical and Cultural Resource Assessment, Proposed Telecommunications Facility, Site No. PL-386-02, 2000 Hearst Avenue, Berkeley, California (letter report)	Brown & Mills, Inc.	01-010885
S-029543	Submitter - BMI Project No. 00S-812	2000	Allen G. Pastron and R. Keith Brown	Historical and Cultural Resource Assessment, Proposed Telecommunications Facility, the Roof Tank, Site No. PL-386-04, 2054 University Avenue, Berkeley, California (letter report)	Brown & Mills, Inc	01-005679
S-029683		2005	Lorna Billat	Roof Mounted Antennas, and Lease Area Inside Building, Downtown Berkeley/CA-2521, 2054 University Avenue, Berkeley, CA.	EarthTouch, Inc.	01-005679

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
S-030787		2005	Benjamin Ananian	2802 Shattuck Avenue, Berkeley, Alameda County (letter report)	Ananian Associates	
S-038249	OHP PRN - FTA051227A; Voided - S-31825; Voided - S-38456; Voided - S-38767; Voided - S-38768	2010	Suzanne Baker	Historic Property Survey Report, the Alameda County Transit District's East Bay Bus Rapid Transit Project in Berkeley, Oakland, and San Leandro	Archaeological/Historical Consultants	01-000026, 01-000031, 01-000042, 01-000091, 01-000092, 01-003856, 01-005348, 01-005593, 01-005594, 01-005618, 01-005628, 01-010520, 01-010530, 01-010531, 01-010535, 01-010538, 01-010600, 01-010690, 01-010691, 01-010692, 01-010693, 01-010694, 01-010695, 01-010696, 01-010697, 01-010698, 01-010699, 01-010700, 01-010701, 01-010808, 01-011577
S-038249a		2010	Suzanne Baker	Addendum to Positive Archaeological Survey Report for the Alameda County Transit District's East Bay Bus Rapid Transit Project in Berkeley, Oakland, and San Leandro, California	Archaeological/Historical Consultants	
S-038249b		2010	Suzanne Baker	Addendum Historic Property Survey Report, the Alameda County Transit Project in Berkeley, Oakland, and San Leandro	Archaeological/Historical Consultants	
S-038249c		2010	Suzanne Baker	Second Addendum to Positive Archaeological Survey Report for Alameda County Transit District's East Bay Bus Rapid Transit Project in Berkeley, Oakland, and San Leandro, California	Archaeological/Historical Consultants	
S-038249d		2005	Suzanne Baker	Positive Archaeological Survey Report for the Alameda-Contra Costa Transit District's East Bay Bus Rapid Transit Project in Berkeley, Oakland, and San Leandro	Archaeological/Historical Constultants	
S-038249e		2006	Milford Wayne Donaldson and Leslie T. Rogers	FTA051227A; National Register of Historic Places Determination of Eligibility for Properties within the Area of Potential Effects for the Propsed AC Transit Bus Rapid Transit Project, Alameda County, California	California Office of Historic Preservation; U.S. Department of Transportation	
S-038249f		2005		Finding of Effect for AC Transit East Bay Bus Rapid Transit Project	JRP Historical Consulting	

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Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
S-039397		2008	Allen G. Pastron	Executive Summary of Results of On-Site Archaeological Monitoring and Evaluation at the 2055 Center Street Project, City of Berkeley, Alameda County, California (letter report)	Archeo-Tec	
S-040215	Submitter - LSA Project #SEG1201	2013	Michael Hibma	Architectural Significance Evaluations of Three Garages at 1931, 1933, and 1935 Addison Street, Berkeley, Alameda County, California (LSA Project #SEG1201) (letter report)	LSA Associates, Inc.	01-011384, 01-011385, 01-011386
S-040638		2013	Jeffrey E. Pearson and Kathleen A. Crawford	Cultural Resources Records Search and Site Visit Results for T-Mobile West, LLC, Candidate BA02010A (Personal Communication System Roofing Antenna), 2116 Bancroft Way, Berkeley, Alameda County, California (letter report)	Michael Brandman Associates	01-011466
S-042212	Other - FCC031113H	2003	Donald Napoli	Historic Architectural Survey Report, AT&T Wireless Services Site ID# 960018012AA-Telegraph/Dwight, UC Berkeley, Zellerback Hall, 0 Bancroft Way, Berkeley, Alameda County, California	Ric Windmiller, Consulting Archaeologist	
S-042691	Submitter - LSA Project #AUS1302	2013	Michael Hibma	Eligibility Evaluation of 1974 University Avenue, Berkeley, Alameda County, California	LSA Associates, Inc	01-011458
S-042755		2012	Michael Hibma	A Cultural Resources Study and Historical Evaluation for the Acheson Commons Project, Berkeley, Alameda County, California	LSA	01-011460, 01-011461
S-042755a		2014	William A. Porter	Acheson Commons, Photo-Documentation & Context Report for 1970-1987 Shattuck Avenue/2101-2109 University Avenue, 2111-2113 University Avenue, 2129/2135-1/2 University Avenue, 2145 University Avenue, 1922/1924 Walnut Street, 1930 Walnut Street	Knapp Architects	
S-043139		2013	Lorna Billat and Dana Supernowicz	Collocation Submission Packet, South Downtown Berkeley, CCL04690	Earth Touch, Inc.	01-011466
S-043139a		2013		Architectural Evaluation Study of the South Downtown Berkeley Project, AT&T Site No. CCL04690, 2116 Bancroft Way, Berkeley, Alameda County, California 94704	Historic Resource Associates	
S-043818	OHP PRN - FEMA 100111 A	2009		California Student Center/Lower Sproul Plaza, University of California-Berkeley, Berkeley, California, Historic Structure Report	Kelley & VerPlanck Historical Resources Consulting	

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Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
S-045781	OHP PRN - FCC_2014_0908_002	2014	Carrie D. Wills and Kathleen A. Crawford	Cultural Resources Records Search and Site Visit Results for Sprint Nextel Candidate FN03XC010 (University), 2054 University Avenue, #210, Berkeley, Alameda County, California (letter report)	First Carbon Solutions	01-005679
S-046434		2015	Christopher McMorris	Historic Resources, City of Berkeley Hearst Avenue Complete Streets Project (letter report)	JRP Historical Consulting	01-005338, 01-005394, 01-005438, 01-005439, 01-005449, 01-005527, 01-005553
S-046723		2013	Michael Hibma	Historical Evaluation 2201 Dwight Way, Berkeley, Alameda County, California	LSA Associates, Inc.	01-011648
S-046739	OTIS Report Number - FCC050322B	2005	Beth A. Gordon	Historic Resource Report, SNFCCA0157A / South Downtown Berkeley, 2116 Bancroft Way, Berkeley, Alameda County, California	RESCOM Environmental Corp	01-011466
S-046739a		2005		Cultural Resources Study of the South Downtown Berkeley Project, AT&T Wireless Services Site No. SNFCCA0157A, 2116 Bancroft Way, Berkeley, Alameda County, California 94704	Historic Resource Associates	
S-046965	Agency Nbr - CCL01059	2015	Carolyn Losee	Cultural Resources Investigation for AT&T Mobility CCL01059 "Telegraph-Dwight" Bancroft Way and Telegraph Avenue, Berkeley, Alameda County, California 94704 (letter report)	Archaeological Resources Technology	01-011602
S-047174	Agency Nbr - GOGA 1991 C / 052-91-GOGA; OHP PRN - NPS910611A	1991	Carol A. Martin	Archaeological Clearance: East Fort Baker, install electrical services to buildings No. 513 and No. 511, Bay Area Discovery Museum, Marin Headlands District, GGNRA, Marin County, California (letter report)	National Park Service	
S-047276	OHP PRN - FCC_2015_1104_002 ; Submitter - LSA Project No. CYG530	2015	Mary Armstrong-Friberg	FCC Form 621 Collocation Submission Packet: Verizon Wireless Shattuck and Bancroft Facility, 2116 Bancroft Way, Berkeley, CA 94704	Bureau Veritas North America, Inc.	01-011466
S-047276a		2015	Phil Fulton and Casey Tibbet	Cultural Resource Assessment Class I Inventory: Verizon Wireless Services Shattuck and Bancroft Facility, City of Berkeley, County of Alameda, California	LSA Associates, Inc.	
S-047276b		2015	Julianne Polanco	FCC_2015_1104_002; Shattuck and Bancroft, 2116 Bancroft Way, Berkeley, Alameda County, Collocation	Office of Historic Preservation	

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
S-047806	OTIS Report Number - FCC_2016_0708_002	2016	Carolyn Losee and Alexandra Bevk	Cultural Resources Investigation for AT&T Mobility CCL04690 "South DT Berkeley" 2116 Bancroft Way, Berkeley, Alameda County, California 94704 (letter report)	Archaeological Resources Technology	01-011466
S-047806a		2016	Julianne Polanco and Carolyn Losee	FCC_2016_0708_002, CCL04690 "South Downtown Berkeley" 2116 Bancroft Way, Berkeley, Collocation	Office of Historic Preservation; Geist Engineering and Environmental Group, Inc.	
S-048242	Agency Nbr - AT&T CCL00499; OHP PRN - FCC_2016_0707_002	2016	Carolyn Losee	Cultural Resources Investigation for AT&T CCL00499 "Berkeley Hills," Tolman Hall, University of California at Berkeley, Alameda County, California 94709 (letter report)	Archaeological Resources Technology	01-011800
S-048242a		2016	Julianne Polanco	FCC_2016_0707_002; CCL00499 "Tolman Hall", University of California 2272 Hearst Ave., Berkeley, Alameda County, Collocation	Office of Historic Preservation	
S-051845		2018	Daniel Shoup	Cultural Resources Technical Report, Adeline Corridor Specific Plan, Berkeley, California	Archaeological/Historical Consultants	
S-052790		2005		Cultural Resources Study of the University Berkeley Project, AT&T Wireless Services Site No. SNFCCA6345, St. Joseph the Worker Church, 1640 Addison Street, Berkeley, Alameda County, California 94703	Historic Resource Associates	01-005104, 01-012181
S-052854		2002		Cultural Resources Study for the Proposed Bechtel Corporation Project, Site No. 499 - Berkeley Hills, Tolman Hall, Hearst Avenue, Berkeley, California	Historic Resource Associates	01-011800

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-01-000029	CA-ALA-000008	Resource Name - [none]	Site	Prehistoric	AP09	1949 (Pilling, [none])	S-007903, S-026071, S-053807
P-01-000242		Resource Name - The Town and Gown Club	Building	Historic	HP09	1977 (Robin Thomas, Berkeley Architectural Heritage Assn.)	S-026071, S-026399
P-01-005104		Resource Name - St. Joseph the Workman Church; Other - St. Joseph the Worker Church; Other - St. Joseph's Church; OHP Property Number - 012148; OTIS Resource Number - 414933; OHP PRN - FCC050404G; OHP PRN - 4701-0080-0000; Other - St. Joseph the Worker Parish	Building	Historic	HP16	1979 (Harry B. Morrison, Berkeley Historical Society); 2005 (Dana E. Supernowicz, Historic Resource Associates)	S-052790
P-01-005107		Resource Name - Golden Sheaf Bakery; OHP Property Number - 12151; OHP PRN - 4701-0083-0000; Other - Nevo Education Center; Other - 2071 Addison Street; National Register - 78000644; OTIS Resource Number - 414936	Building	Historic	HP06	1977 (Robert Y. Feldman, U.C. Berkeley (graduate architecture student)); 1977 (Brian Horrigan, Berkeley Architectural Heritage Association); 2015 (Franklin Maggi, Archives & Architecture, LLC)	S-049123
P-01-005108		Resource Name - American Railway Express; OTIS Resource Number - 414937; Other - Swedberg's Furniture; Other - Executive Massage; HALS - M.J. Reynolds Realty; Other - Armory Hall; Other - J.G. Wright Building; OHP Property Number - 12152; OHP PRN - 4701-0084-0000; Other - Swedberg Furniture	Building	Historic	HP06	1979 (Betty Marvin, Berkeley Architectural Heritage Survey); 2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-01-005109		Resource Name - Underwood Building; Other - Virginia Apartments; Other - Addison Apartments; OHP Property Number - 12153; OHP Z-number - 4701-0085-0000; OTIS Resource Number - 414938	Building	Historic	HP03; HP06	1978 (Anthony Buffington Bruce, Berkeley Architectural Heritage Association); 2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-005110		Resource Name - Terminal Place; OTIS Resource Number - 414939; OHP Property Number - 12154; OHP PRN - 4701-0086-0000	Building	Historic	HP39	1978 (Betty Marvin, Berkeley Architectural Heritage Survey)	S-049123
P-01-005111		Resource Name - Heywood Building; Resource Name - Heywood Apartments; OHP Property Number - 12155; OHP PRN - 4701-0087-0000; OTIS Resource Number - 414940	Building, Element of district	Historic	HP03	1978 (Betty Narvin, Berkeley Architectural Heritage Survey); 2105 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-005153		Resource Name - Masonic Temple; Other - Crocker National Bank; OHP Property Number - 12197; OHP PRN - 4701-0129-0000; National Register - NPS-82002162-0000; OHP PRN - FTA051227A; Other - Berkeley Masonic Temple; Other - 2105 Bancroft Way; OTIS Resource Number - 414982	Building, Element of district	Historic	HP07; HP13	1978 (Betty Marvin, Berkeley Architectural Heritage Survey); 1981 (Betty Marvin, Berkeley Architectural Heritage Association); 1982 (Betty Marvin, Berkeley Architectural Heritage Association); 2015 (Franklin Maggi, Archives & Architecture, LLC)	S-049123
P-01-005177		Resource Name - Greyhound Lines; Other - Elephant Crossing; Other - Kaldor's Knit Shop; Other - Travel Service Inc.; Other - Chamber of Commerce; Other - Diane's; OHP Property Number - 12221; OHP PRN - 4701-0153-0000; OHP PRN - FTA051227A; OTIS Resource Number - 415006	Building, Element of district	Historic	HP06	1978 (Betty Marvin, Berkeley Architectural Heritage Survey); 2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture)	S-049123

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Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-01-005178		Resource Name - Southern Pacific Railroad Station; OHP Property Number - 12222; OHP PRN - 4701-0154-0000; OTIS Resource Number - 415007; Other - Little Hunan; Other - Metro PCS; Other - East Bay Passport Photo; Other - Fox Photo; Other - Square Fountain	Building	Historic	HP06	1979 (Betty Marvin, Berkeley Architectural Heritage Survey); 2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-005179		Resource Name - Southern Pacific Office; Other - Palace Barber; Other - Shoe & Luggage Repair; Other - Town Square Café; Other - Anna Bella Nails; OHP Property Number - 12223; OHP PRN - 4701-0155-0000; OHP PRN - FTA051227A; OTIS Resource Number - 415008	Building, Element of district	Historic	HP06	1978 (Betty Marvin, Berkeley Architectural Heritage Survey); 2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-005222		Resource Name - Mikkelson and Berry Building; OHP PRN - 4701-0198-0000; OHP Property Number - 12266; OTIS Resource Number - 415050; Other - Globe Stamp Store; Other - Sabin Optometric	Building	Historic	HP06	1978 (Betty Marvin, Berkeley Architectural Heritage Association); 2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-005223		Resource Name - Ennor's Restaurant - Bakery - Candy Store; Other - Act One / Act Two Theater; OHP Property Number - 012267; OHP PRN - 4701-0199-0000; Other - Tax Cert 537.9-01-0146; Other - Ben & Jerry's; OTIS Resource Number - 415051; Resource Name - Ennor's Restaurant Building; Other - Act 1 & Act 2 Theater	Building, Element of district	Historic	HP07	1977 (Betty Marvin, Berkeley Architectural Heritage Association); 2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-01-005224		Resource Name - Thomas Block; Other - Lindgren & Hicks Building; Other - LaLoma Apts; Other - Wawona Apartments; OHP Property Number - 12268; OHP PRN - 4701-0200-0000; Other - Campus Florist; Other - P.I.P.; Other - McPhee's Bootery; OTIS Resource Number - 415052	Building, Element of district	Historic	HP03; HP06	1978 (Betty Marvin, Berkeley Architectural Heritage Survey); 2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-005268		Resource Name - Squire, (James A.) House; OHP Property Number - 012312; OHP PRN - FTA051227A; OHP PRN - 4701-0244-0000; OTIS Resource Number - 415096	Building	Historic	HP02	1979 (Anthony Buffington Bruce, Berkeley Architectural Heritage Association)	
P-01-005348		Resource Name - Odd Fellows' Temple; Other - Map Reference No. 01-31; Other - 2280-2288 Fulton Street; OHP Property Number - 012392; OHP PRN - 4701-0324-0000; OHP PRN - FTA051227A;	Building	Historic	HP06; HP13	1978 (Betty Marvin, Berkeley Architectural Heritage Survey); 2004 (Cindy Toffelmier, JRP Historical Consulting)	S-038249
P-01-005394		Resource Name - Robert H. Wetmore House; OHP Property Number - 012438; OHP PRN - 4701-0370-0000; OTIS Resource Number - 415221	Building	Historic	HP02	1979 (Carson Anthony Anderson, Berkeley Architectural Heritage Association)	S-046434
P-01-005423		Resource Name - Berkeley Main Public Library; National Register - NPS-82002156-0000; Other - Berkeley Public Library; OHP Property Number - 012467; OHP PRN - 4701-0399-0000; OHP PRN - FTA051227A; Other - Map Reference No. 01-28;	Building, Element of district	Historic	HP15	1977 (Brian Hoorigan, Berkeley Architectural Heritage Association); 1981 (Betty Marvin, Berkeley Architectural Heritage Association); 2004 (Toni Webb, JRP Historical Consulting); 2015 (Franklin Maggi, Archives & Architecture, LLC)	S-049123

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-01-005424		Resource Name - Fox California Theater; Other - T & D Theater; Other - California Theater; OHP PRN - 4701-0400-0000; OHP Property Number - 012468; OTIS Resource Number - 415251	Building, Element of district	Historic	HP10	1978 (Betty Marvin, Berkeley Architectural Heritage Survey); 2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-005425		Resource Name - A.H. Broad House; Other - Marialis Beauty Salon; Other - Fu Lu Shou Restaurant; Other - Kittredge Street Sandwich & Tempura Shop; OHP Property Number - 012469; OHP PRN - 4701-0401-0000; Other - A.H. Broad House & Storefront; OTIS Resource Number - 415252	Building, Element of district	Historic	HP03; HP06	1977 (Betty Marvin, Berkeley Architectural Heritage Association); 2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-005426		Resource Name - Robert Elder House; Other - Morgan & Agostini Real Estate; OHP Property Number - 012470; OHP PRN - 4701-0402-0000; Other - Delta Upsilon Hose; Other - Amanda Agostini Morgan Building; OTIS Resource Number - 415253	Building, Element of district	Historic	HP03; HP06	1979 (Anthony Buffington Bruce, Berkeley Architectural Heritage Assoication); 2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-005427	CA-ALA-000618/H	Resource Name - John C. Fitzpatrick House; OTIS Resource Number - 415254; Other - 2138 Kittredge Burial; OHP Property Number - 012471; Other - Pepper Tree Tea Room; OHP PRN - 4701-0403-0000	Building, Site, Element of district	Prehistoric, Historic	AP09; HP02	1979 (Anthony Buffington Bruce, Berkeley Architectural Heritage Association); 2004 (Richard Schwartz, [none]); 2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-005428		Resource Name - Herb's Hamburgers; OHP Property Number - 012472; OHP PRN - 4701-0404; OTIS Resource Number - 415255	Building	Historic	HP06	1979 (Betty Marvin, Berkeley Architectural Heritage Survey)	S-049123

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-01-005559		Resource Name - Southern Pacific Station on Shattuck; Other - Downtown train station; OHP PRN - 4701-0535-0000; OHP Property Number - 012603; Other - Berkeley Square; Other - Shattuck Square; OTIS Resource Number - 415386	Building, Site, Element of district	Historic	HP17; HP31	1978 (Gray Brechin, Berkeley Architectural Heritage Association)	S-047381, S-049123
P-01-005560		Resource Name - Palmer's; Other - Shattuck Square Building; OHP PRN - 4701-0536-0000; OHP Property Number - 012604; Other - Palmer's Drugstore; Resource Name - 48 Shattuck Square	Building, Element of district	Historic	HP06	1978 (Betty Marvin, Berkeley Architectural Survey); 2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-005561		Resource Name - Roos-Atkins; Other - Roos Brothers; OHP Property Number - 012605; OHP PRN - 4701-0537-0000; Other - Shattuck Square Building	Building, Element of district	Historic	HP06	1978 (Betty Marvin, Berkeley Architectural Heritage Survey); 2105 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-005562		Resource Name - Watkin's Shoes; Resource Name - Birdie's Toy House; OHP Property Number - 012606; Other - Shattuck Square Building; OHP PRN - 4701-0538-0000; Other - Watkins Building; Other - PiQ	Building, Element of district	Historic	HP06	1978 (Betty Marvin, Berkeley Architectural Heritage Survey); 2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-005569		Resource Name - MacFarlane's; Other - Stores for U.S. Realty Corporation; OHP Property Number - 12613; OHP PRN - 4701-0545-0000; Other - MacFarlane Building; Other - Stores for U.S. Realty Corporation	Building, Element of district	Historic	HP06	1978 (Katherine R. Wright, Berkeley Architectural Heritage Association); 2015 (Franklin Maggi, Archives & Architecture, LLC)	S-049123

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Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-01-005570		Other - Mason-McDuffie Building; Resource Name - University and Shattuck Store Building; OTIS Resource Number - 415397; OHP Property Number - 012614; OHP PRN - 4701-0546-0000	Building, Element of district	Historic	HP06	1977 (J. Brian Horrigan, Berkeley Architectural Heritage Assoc.)	S-049123
P-01-005571		Resource Name - Heywood Building; OHP Property Number - 12615; OHP PRN - 4701-0547-0000; Other - Singer Sewing Machine Company; Other - Plachek Building	Building	Historic	HP06	1978 (Anthony Bruce, Berkeley Architectural Heritage Association); 2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-005572		Resource Name - Kress's; Resource Name - S.H. Kress & Company Store; OHP Property Number - 12616; OHP PRN - 4701-0548-0000	Building, Element of district	Historic	HP06	1978 (Betty Marvin, Berkeley Architectural Heritage Survey); 2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-005573		Resource Name - The Berkeley Hotel; Other - The Studio Building; OHP Property Number - 12617; OHP PRN - 4701-0549-0000; National Register - 78000645	Building, Element of district	Historic	HP05; HP07	1977 (Anthony B. Bruce, Berkeley Architectural Heritage Association); 1978 (Anthony Bruce, NPS); 2015 (Franklin Maggi, Archives & Architecture, LLC)	S-049123
P-01-005574		Resource Name - Francis Shattuck Building; OHP Property Number - 12618; OHP PRN - 4701-0550-0000; OTIS Resource Number - 415401; Other - 2080 Addison Street	Building, Element of district	Historic	HP05; HP06	1978 (Anthony Bruce, Berkeley Architectural Heritage Association); 2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-005575		Resource Name - Mason-McDuffie Company Building; Other - Mobilia (Furniture Company); OHP Property Number - 12619; OHP PRN - 4701-0551-0000; Other - Berkeley Guarantee Building & Loan; Other - Mobilia Furniture	Building, Element of district	Historic	HP06	1979 (Donna Dumont, Berkeley Architecture Heritage Association); 2015 (f. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-01-005576		Resource Name - Hotel Crail; Other - Hotel Vernon; Other - Alexander; Other - Opal Theater; Other - Victorian Inn; Other - Interlude Massage; OHP Property Number - 12620; OHP PRN - 4701-0552-000; Resource Name - V.D. Chase Building; Other - California Terrace Inn	Building, Element of district	Historic	HP03; HP05; HP07	1978 (Betty Marvin, Berkeley Architectural Heritage Survey); 2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-005577		Resource Name - Bentley's; Other - Roy O. Long Company; Other - Morse-Brock Building; OHP Property Number - 12621; OHP PRN - 4701-0553-0000; OTIS Resource Number - 415404	Building, Element of district	Historic	HP06	1978 (Betty Marvin, Berkeley Architectural Heritage Survey); 2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-005578		Resource Name - Great Western Building; Other - First Savings Building; OHP Property Number - 12622; OHP PRN - 4701-0554-0000; OTIS Resource Number - 415405; Other - Power Bar; Other - Chase Bank	Building, Element of district	Historic	HP07; HP73	1979 (Charles S. Marinovich, Berkeley Architectural Heritage Association); 2015 (F. Maggi, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-005579		Resource Name - Wright Block; Other - Blum's Flower Shop; Other - White's Jewelers; OHP Property Number - 12623; OHP PRN - 4701-0555-0000; Other - Hann Block; OTIS Resource Number - 415406	Building, Element of district	Historic	HP06; HP99	1977 (Betty Marvin, Berkeley Architectural Heritage Association); 2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123, S-050856
P-01-005580		Resource Name - Constitution Square Building; Other - Havens Block; Other - Shattuck Hall Site; OHP Property Number - 12624; OHP PRN - 4701-0556-0000; Other - Quinto Sol Publications; OTIS Resource Number - 415407	Building, Element of district	Historic	HP06	1978 (Anthony Bruce, Berkeley Architectural Heritage Association); 1980 (A. Castenada, J. Pitti, Chicano / Latino Cult. Res. Sur.); 2015 (F. Maggi, S. Winder, Archives & Architecture, LLC)	S-049123

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-01-005581		Resource Name - F.W. Foss Company; Other - Martino's Restaurant; Other - Wolf's Jewelers; Other - Sandwich Indulgence; OHP Property Number - 12625; OHP PRN - 4701-0557-0000; Other - Jupiter; OTIS Resource Number - 415408	Building, Element of district	Historic	HP06	1979 (Betty Marvin, Berkeley Architectural Heritage Survey); 2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-005582		Resource Name - Samson Market; Other - Central Bank; OHP Property Number - 12626; OHP PRN - 4701-0558-0000; OTIS Resource Number - 415409; Other - Target Store	Building, Element of district	Historic	HP06	1978 (Betty Marvin, Berkeley Architectural Heritage Survey); 2015 (F. Maggi, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-005583		Resource Name - Hinkel Block; Other - Havens Block; Other - Edy's Candy; Other - KPFA Radio; OHP Property Number - 12627; OHP PRN - 4701-0559-0000; Other - Hulbert Block; Other - Edy's Creamery; OTIS Resource Number - 415410	Building, Element of district	Historic	HP06	1978 (Betty Marvin, Berkeley Architectural Heritage Survey); 2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-005585		Resource Name - Amherst Hotel; Other - Lawson's Stationery; Other - Brock & Brooks Building; Other - Brooks Apartments; OHP Property Number - 12629; OHP PRN - 4701-05561-0000; OTIS Resource Number - 415412	Building	Historic	HP03; HP05; HP06	1978 (Betty Marvin, Berkeley Architectural Heritage Survey)	S-049123
P-01-005586		Resource Name - Blue and Gold Market; Resource Name - Wanger Block; OHP Property Number - 12630; OHP PRN - 4701-0562-0000; OTIS Resource Number - 415413	Building, Element of district	Historic	HP03; HP06	1978 (Betty Marvin, Berkeley Architectural Heritage Survey); 2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-01-005587		Resource Name - Marble Restaurant; Resource Name - Homestead Loan Association; OHP Property Number - 12631; OHP PRN - 4701-0563-0000; Other - Berkeley Art Museum; OTIS Resource Number - 415414; Other - Homestead Loan Association Building	Building, Element of district	Historic	HP06	1978 (Anthony Buffington Bruce, Berkeley Architectural Heritagte Association); 2015 (F. Maggi, L/ Dill, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-005588		Resource Name - United Artists Theater; OHP Property Number - 12632; OHP PRN - 4701-0564-0000; OTIS Resource Number - 415415	Building, Element of district	Historic	HP10	1978 (Betty Marvin, Berkeley Architectural Heritage Survey); 2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-005589		Resource Name - Hezlett's Silk Store; Other - Tupper & Reed Building (after 1960); OHP Property Number - 12635; OHP PRN - 4701-0567-0000; OTIS Resource Number - 415416	Building, Element of district	Historic	HP06	1977 (Ann Maria Celona, Berkeley Architectural Heritage Association); 2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-005590		Resource Name - Morse Block; Other - Donogh Arms; OHP Property Number - 12634; Other - 4701-0566-0000; OTIS Resource Number - 415417; Other - Pasand Hotel	Building, Element of district	Historic	HP03; HP05; HP07	1978 (Anthony Buffington Bruce, Berkeley Architectural Heritage Association); 2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-005591		Resource Name - Tupper & Reed Building; OHP Property Number - 12633; OHP PRN - 4701-0565-0000; Other - 2275 Shattuck Avenue; National Register - 82002163; OTIS Resource Number - 415418	Building, Element of district	Historic	HP06; HP99	1977 (Gary Brechin, Berkeley Architectural Heritage Association); 1982; 2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-01-005592		Resource Name - Capdeville's University French Laundry; Other - Paul's Shoe Repair; Other - Pirro's Pizza; OHP Property Number - 12636 for Capdeville's University French Laundry; OHP Property Number - 162978 for Paul's Shoe Repair; OHP PRN - 4701-0568-0000; OTIS Resource Number - 415419; Other - Capedeville French Laundry	Building, Element of district	Historic	HP06	1975 (Betty Marvin, Berkeley Architural Heritage Survey); 2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-005593		Resource Name - Corder Building; Other - Whitecotton Building; Other - Shattuck Apartments; Other - Stone Pierce Company; OHP Property Number - 12637; OHP PRN - 4701-0569-0000; Other - Witter Building; National Register - NPS-82002158-0000; OTIS Resource Number - 415420; Other - 2300 - 2350 Shattuck Avenue	Building, Element of district	Historic	HP03; HP05; HP07	1976 (Betty Marvin, Berkeley Architectural Heritage Survey); 1980 (Betty Marvin, Berkeley Architectural Heritage Association); 1982; 2005 (Kathleen Kennedy, JRP Historical Consulting); 2015 (Franklin Maggi, Archives & Architecture, LLC)	S-038249, S-049123
P-01-005594		Resource Name - Fidelity Guaranty Building and Loan Assoc.; Resource Name - Fidelity Savings and Loan Association; OHP Property Number - 12638; OHP PRN - 4701-0570-0000; Resource Name - Map Reference No. 01-38; OTIS Resource Number - 415421	Building, Element of district	Historic	HP06	1979 (Donna Dumont, Berkeley Architectural Heritage Survey); 2004 (Toni Webb, JRP Historical Consulting); 2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-038249, S-049123
P-01-005619		Resource Name - Hotel Carlton; OHP PRN - 4701-0595-0000; OHP Property Number - 012663	Building	Historic	HP05	2004 (Diana Painter, Painter Preservation & Planning)	S-028215

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-01-005676		Resource Name - U.C. Theater; Other - Fox U.C. Theater; Other - Stark Hotel; OHP Property Number - 12720; OHP Property Number - 69236; OHP PRN - 4701-0653-0000	Building, Element of district	Historic	HP05; HP06; HP10	1978 (Betty Marvin, Berkeley Architectural Heritage Survey); 2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-005678		Resource Name - Joseph Davis Building; Other - The Victoria; Other - Former Berkeley Barb office; OHP Property Number - 12722; OHP PRN - 4701-0655-0000	Building, Element of district	Historic	HP03; HP06	1978 (Betty Marvin, Berkeley Architectural Heritage Survey); 2015 (F. Maggi, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-005679		Resource Name - Koerber Building; OHP Property Number - 12723; OHP PRN - 4701-656-0000; Other - State Farm Building; OHP Property Number - 127060; OHP PRN - DOE-01-01-0001-0000; OHP PRN - FCC001011B; Other - Morgan Building; Voided - P-01-010708; Voided - P-01-010412	Building, Element of district	Historic	HP07	1979 (Betty Marvin, Berkeley Architectural Heritage Survey); 2004 (Lorna Billat, Earth Touch, Inc.); 2009 (Daniella Thompson, [none]); 2015 (F. Maggi, S. Winder, Archives & Architecture, LLC)	S-029543, S-029683, S-045781, S-049123
P-01-005680		Resource Name - Middle Eastern Restaurant; Other - Plachek Addition to the Acheson Building; Other - 2125 University Avenue; Resource Name - Acheson's Physicians Building; OHP Property Number - 12724; OHP PRN - 4701-0657-0000; Other - Crepes A-Go-Go	Building, Element of district	Historic	HP06	1979 (Katherine R. Wright, Berkeley Architectural Heritage Association); 2015 (Franklin Maggi, Archives & Architecure, LLC)	S-049123
P-01-005681		Resource Name - Acheson Physicians' Building; Other - 2125 - 2135 University Avenue; OHP Property Number - 12725; OHP PRN - 4701-0658-0000	Building, Element of district	Historic	HP07	1978 (Katherine R. Wright, Berkeley Architectural Heritage Association); 2015 (Franklin Maggi, Archives & Architectue, LLC)	S-049123

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-01-005682		Resource Name - Berkeley Hardware Store; Other - Sill's; Other - Montgomery Ward Store; OHP Property Number - 12726; OHP PRN - 4701-0659-0000; Other - J Sill & Company Grocery	Building, Element of district	Historic	HP06	1978 (Katherine R. Wright, Berkeley Architectural Heritage Association); 2015 (Franklin Maggi, Archives & Architecture, LLC)	S-049123
P-01-005706		Resource Name - Chamber of Commerce Building; OHP PRN - 4701-0714-0000; Other - Wells Fargo Building; OHP PRN - 4701-0197-0000; National Register - NPS 85001916-0000; OHP PRN - FTA 051227A; OHP Property Number - 12750; Other - American Trust; OTIS Resource Number - 415594	Building, Element of district	Historic	HP07	1978 (Anthony Buffington Bruce, Berkeley Architectural Heritage Association); 1984 (Betty Marvin, Berkeley Architectural Heritage Association); 2015 (Franklin Maggi, Archives & Architecture, LLC)	S-024284, S-049123
P-01-008285		Resource Name - Campanile Hotel; OHP Property Number - 95629; OHP PRN - HUD950302C; Other - The Avenue Block; Other - Aldone Apartments	Building	Historic	HP03; HP05; HP06	2015 (F Maggi, S. Winder, Archives and Architecture, LLC)	
P-01-010496		Resource Name - 1910 Hearst Street	Site	Prehistoric	AP16	2002 (Richard Schwartz, [none])	
P-01-010538	CA-ALA-000607	Resource Name - Burial at Site of old Kellogg School	Site	Prehistoric	AP15	2001 (Richard Schwartz, [none])	S-031825, S-038249
P-01-010663	CA-ALA-000615	Resource Name - Shell West of Haviland Hall	Site	Prehistoric	AP16	2004 (Richard Schwartz, [none])	
P-01-011384		Resource Name - 1931 Addison Street; Other - Campanile Auto Service; Other - Campanile, Machine Shop & Garage; Other - Franks's Auto Glass	Building	Historic	HP06	2012 (Michael Hibma, LSA Associates Inc.)	S-040215
P-01-011385		Resource Name - 1933 Addison Street; Other - Berkeley Test Only Smog; Other - Berkeley Spring & Forging	Building	Historic	HP06	2012 (Michael Hibma, LSA Associates Inc.)	S-040215

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-01-011386		Resource Name - 1935 Addison Street; Other - Frank's of Berkeley; Other - Berkeley Auto Enameling	Building	Historic	HP06	2012 (Michael Hibma, LSA Associates, Inc.)	S-040215
P-01-011458		Resource Name - 1974 University Avenue; Other - Firestone Automotive	Building	Historic	HP06	2012 (Michael Hibma, LSA Associates)	S-042691
P-01-011460		Resource Name - 1922/1924 Walnut Street; OHP PRN - 4701-0668-000; Other - Baldwin/Acheson House	Building	Historic	HP03; HP30	2011 (Michael Hibma, LSA Associates Inc.)	S-042755
P-01-011461		Resource Name - 1930 Walnut Street; OHP PRN - 4701-0670-000; Other - Moore/Acheson House	Building	Historic	HP03; HP30	2011 (Michael Hibma, LSA Associates, Inc.)	S-042755
P-01-011466		Resource Name - SBC Building; OTIS Resource Number - 543240	Building	Historic	HP07	2005 (Dana Supernowicz, Historic Resource Associates); 2016 (Alexandra Bevk, [none])	S-040638, S-043139, S-046739, S-047276, S-047806
P-01-011577		Resource Name - Trinity Methodist Episcopal Church; OHP Property Number - 161897; OHP PRN - FTA051227A; OHP PRN - HUD060410F; OTIS Resource Number - 536092; OTIS Resource Number - 671837	Building	Historic	HP13	2004 (Toni Webb, JRP Historical Consulting); 2006 (Tim Stroshane, City of Berkeley Housing Department)	S-038249, S-049267
P-01-011602		Resource Name - Zellerbach Hall; Other - Performing Arts Center	Building	Historic	HP10	2015 (Alexandra Bevk, [none])	S-046965
P-01-011648		Resource Name - 2201 Dwight Way; Other - J.E. French & Company; Other - Hopper-Hammond Dodge; Other - Dodge of Berkeley	Building	Historic	HP06	2012 (Michael Hibma, LSA Associates)	S-046723
P-01-011834		Resource Name - Hotel Central; Other - Cal Hotel; Other - California Hotel; HALS - 2008 - 2012 Shattuck Avenue	Building, Element of district	Historic	HP03; HP05; HP07	2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-01-011835		Resource Name - Nish & McNeill Men's Furnishings; Other - Cloud Building; Other - 2017 Shattuck Avenue	Building, Element of district	Historic	HP06	2015 (Frank Maggi, Archives & Achitecture, LLC)	S-049123
P-01-011836		Resource Name - First Savings Bank of Oakland Branch; Other - Patelco; Other - 2033 Shattuck Avenue	Building, Element of district	Historic	HP06	2015 (F. Maggi, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-011837		Resource Name - Bowles Building; Other - Mandarin Garden Restaurant; HALS - 2023 Shattuck Avenue	Building, Element of district	Historic	HP06	2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-011838		Resource Name - 2030 Addison Street	Building	Historic	HP07	2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-011839		Resource Name - Woolsey Building	Building	Historic	HP06	2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-011840		Other - Kaplan Building; Resource Name - 150 Berkeley Square	Building, Element of district	Historic	HP06	2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-011841		Resource Name - San Francisco Federal Savings; Other - Bank of Italy; Other - Bank of America; Other - Citibank; Other - 2000 Shattuck Avenue	Building, Element of district	Historic	HP06	2015 (F. Maggi, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-011842		Resource Name - Berkeley Tower; Other - 2120 - 2134 University Avenue	Building, Element of district	Historic	HP07	2015 (F. Maggi, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-011843		Resource Name - 2020 Shattuck Avenue; Other - Comal; 2018 - 2020 Shattuck Avenue	Building, Element of district	Historic	HP06	2015 (F. Maggi, L. Dill, S. Winder, Archives & Architects, LLC)	S-049123
P-01-011844		Resource Name - Bauml Building; Other - Fantastic Comics; Other - Phil's Sliders; Other - 2024 Shattuck Avenue	Building, Element of district	Historic	HP06	2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-01-011845		Resource Name - Boudin Bakery; OHP Property Number - 162970; OHP PRN - FTA051227A; Other - 2116 Shattuck Avenue; OTIS Resource Number - 535192	Building, Element of district	Historic	HP06	2015 (F. Maggi, L. Dill, S. Winder, Archives & Architedcture, LLC)	S-049123
P-01-011846		Resource Name - Norton Building; Other - United California Bank; Other - 2169-2171 Shattuck Avenue; OTIS Resource Number - 535193; OHP Property Number - 162971	Building, Element of district	Historic	HP06	2015 (Franklin Maggi, Archives & Architecture, LLC)	S-049123
P-01-011847		Resource Name - J. C. Penney Co.; Other - Walgreens; Other - 2116 Shattuck Avenue; OTIS Resource Number - 535192; OHP Property Number - 169970	Building, Element of district	Historic	HP06	2015 (F. Maggi, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-011848		Resource Name - The Luggage Center; Other - Taylor's Leather Goods; Other - 2219 Shattuck Avenue; OTIS Resource Number - 535197; OHP Property Number - 162975	Building, Element of district	Historic	HP06	2105 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-011849		Resource Name - 2301 Shattuck Avenue; Other - Merchant's Bank	Building, Element of district	Historic	HP06	2015 (F. Maggi, L. Dill, S. Winder, Archives & Achritecture, LLC)	S-049123
P-01-011850		Resource Name - Blake & McGuire Grocery; Other - Venus Restaurant; OHP Property Number - 162979; OTIS Resource Number - 535201; Other - 2327 Shattuck Avenue	Building, Element of district	Historic	HP06	2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-011851		Resource Name - Union Bank; Other - 2333 Shattuck Avenue	Building, Element of district	Historic	HP06	2015 (F. Maggi, L. Dill, Archives & Architecture, LLC)	S-049123

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-01-011852		Resource Name - Bank of America; Other - 2119 Center Street; Other - 2129 Shattuck Avenue	Building, Element of district	Historic	HP06	2015 (F. Maggi, L. Dill, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-011853		Resource Name - 2058 University Avenue; Other - Goodwill	Building, Element of district	Historic	HP06	2015 (Franklin Maggi, Sarah Winder, Archives & Architecture, LLC)	S-049123
P-01-011854		Resource Name - 2111 University Avenue; Other - Krishna Copy Center	Building, Element of district	Historic	HP06	2015 (Franklin Maggi, Archives & Architecture, LLC)	S-049123
P-01-011855		Resource Name - Bachenheimer Building; Other - 2117 - 2119 University Avenue	Building, Element of district	Historic	HP03; HP07	2015 (Franklin Maggi, Archives & Architecture, LLC)	S-049123
P-01-011856		Resource Name - Martha Sell Building; Other - Swedberg Furniture; Other - 2154 - 2160 University Avenue	Building, Element of district	Historic	HP06	2015 (F. Maggi, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-011857		Resource Name - Ernest Alvah Heron Building; Other - 2136 - 2140 University Avenue	Building, Element of district	Historic	HP06	2015 (F. Maggi, S. Winder, Archives & Architecture, LLC)	S-049123
P-01-012181		Resource Name - St. Joseph the Worker School; OHP Property Number - 161740; OTIS Resource Number - 536154; OHP PRN - FCC050404G; Other - St. Joseph School	Building	Historic	HP15	2005 (Dana E. Supernowicz, Historic Resource Associates)	S-052790

Sacred Lands File & Native American Contacts List Request

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd, Suite 100
Sacramento, CA 95814
(916) 373-3710
(916) 373-5471 – Fax
nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Project: 2065 Kittredge Street Residential Project

County: Alameda

USGS Quadrangle Name: Oakland West Quadrangle

Township: 01S Range: 04W Section(s): 02

Company/Firm/Agency: Rincon Consultants, Inc.

Contact Person: Andrew Rodriguez

Street Address: 180 N Ashwood Ave

City: Ventura Zip: 93003

Phone: 805-644-4455

Email: arodriguez@rinconconsultants.com

Project Description: The project location is a portion of an irregularly shaped but generally square 1.63-acre larger property forming one city block in Downtown Berkeley, bounded by and fronting Shattuck Avenue to the east, Kittredge Street to the south, Harold Way to the west, and Allston Way to the north (APNs 057-2027-00600, -00700, -00800, and -00900) in Berkeley, Alameda County, California. The address for the project site is 2065 Kittredge Street. The project involves a new mixed-use development consisting of an 8-story residential apartment building with a total of 191 units, including 5% affordable units. 43 parking spaces will be provided in an underground parking level. We understand the project will require demolition of one existing commercial building located on site as well as renovations to the landmarked Shattuck Hotel.


2211 Harold Way
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2,000
Feet
N
BERKELEY
UNIVERSITY OF CALIFORNIA
Park
BANCROFT
WAY
SHATTUCK
DWIGHT
ASHBY
SAN ANTONIO

NATIVE AMERICAN HERITAGE COMMISSION

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

April 5, 2022

Andrew Rodriguez
Rincon Consultants, Inc.

Via Email to: arodriguez@rinconconsultants.com

Re: 2065 Kittredge Street Residential Project, Alameda County

Dear Mr. Rodriguez:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information submitted for the above referenced project. The results were positive. Please contact the Amah Mutsun Tribal Band of Mission San Juan Bautista and the North Valley Yokuts Tribe on the attached list for information. Please note that tribes do not always record their sacred sites in the SLF, nor are they required to do so. A SLF search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with a project's geographic area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites, such as the appropriate regional California Historical Research Information System (CHRIS) archaeological Information Center for the presence of recorded archaeological sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. Please contact all of those listed; if they cannot supply information, they may recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: Cody.Campagne@nahc.ca.gov.

Sincerely,

Cody Campagne

Cody Campagne
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Native American Contact List
Alameda County
4/5/2022

Amah MutsunTribal Band of Mission San Juan Bautista
Irene Zwierlein, Chairperson
3030 Soda Bay Road
Lakeport, CA, 95453
Phone: (650) 851 - 7489
Fax: (650) 332-1526
amahmutsuntribal@gmail.com
Costanoan

Costanoan Rumsen Carmel Tribe
Tony Cerda, Chairperson
244 E. 1st Street
Pomona, CA, 91766
Phone: (909) 629 - 6081
Fax: (909) 524-8041
rumsen@aol.com
Costanoan

Guidiville Indian Rancheria
Donald Duncan, Chairperson
P.O. Box 339
Talmage, CA, 95481
Phone: (707) 462 - 3682
Fax: (707) 462-9183
admin@guidiville.net
Pomo

Indian Canyon Mutsun Band of Costanoan
Kanyon Sayers-Roods, MLD Contact
1615 Pearson Court
San Jose, CA, 95122
Phone: (408) 673 - 0626
kanyon@kanyonkonsulting.com
Costanoan

Indian Canyon Mutsun Band of Costanoan
Ann Marie Sayers, Chairperson
P.O. Box 28
Hollister, CA, 95024
Phone: (831) 637 - 4238
ams@indiancanyons.org
Costanoan

Muwekma Ohlone Indian Tribe of the SF Bay Area
Monica Arellano, Vice Chairwoman
20885 Redwood Road, Suite 232
Castro Valley, CA, 94546
Phone: (408) 205 - 9714
marellano@muwekma.org
Costanoan

North Valley Yokuts Tribe
Katherine Perez, Chairperson
P.O. Box 717
Linden, CA, 95236
Phone: (209) 887 - 3415
canutes@verizon.net
Costanoan
Northern Valley Yokut

North Valley Yokuts Tribe
Timothy Perez,
P.O. Box 717
Linden, CA, 95236
Phone: (209) 662 - 2788
huskanam@gmail.com
Costanoan
Northern Valley Yokut

The Ohlone Indian Tribe
Andrew Galvan,
P.O. Box 3388
Fremont, CA, 94539
Phone: (510) 882 - 0527
Fax: (510) 687-9393
chochenyo@AOL.com
Bay Miwok
Ohlone
Patwin
Plains Miwok

Wuksache Indian Tribe/Eshom Valley Band
Kenneth Woodrow, Chairperson
1179 Rock Haven Ct.
Salinas, CA, 93906
Phone: (831) 443 - 9702
kwood8934@aol.com
Foothill Yokut
Mono

The Confederated Villages of Lisjan
Corrina Gould, Chairperson
10926 Edes Avenue
Oakland, CA, 94603
Phone: (510) 575 - 8408
cvltribe@gmail.com
Bay Miwok
Ohlone
Delta Yokut

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed 2065 Kittredge Street Residential Project, Alameda County.

***Resource Name or #** (Assigned by recorder) Shattuck Hotel

***Recorded by:** JulieAnn Murphy, Rincon Consultants ***Date:** March 2022 ☐ Continuation ■ Update

The subject property at 2200 Shattuck Avenue/2065 Kittredge Street/2060-2080 Allston Way, commonly known as the Shattuck Hotel, is located in Downtown Berkeley, and is bounded by Allston Way to the north, Kittredge Street to the south, Shattuck Avenue to the east, and Harold Way to the west. The property was previously recorded in 1979 by Carol Raiskin for Berkeley Architectural Heritage as part of an architectural survey, finding it significant for its architecture as a good example of locally significant architect Benjamin McDougall's work in the Mission Revival style and as one of Berkeley's first steel reinforced concrete buildings. The evaluation assigned a National Register Status Code 3 and recommended that the property was eligible for listing in the National Register of Historic Places (NRHP) under Criterion C for its architecture. The property was subsequently recorded and evaluated in November 2004 by Jessica Herrick of JRP Historical Consulting, who noted that the property was unaltered since its recording in 1979 and appeared to remain eligible for listing in the NRHP and, as a result, also appeared eligible for listing in the California Register of Historical Resources (CRHR) for its architecture. Herrick also noted that the property was designated as a City of Berkeley Landmark.

In 2014, Sarah Hahn of Architectural Resources Group evaluated the property finding that the Shattuck Hotel and former Hink's Department Store appeared eligible for listing in the NRHP/CRHR under Criterion 1 for its association with Berkeley's early commercial development and under NRHP/CRHR under Criterion 3 as a distinctive example of the Mission Revival style architecture in Berkeley's downtown and for its association with architect Benjamin McDougall. It further refined previous evaluations to clarify that the eligible resource included the original construction and the additions completed in 1912, 1913, and 1926, but did not include the building's 1959 addition, referred to as Hink's Building, due to a loss of integrity from a number of alterations.

In 2015, the building was recorded as part of the Shattuck Avenue Downtown Historic District evaluation performed by Franklin Maggi of Archives & Architecture. The updated recording notes the earliest previous evaluations and findings and adds that the building was determined eligible for listing in the NRHP under Criterion C by consensus through a Section 106 process and added to the CRHR in March 2006. The evaluation but does not, however, reference the 2014 evaluation performed by Architectural Resources Group.

The current survey update of the subject property was conducted as a part of the 2065 Kittredge Street Project in Alameda County, California. Since the property was last evaluated in 2015, there have been no visible alterations and there is no evidence to suggest that it would no longer be eligible for federal, state, or local designation. In concurrence with the previous evaluations, this study recommends that Shattuck Hotel eligible for listing in the NRHP, CRHR, and for local designation as a City of Berkeley Landmark, including the 2014 Architectural Resources Group determination that the 1959 Hink's Building is a non-contributing element of the historical resource.

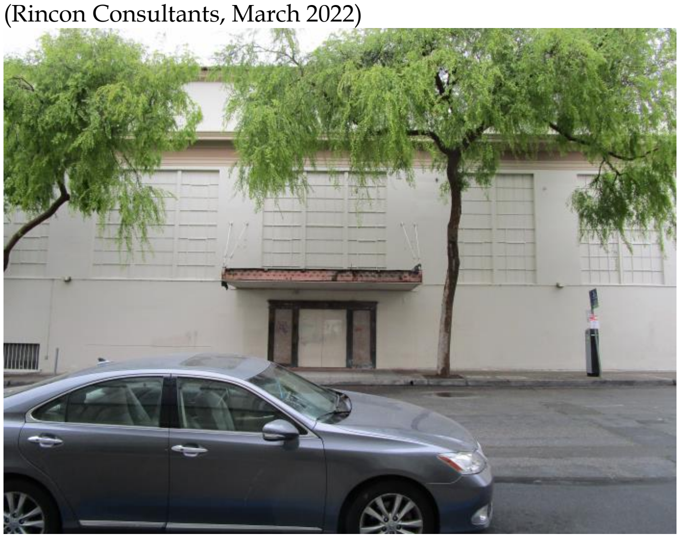
Shattuck Hotel, east and north elevations, view southwest.

***Resource Name or #** (Assigned by recorder) Shattuck Hotel

***Recorded by:** JulieAnn Murphy, Rincon Consultants ***Date:** March 2022 ☐ Continuation ■ Update

Shattuck Hotel, south and east elevations, view northwest. (Rincon Consultants, March 2022)

Detail of northeast corner of Shattuck Hotel. (Rincon Consultants, March 2022)



South elevation across Kittridge, view north. (Rincon Consultants, March 2022).

West elevation across Kittridge, view northeast. (Rincon Consultants, March 2022).

North elevation with Hink's Building (non-contributing) in foreground, view southeast. (Rincon Consultants, March 2022)

North elevation, view southeast. (Rincon Consultants, March 2022).

***Recorded by:** JulieAnn Murphy, Rincon Consultants ***Date:** March 2022 ☐ Continuation ■ Update

References

Architectural Resources Group

2014 Department of Parks and Recreation, 523 Form, 2200 Shattuck Avenue/2065 Kittredge Street. Architectural Resources Group, "2211 Harold Way Historical Resources Technical Report."

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2015 Department of Parks and Recreation, 523 Form, Shattuck Hotel. Document on file at Northwest Information Center, California State University, Sonoma.

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1978 Department of Parks and Recreation, 523 Form, Shattuck Hotel: Shattuck Avenue and Allston Way. Document on file at Northwest Information Center, California State University, Sonoma.

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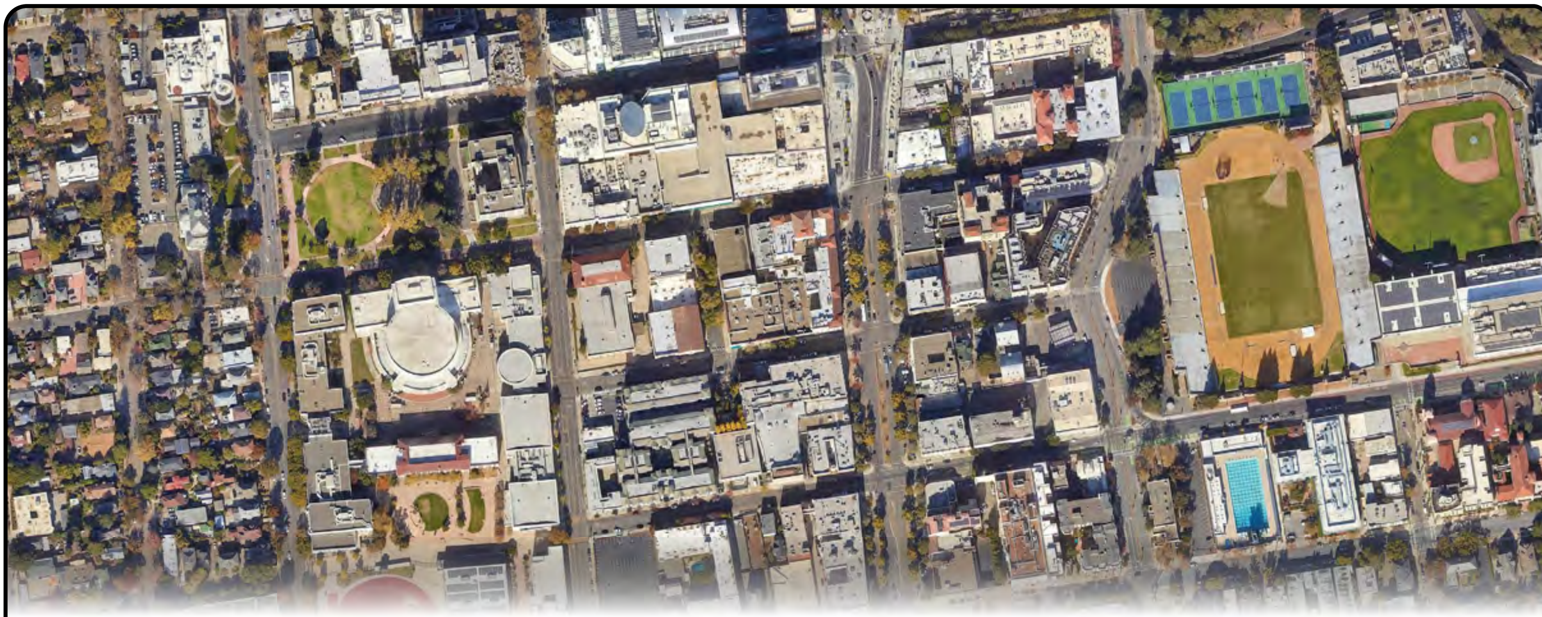
2004 Department of Parks and Recreation, 523 Form, Map Reference No. 01-21. Document on file at Northwest Information Center, California State University, Sonoma.

Appendix D

Traffic Impact Report



Traffic Impact Report

2065 Kittredge Street Residential Project

City of Berkeley

Prepared by:
Abrams Associates
1875 Olympic Boulevard, Suite 210
Walnut Creek CA 94596

Abrams Associates
TRAFFIC ENGINEERING, INC.

December 10, 2021

2065 Kittredge Street Residential Project
in the
City of Berkeley

TRAFFIC IMPACT REPORT

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1) EXECUTIVE SUMMARY

The 2065 Kittredge Street residential project would involve construction of an eight-story student apartment building. The project is proposed to include a total of 191 apartments and a single-level below grade parking garage that would accommodate 43 vehicles using parking lifts. The site has an existing three-story building that would be demolished as part of the project. The existing building has 95,000 square feet of space that has been previously occupied by service and office uses. **Figure 1** shows the location of the project and the surrounding roadway network. **Figure 2** shows the ground floor site plan for the project. Based on the trip generation forecasts the project would generate about 36 vehicle trips during the AM peak hour and about 38 trips during the PM peak hour. A detailed review of the project's design and an analysis conducted according to the City's guidelines indicated there would be no significant transportation impacts according to the City's significance criteria and, subject to City approval, no off-site traffic or transportation mitigations would be required.[1] The project would also have a less than significant impact on vehicle miles traveled in the area, according to the City's adopted standards.[2]

2) INTRODUCTION

This transportation impact analysis describes the existing and baseline conditions for transportation and circulation both with and without the proposed project. The study presents information on the regional and local roadway networks, the pedestrian and transit conditions, and provides an analysis of the effects on transportation facilities associated with the project. This study also describes the regulatory setting; the criterion used for determining the significance of environmental impacts; and summarizes potential environmental impacts and appropriate mitigation measures when necessary. This study has been conducted in accordance with the requirements and methodologies set forth by the City of Berkeley, Alameda County, Caltrans, and the applicable provisions of CEQA.

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[1] *Guide for Development of Traffic Impact Reports*, City of Berkeley Office of Transportation, Berkeley, CA, January, 2009.

[2] *General Plan Amendment: Vehicle Miles Traveled (VMT) for Transportation Impact Analysis under the California Environmental Quality Act (CEQA)*, Planning Commission Staff Report, Planning and Development Department, City of Berkeley, September 2, 2020.

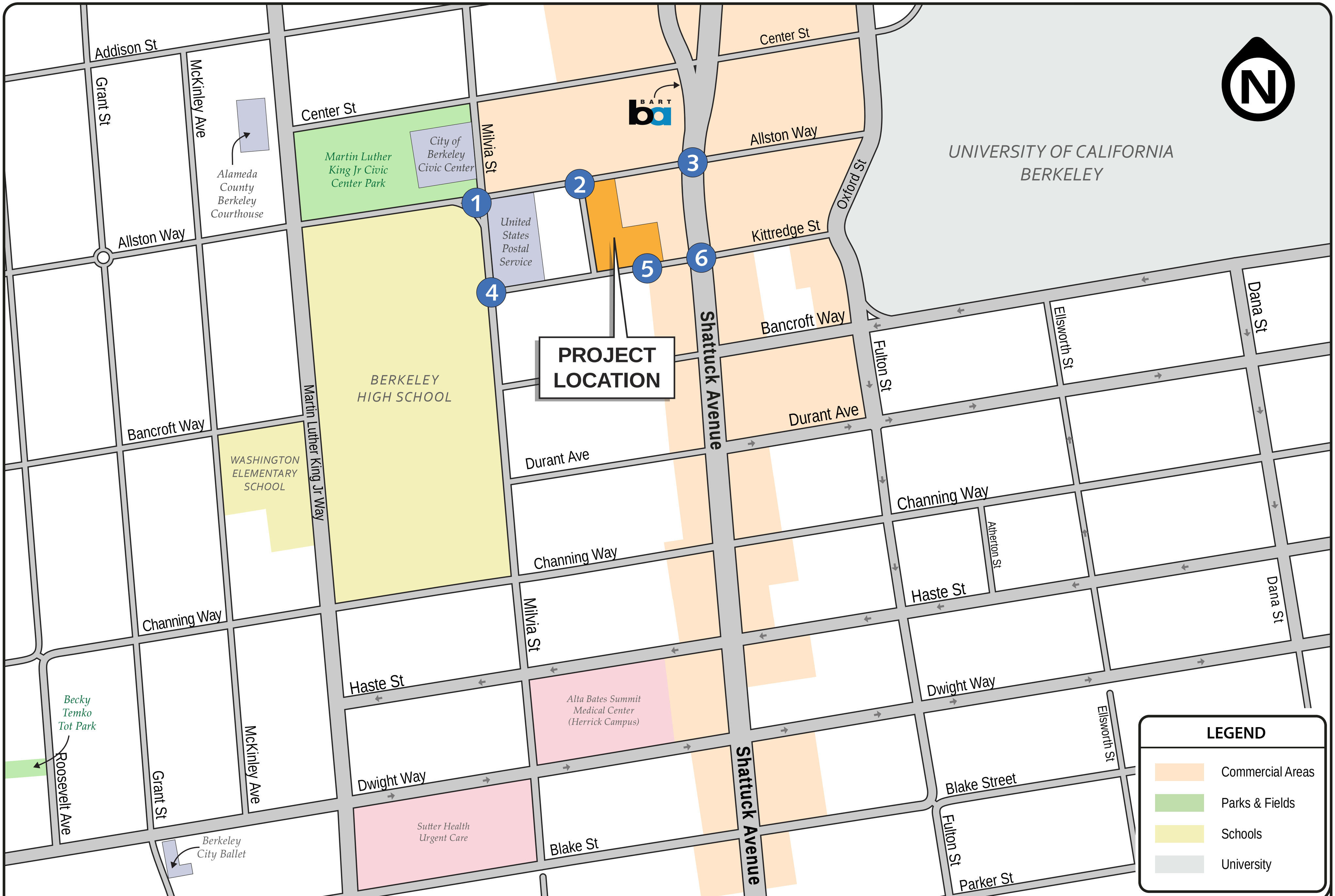

FIGURE 1 | PROJECT LOCATION AND PRELIMINARY STUDY INTERSECTIONS

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2065 Kittredge Street Project

City of Berkeley

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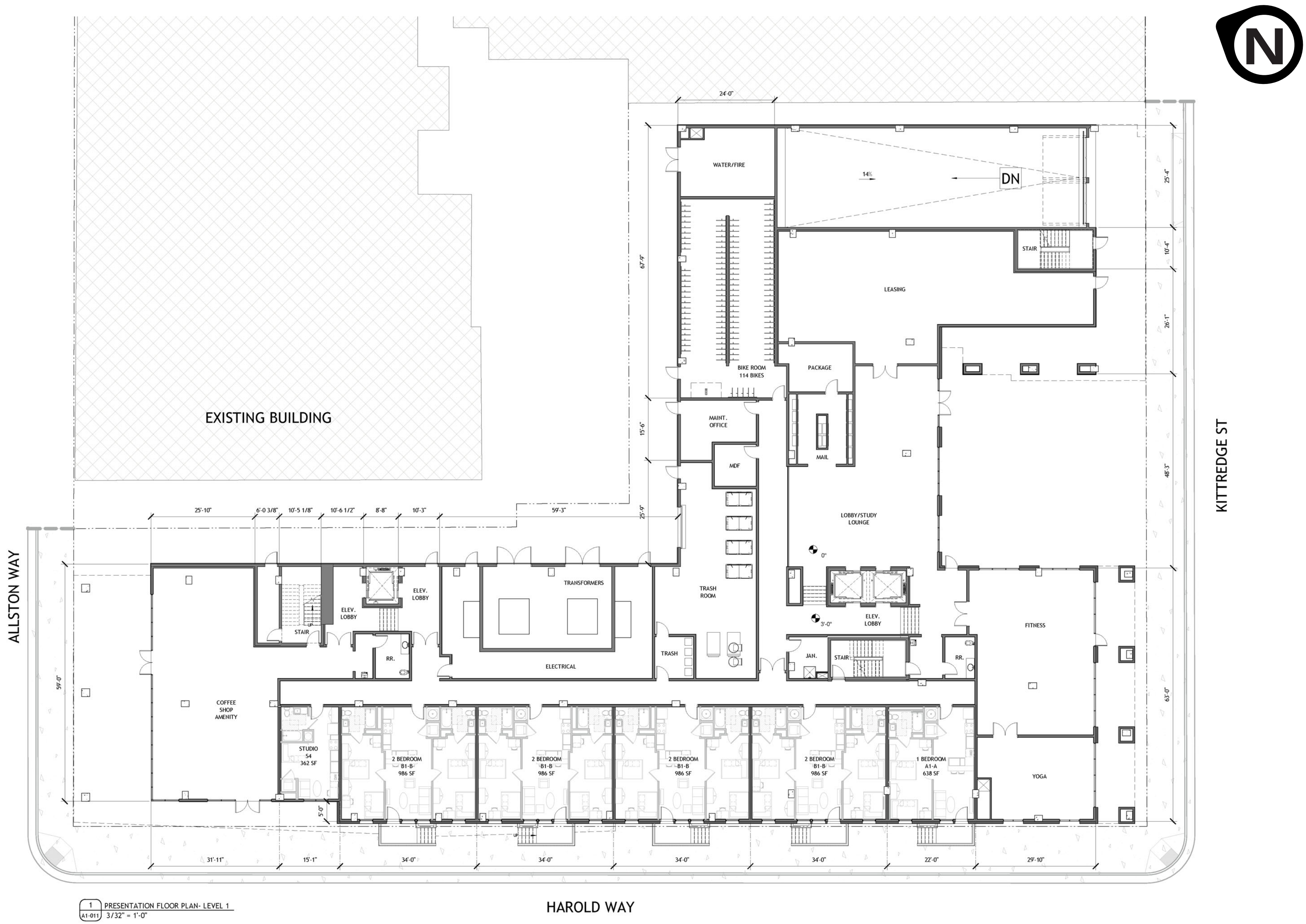

FIGURE 2 | SITE PLAN
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2065 Kittredge Street Project
City of Berkeley

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3) ENVIRONMENTAL SETTING

This section of the report describes the roadways, traffic conditions and other existing transportation characteristics in the vicinity of the project. The primary basis for the traffic operations portion of the analysis is the peak hour level of service at the key study intersections. In this report, these peak commute hours will be identified as the AM and PM peak hours.

3.3 Project Study Intersections

To provide a baseline for identification of impacts on the local roadway network, existing traffic operating conditions have been determined for the key local intersections that may be affected by the project. For this analysis six study intersections were selected in coordination with City staff based on the City's Guidelines for Development of Traffic Impact Reports and their potential to be impacted by the proposed project. The six study intersections are:

1. *Allston Way at Milvia Street*
2. *Allston Way at Harold Way*
3. *Allston Way at Shattuck Avenue*
4. *Kittredge Street at Milvia Street*
5. *Kittredge Street at the Project's Garage Entrance*
6. *Kittredge Street at Shattuck Way*

3.2 Traffic Analysis Scenarios

The study intersections were evaluated for the following four scenarios:

- Scenario 1: *Existing Conditions* – Level of Service (LOS) based on existing peak hour volumes and existing intersection configurations.
- Scenario 2: *Existing Plus Project* – Existing traffic volumes plus trips from the proposed project.
- Scenario 3: *Baseline (No Project) Conditions* – The Baseline scenario is based on pre-Covid volumes based on counts taken in 2018.
- Scenario 4: *Baseline Plus Project Conditions* – This scenario is based on the Baseline traffic volumes plus the trips that would be generated by the proposed project.

3.3 Existing Roadway Network

As shown on **Figure 1**, the roads that would be primarily affected by the project are Kittredge

Street, Allston Way, Milvia Street, Shattuck Avenue, and Harold Way. The following is a brief description of these roadways:

- **Kittredge Street –** Kittredge Street is only a few blocks long, extending east from Milvia Street to terminate to the east at Oxford Street. It serves school, residential and commercial traffic and a two lane street with stop controls at all intersections except Shattuck Avenue, where there is a traffic signal.

- **Allston Way –** Allston Way extends east from Berkeley Aquatic Park across town to terminate to the east at Oxford Street. It serves school, residential and commercial traffic and is one way westbound to the east of Shattuck Avenue.

- **Milvia Street** – Milvia Street is a two-lane collector street extending north from Russell Road to Yolo Avenue. It serves school, residential and commercial traffic and is designated as an important north-south bicycle boulevard.

- **Shattuck Avenue** – Shattuck Avenue is a four-lane arterial roadway extending south from Vine Street to terminate to the south at Telegraph Avenue in the City of Oakland. It serves school, residential and commercial traffic and is an important north-south travel route. It is designated as a major street and a primary transit route in the City's General Plan.

- **Harold Way –** Harold Way is a two lane roadway that extends just one block from Allston Way to Kittredge Drive. It serves school, residential and commercial traffic and forms the western boundary of the project site.

3.4 Accident History

Caltrans has established restrictions on the use of multi-way stop signs and the California Manual of Uniform Traffic Control Devices (MUTCD) provides detailed guidance on when multi-way stop applications and traffic signals are appropriate.[1] Caltrans' guidelines state that a traffic signal or all-way stop control shall be considered if: "*Five or more reported crashes, of types susceptible to correction by a traffic control signal, have occurred within a 12-month period, each crash involving personal injury or property damage apparently exceeding the applicable requirements for a reportable crash*". A detailed review of the accident history in the study area (back to 2012) was conducted using data available from the California Highway Patrol's Statewide Integrated Traffic Records System (SWITRS). This data is included in the technical appendix and verifies the existing accident history in the area would not warrant installation of additional traffic signals, multi-way stop control, or other safety measures.

[1] *California MUTCD*, Chapter 2B, Caltrans, Sacramento, CA, November 7, 2014.

3.5 Intersection Analysis Methodology

Existing operational conditions at the study intersection were evaluated according to the requirements set forth by the City of Berkeley. Analysis of traffic operations was conducted using the 6th Edition of the *Highway Capacity Manual* (*HCM*) Level of Service (LOS) methodology with Synchro software.[1]

Level of service is an expression, in the form of a scale, of the relationship between the capacity of an intersection (or roadway segment) to accommodate the volume of traffic and the traffic moving through it at any given time. The level of service scale describes traffic flow with six ratings ranging from A to F, with “A” indicating relatively free flow of traffic and “F” indicating stop-and-go traffic characterized by traffic jams.

As the amount of traffic moving through a given intersection or roadway segment increases, the traffic flow conditions that motorists experience rapidly deteriorate as the capacity of the intersection or roadway segment is reached. Under such conditions, there is general instability in the traffic flow, which means that relatively small incidents (e.g., momentary engine stall) can cause considerable fluctuations in speeds and delays that lead to traffic congestion. This near-capacity situation is labeled level of service (LOS) E.

Beyond LOS E, the intersection or roadway segment capacity has effectively been exceeded, and arriving traffic will exceed the ability of the intersection to accommodate it. **Table 1** summarizes the relationship between LOS, average control delay, and the volume to capacity ratio at signalized intersections. **Table 2** summarizes the relationship between LOS and delay at unsignalized intersections

For signalized intersections, The City of Berkeley’s LOS standards are based on the average delay for the entire intersection. The *HCM* methodology determines the capacity of each lane group approaching the intersection. The LOS is then based on average control delay (in seconds per vehicle) for the various movements within the intersection. A combined weighted average control delay and LOS are presented for the intersection. A summary of the HCM results and copies of the detailed HCM LOS calculations are included in the appendix to this report.

For unsignalized (all-way stop controlled and two-way stop controlled) intersections, the average control delay and LOS operating conditions are calculated by approach (e.g., northbound) and movement (e.g., northbound left-turn) for those movements that are subject to delay. Operating conditions for unsignalized intersections are presented for the worst approach.

---

[1] *6th Edition of the Highway Capacity Manual*, Transportation Research Board, Washington D.C., 2016.

TABLE 1
SIGNALIZED INTERSECTION LEVEL OF SERVICE DEFINITIONS

Level of Service	Description of Operations	Average Delay (sec/veh)	Volume to Capacity Ratio
A	Insignificant Delays: No approach phase is fully used and no vehicle waits longer than one red indication.	≤ 10	< 0.60
B	Minimal Delays: An occasional approach phase is fully used. Drivers begin to feel restricted.	> 10 to 20	> 0.61 to 0.70
C	Acceptable Delays: Major approach phase may become fully used. Most drivers feel somewhat restricted.	> 20 to 35	> 0.71 to 0.80
D	Tolerable Delays: Drivers may wait through no more than one red indication. Queues may develop but dissipate rapidly without excessive delays.	> 35 to 55	> 0.81 to 0.90
E	Significant Delays: Volumes approaching capacity. Vehicles may wait through several signal cycles and long vehicle queues from upstream.	> 55 to 80	> 0.91 to 1.00
F	Excessive Delays: Represents conditions at capacity, with extremely long delays. Queues may block upstream intersections.	> 80	> 1.00

SOURCES: *Highway Capacity Manual, Sixth Edition*, Transportation Research Board, 2016.

TABLE 2
UNSIGNALIZED INTERSECTION LEVEL OF SERVICE DEFINITIONS

Level of Service	Description of Operations	Average Delay (seconds/vehicle)
A	No delay for stop-controlled approaches.	0 to 10
B	Operations with minor delays.	> 10 to 15
C	Operations with moderate delays.	> 15 to 25
D	Operations with some delays.	> 25 to 35
E	Operations with high delays and long queues.	> 35 to 50
F	Operation with extreme congestion, with very high delays and long queues unacceptable to most drivers.	> 50

SOURCE: *Highway Capacity Manual, Sixth Edition*, Transportation Research Board, 2016.

3.6 Existing Intersection Capacity Conditions

The existing intersection geometry at the project study intersections is presented in **Figure 3**. The existing traffic volumes at these intersections for the weekday AM and PM peak hours are presented in **Figure 4**. Traffic counts at the intersection were conducted in December of 2021 when UC Berkeley was still in session. **Table 3** summarizes the associated LOS computation results for the existing weekday AM and PM peak hour conditions at these intersections. As shown in **Table 3**, all of the study intersections currently have acceptable conditions (LOS D or better). Please note the detailed LOS calculations are included in the appendix to this report**.**

3.7 Pedestrian and Bicycle Facilities

Bicycle paths, lanes and routes are typical examples of bicycle transportation facilities, which are defined by Caltrans as being in one of the following four classes:

Class I – Provides a completely separated facility designed for the exclusive use of bicyclists and pedestrians with crossing points minimized.
Class II – Provides a restricted right-of-way designated lane for the exclusive or semi-exclusive use of bicycles with through travel by motor vehicles or pedestrians prohibited, but with vehicle parking and cross-flows by pedestrians and motorists permitted.
Class III – Provides a right-of-way designated by signs or permanent markings and shared with pedestrians and motorists.
Class IV – Provides an adjacent bike lane or bikeway that is physically separated from motor vehicle traffic.

In the vicinity of the project Milvia Street is a Class III bike route and is designated as a bicycle boulevard with signage and markings encouraging motorists to share the road with bicyclists.

TABLE 3
EXISTING INTERSECTION LEVEL OF SERVICE CONDITIONS

INTERSECTION		CONTROL	PEAK HOUR	EXISTING	
				Delay	LOS
1	ALLSTON WAY & MILVIA STREET	Signalized	AM	16.9	B
			PM	17.7	B
2	ALLSTON WAY & HAROLD WAY	Side Street Stop	AM	9.3	A
			PM	9.8	A
3	ALLSTON WAY & SHATTUCK AVENUE	Signalized	AM	7.8	A
			PM	8.0	A
4	KITTREDGE STREET & MILVIA STREET	All Way Stop	AM	8.3	A
			PM	9.0	A
5	KITTREDGE STREET & PROJECT ACCESS	Side Street Stop	AM	N/A	N/A
			PM	N/A	N/A
6	KITTREDGE STREET & SHATTUCK AVENUE	Signalized	AM	7.9	A
			PM	10.0	B

SOURCE: Abrams Associates, 2021

NOTES: HCM LOS results are presented in terms of average intersection delay in seconds per vehicle.

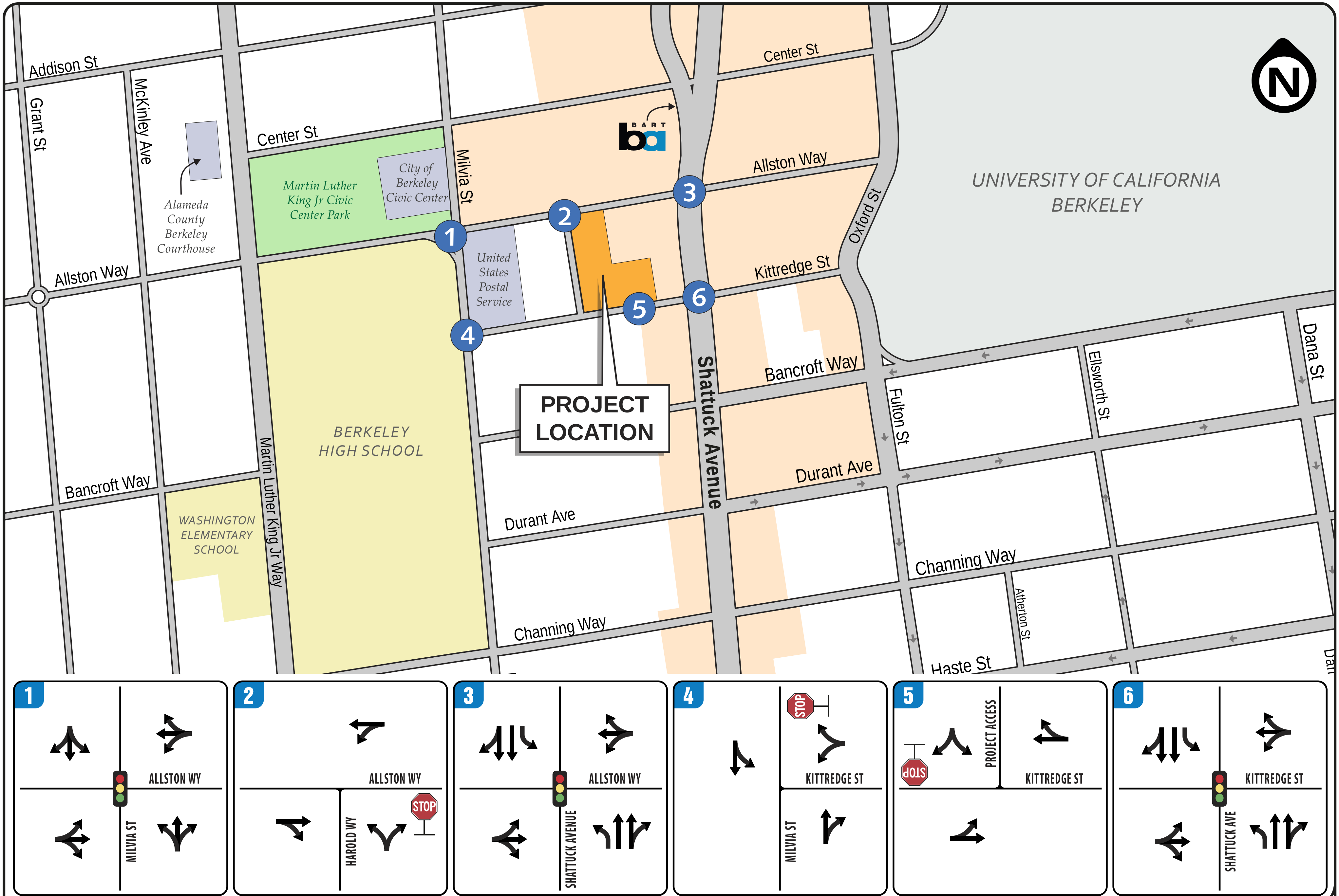

FIGURE 3 | EXISTING LANE CONFIGURATIONS

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2065 Kittredge Street Project

City of Berkeley

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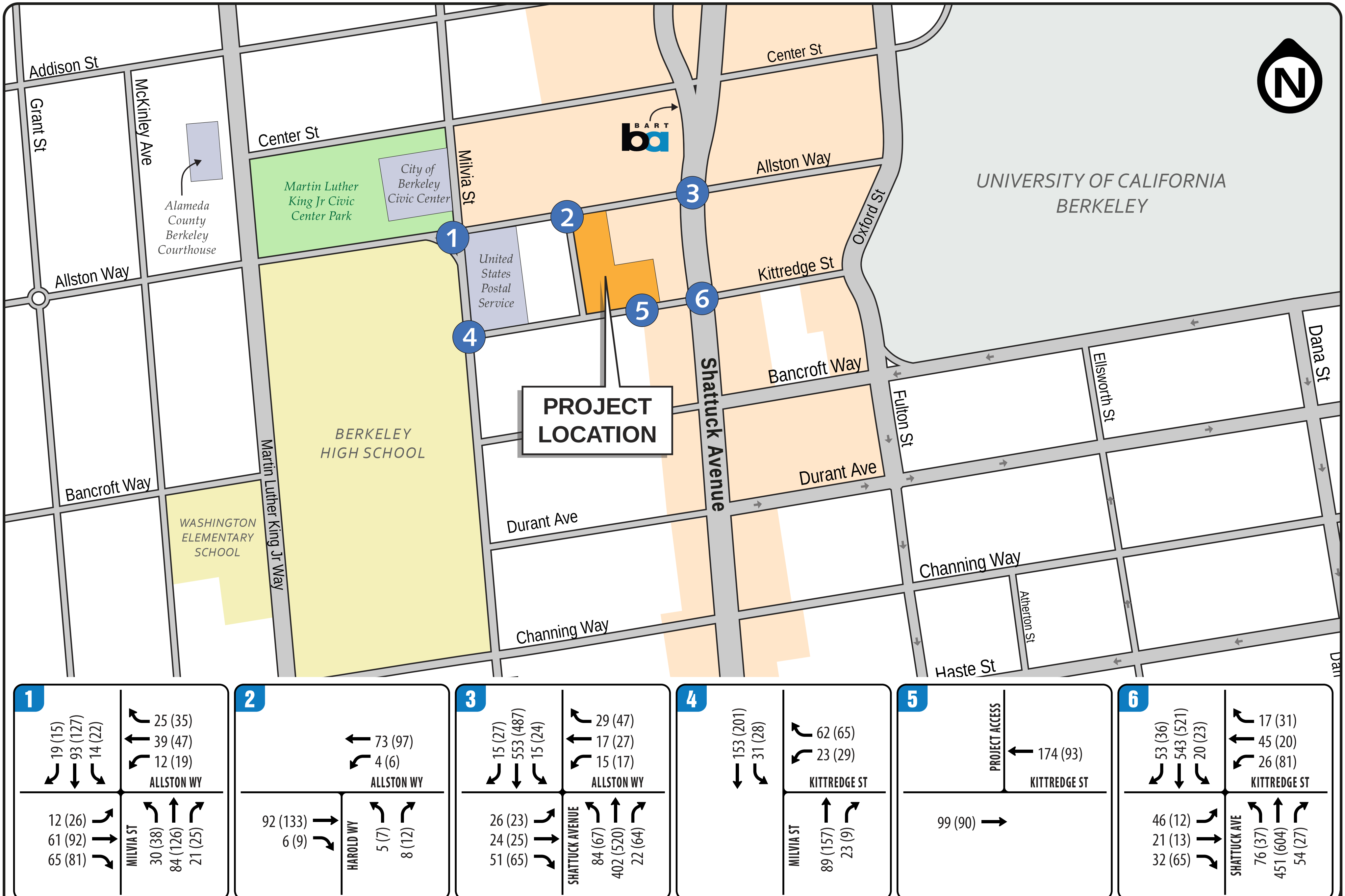

FIGURE 4 | EXISTING AM(PM) PEAK HOUR TRAFFIC VOLUMES

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2065 Kittredge Street Project

City of Berkeley

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3.8 Transit Service

The Downtown Berkeley BART station is located less than two blocks from the project site. This station is located on the Richmond-Fremont Line which connected to other destinations in the Bay Area at the MacArthur Station. There is also direct service to Downtown San Francisco as well as continuing service to Milbrae. There is also extensive bus transit service provided by Alameda-Contra Costa County Transit (AC Transit) at the BART Station. In addition to local bus routes 6, 18, 51B, and 79, the following special lines operate less than a block from the project:

800: (All Nighter) Richmond BART to Market St. and Van Ness Ave, S.F., via Macdonald Ave, San Pablo Ave, University Ave, Telegraph Ave and downtown Oakland. Returns via Market St. and West Oakland BART.
851: (All Nighter) Downtown Berkeley to Fruitvale BART via Southside Berkeley (UC campus), College Ave., Broadway, downtown Oakland, Webster St., Santa Clara Ave., Broadway, and Fruitvale Ave.
F: (Transbay) UC Campus to Transbay Temporary Terminal, San Francisco via Shattuck Ave, Adeline St and 40th St.

Please note the nearest bus stops are less than a block from the project site at Shattuck Avenue and Kittredge Street.

4) REGULATORY CONTEXT

Existing policies, laws and regulations that apply to the proposed project are summarized below.

4.1 State

The California Department of Transportation (Caltrans) has jurisdiction over State highways and any improvements to these roadways would require Caltrans' approval.

4.2 Local

***City of Berkeley General Plan* -** The Transportation and Circulation Element the City of Berkeley General Plan addresses the location and extent of existing and planned transportation routes, terminals, and other local public utilities and facilities. The General Plan identifies roadway and transit goals and policies that have been adopted to ensure that the transportation system of the City will have adequate capacity to serve planned growth. These goals and policies are intended to provide a plan and implementation measures for an integrated, multi-modal transportation system that will safely and efficiently meet the transportation needs of all economic and social segments of the City.

4.3 Significance Criteria

The City's level of service standard states that an impact is significant when the criteria are reduced from LOS A, B, C, or D to LOS E (with the addition of two (2) seconds of average delay) for signalized intersections. Intersections that exceed this service level threshold are considered to be impacted and should be considered for mitigation. Exceptions to the LOS D standard arise when the project is not expected to add more than two seconds at an intersection going from LOS D to LOS E or more than three seconds of delay at an intersection that is already operating at LOS E. In addition, it would also be considered a significant impact if a project would increase the volume to capacity (V/C) ratio by more than 0.01 at a signalized intersection that is already operating at LOS F. For unsignalized intersections, additional considerations are involved, including the number of vehicles on the critical approach, vehicles contributed by the proposed project, and signal warrant analysis. At an unsignalized intersection, mitigation is required if a movement is LOS F, the peak hour signal warrant is met, and a minimum of 10 vehicles are added to the critical movement. In this case the project has not been found to have any significant impacts but according to CEQA guidelines, a project would also have a significant impact if it would:

- Conflict with a plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, including transit, roadway, bicycle and pedestrian facilities.
- Would the project conflict with or be inconsistent with CEQA Guidelines Section 15064.3 subdivision (b)?
- Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment).
- Result in inadequate emergency vehicle access.

It should again be noted that this project has not been found to have any significant impacts according to CEQA and the above-mentioned criteria are presented for informational purposes.

5) IMPACTS AND MITIGATION MEASURES

5.1 Project Trip Generation

The vehicle trip generation for the project is shown in **Table 4**. The trip generation rates are based on the ITE rates for apartments in the center city core, close to rail transit (Land Use 221) taken from the 10th Edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual. The ITE trip rates for apartments are generally representative of apartment buildings with a mixture of one- and two-bedroom apartments, with studios sometimes included, for an average of no more than about 2 bedrooms per unit. For this project there are eleven three-bedroom units included, so for the purposes of the trip generation each of the three-bedroom units were counted as two units. Based on the trip generation forecasts the project would generate about 36 vehicle trips during the AM peak hour and 38 trips during the PM peak hour.

TABLE 4
TRIP GENERATION CALCULATIONS

Land Use	ITE Code	Size	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
ITE Apartment Rates - Trips per Unit	221		1.94	0.06	0.12	0.18	0.12	0.07	0.19
Project Trip Generation		**202 units[1]**	**392**	**11**	**25**	**36**	**23**	**15**	**38**

SOURCE: Institute of Transportation Engineers Trip Generation Manual (11th Edition).
NOTE: [1] The project is only proposing to include only 191 units but for the purposes of the trip generation calculations the eleven 3-bedroom units were counted as two units each.

5.2 Project Trip Distribution

The trip distribution assumptions have been based on the existing traffic count data including daily directional volume and peak-hour turning movements, the Alameda County travel demand model, and knowledge of the surrounding area such as commute patterns and the overall land use patterns in the area. **Figure 5** shows the project traffic that would be added at the project study intersections.

5.3 Existing Plus Project Intersection Capacity Conditions

This scenario evaluates the existing conditions with the addition of traffic from the proposed project. A comparison of the capacity calculations for the conditions with the addition of traffic from the project is shown in **Table 5**. **Figure 6** presents the existing plus project volumes used in the analysis. The corresponding LOS analysis calculation sheets are presented in the Traffic Analysis Appendix. As shown in **Table 5**, all of the study intersections would continue to have acceptable conditions (LOS D or better) during the weekday AM and PM peak hours. Therefore, the addition of traffic to these intersections would not be considered a significant impact according to City of Berkeley guidelines.

5.4 Baseline Intersection Capacity Conditions

For background conditions the pre-Covid volumes from traffic counts taken in 2018 were used. These were substantially higher than the existing traffic counts and represent a conservative estimate of post-pandemic conditions. **Figure 7** presents the resulting baseline volumes at each of the project study intersections **Table 5** summarizes the LOS results for the Baseline and Baseline Plus Project weekday AM and PM peak hour conditions. The corresponding LOS analysis calculation sheets are presented in the *Traffic Analysis Appendix*. As shown in **Table 5**, all of the study intersections currently have acceptable conditions (LOS D or better) during the weekday AM and PM peak hours. Please note the detailed LOS calculations are included in the technical appendix to this report.

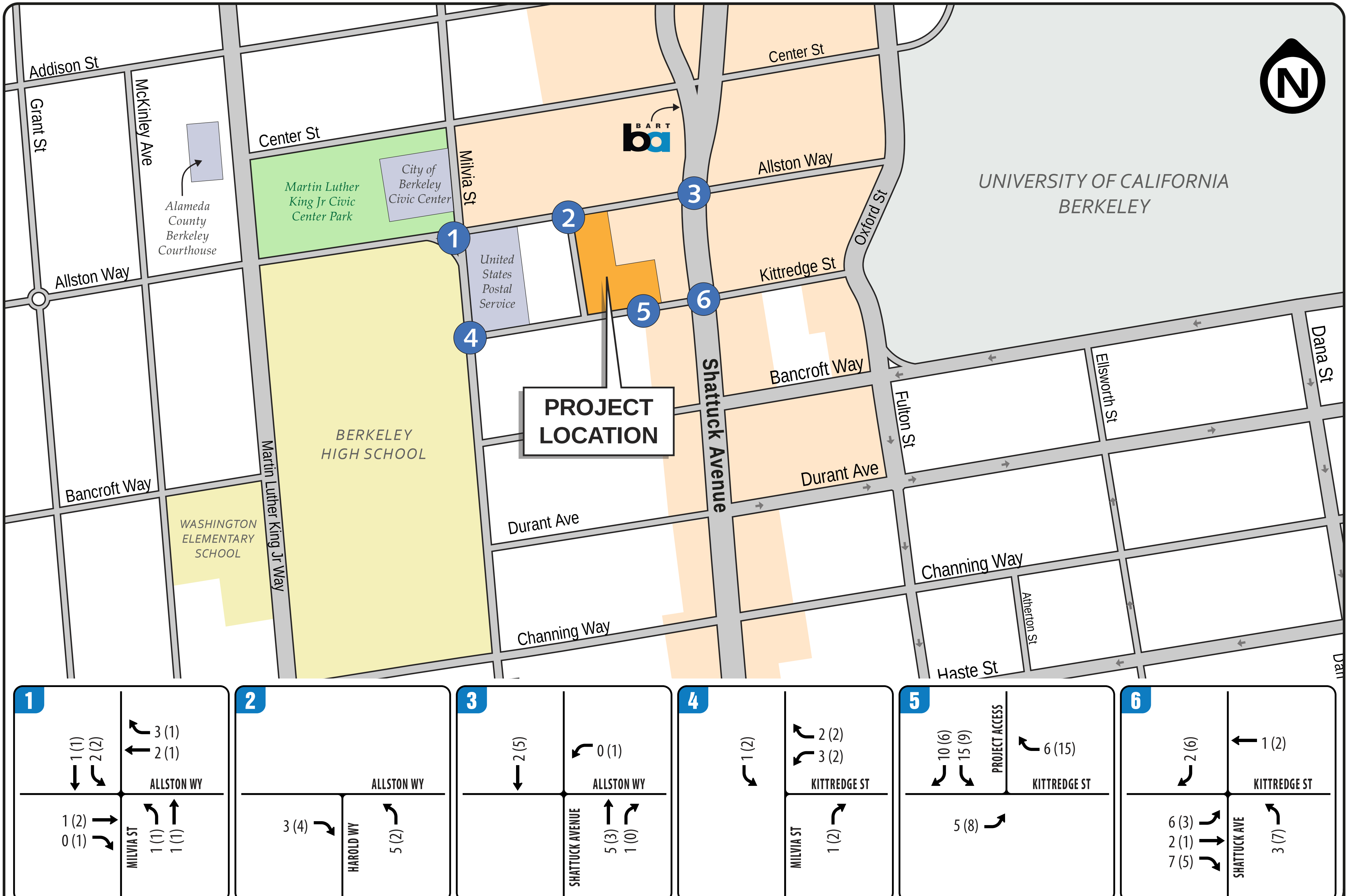

FIGURE 5 | PROJECT AM(PM) PEAK HOUR TRIPS

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2065 Kittredge Street Project

City of Berkeley

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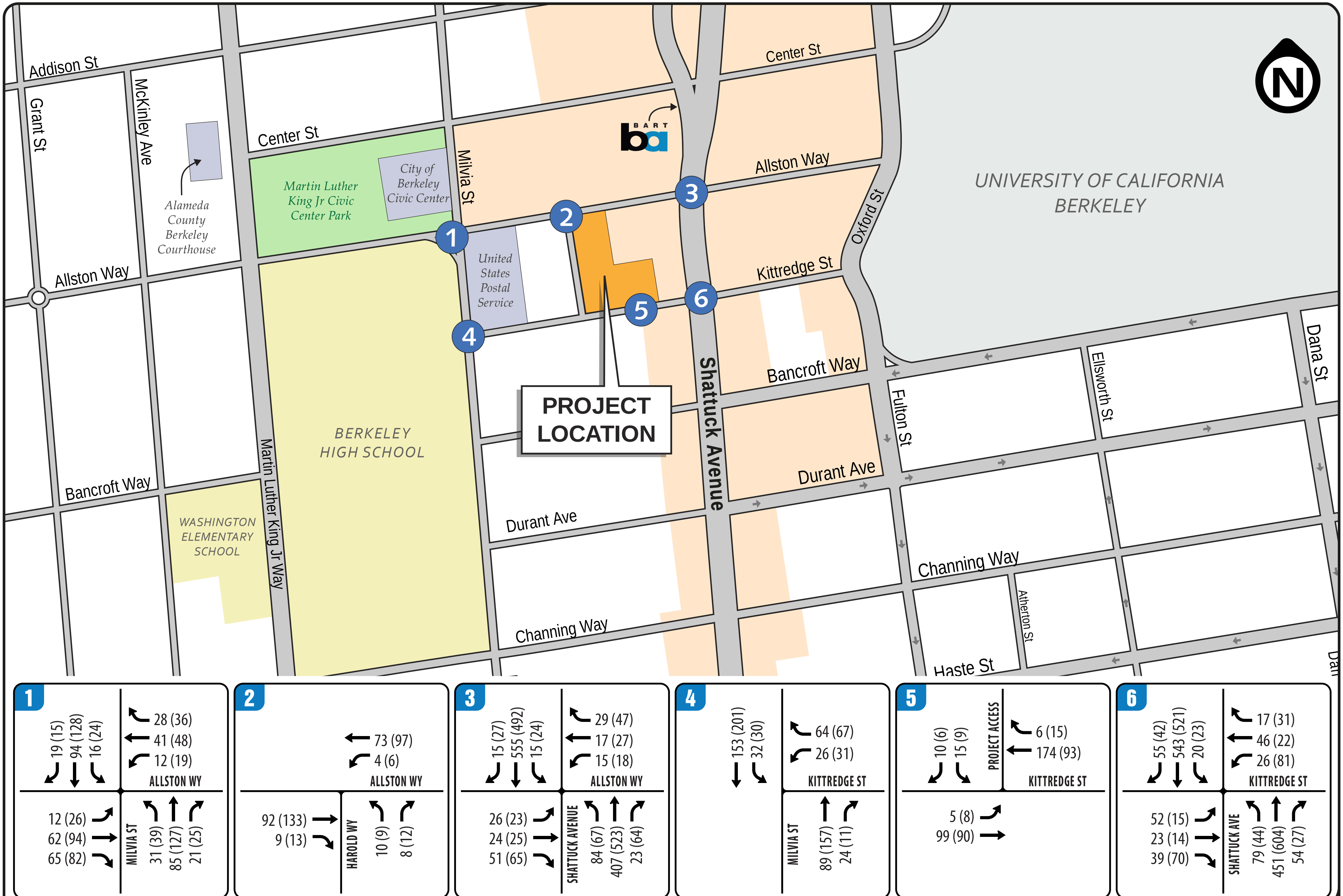

FIGURE 6 | EXISTING PLUS PROJECT AM(PM) PEAK HOUR TRAFFIC VOLUMES

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2065 Kittredge Street Project

City of Berkeley

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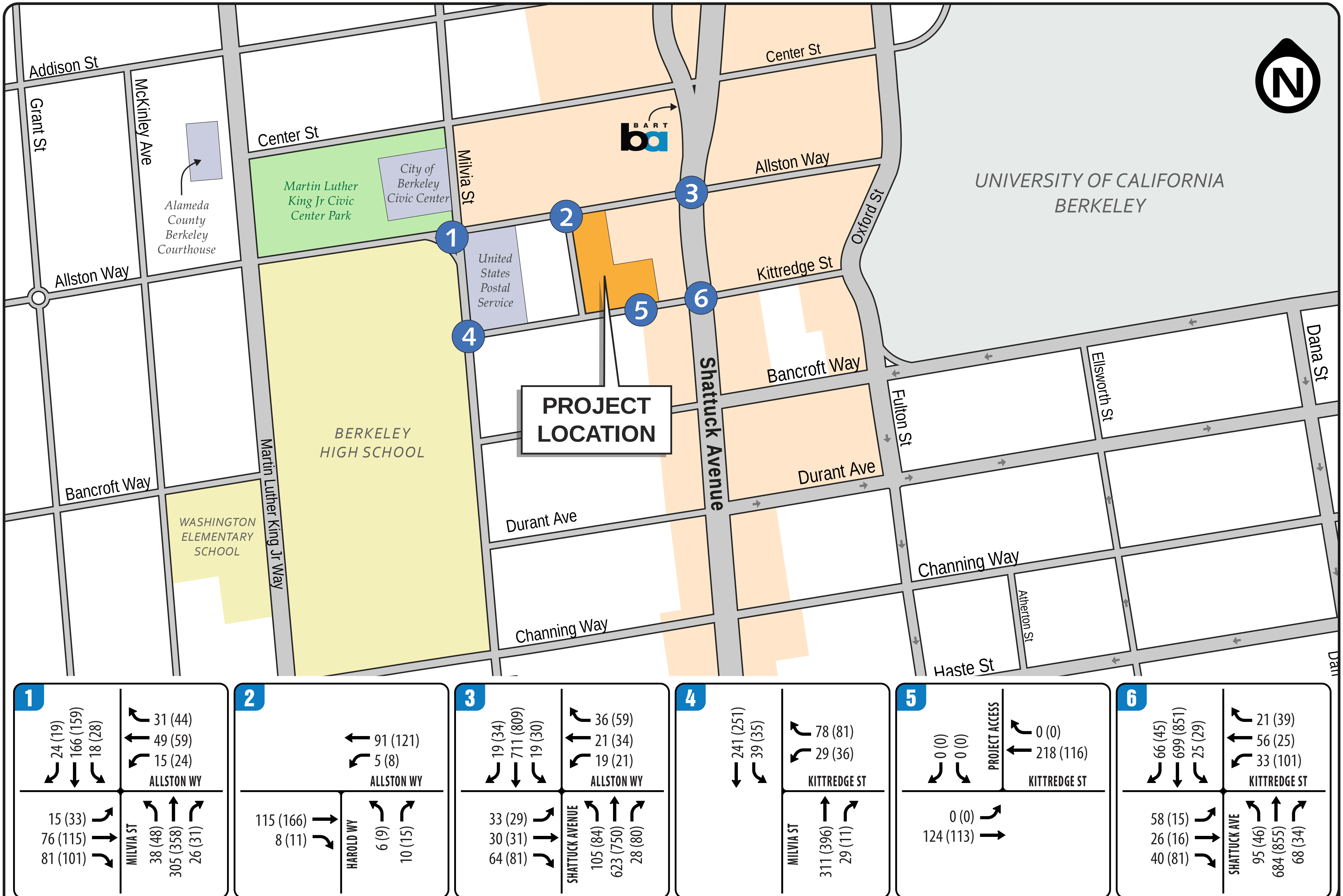

FIGURE 7 | BASELINE AM(PM) PEAK HOUR TRAFFIC VOLUMES

TRAFFIC IMPACT REPORT

2065 Kittredge Street Project

City of Berkeley

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TABLE 5
EXISTING PLUS PROJECT INTERSECTION LEVEL OF SERVICE CONDITIONS

INTERSECTION		CONTROL	PEAK HOUR	EXISTING		EXISTING PLUS PROJECT	
				Delay	LOS	Delay	LOS
1	ALLSTON WAY & MILVIA STREET	Signalized	AM	16.9	B	17.0	B
			PM	17.7	B	17.7	B
2	ALLSTON WAY & HAROLD WAY	Side Street Stop	AM	9.3	A	9.5	A
			PM	9.8	A	9.9	A
3	ALLSTON WAY & SHATTUCK AVENUE	Signalized	AM	7.8	A	7.8	A
			PM	8.0	A	8.0	A
4	KITTREDGE STREET & MILVIA STREET	All Way Stop	AM	8.3	A	8.3	A
			PM	9.0	A	8.9	A
5	KITTREDGE STREET & PROJECT ACCESS	Side Street Stop	AM	N/A	N/A	10.5	B
			PM	N/A	N/A	9.8	A
6	KITTREDGE STREET & SHATTUCK AVENUE	Signalized	AM	7.9	A	8.2	A
			PM	10.0	B	10.1	B

SOURCE: Abrams Associates, 2021

NOTES: HCM LOS results are presented in terms of average intersection delay in seconds per vehicle.

TABLE 6
BASELINE PLUS PROJECT INTERSECTION LEVEL OF SERVICE CONDITIONS

INTERSECTION		CONTROL	PEAK HOUR	BASELINE		BASELINE PLUS PROJECT	
				Delay	LOS	Delay	LOS
1	ALLSTON WAY & MILVIA STREET	Signalized	AM	16.2	B	16.3	B
			PM	17.4	B	17.5	B
2	ALLSTON WAY & HAROLD WAY	Side Street Stop	AM	9.6	A	9.7	A
			PM	10.2	B	10.3	B
3	ALLSTON WAY & SHATTUCK AVENUE	Signalized	AM	8.0	A	7.9	A
			PM	8.8	A	8.8	A
4	KITTREDGE STREET & MILVIA STREET	All Way Stop	AM	10.9	B	10.9	B
			PM	12.2	B	12.3	B
5	KITTREDGE STREET & PROJECT ACCESS	Side Street Stop	AM	N/A	N/A	11.0	B
			PM	N/A	N/A	10.1	B
6	KITTREDGE STREET & SHATTUCK AVENUE	Signalized	AM	8.7	A	9.0	A
			PM	10.8	B	10.9	B

SOURCE: Abrams Associates, 2021

NOTES: HCM LOS results are presented in terms of seconds per vehicle.

5.5 Baseline *Plus Project* Intersection Capacity Conditions

The Baseline plus proposed project traffic forecasts were developed by adding project-related traffic to the baseline traffic volumes. As noted above, **Table 6** summarizes the LOS results for the Baseline Plus Project weekday AM and PM peak hour conditions (i.e. the existing roadway network). **Figure 8** presents the resulting baseline plus project volumes at each of the project

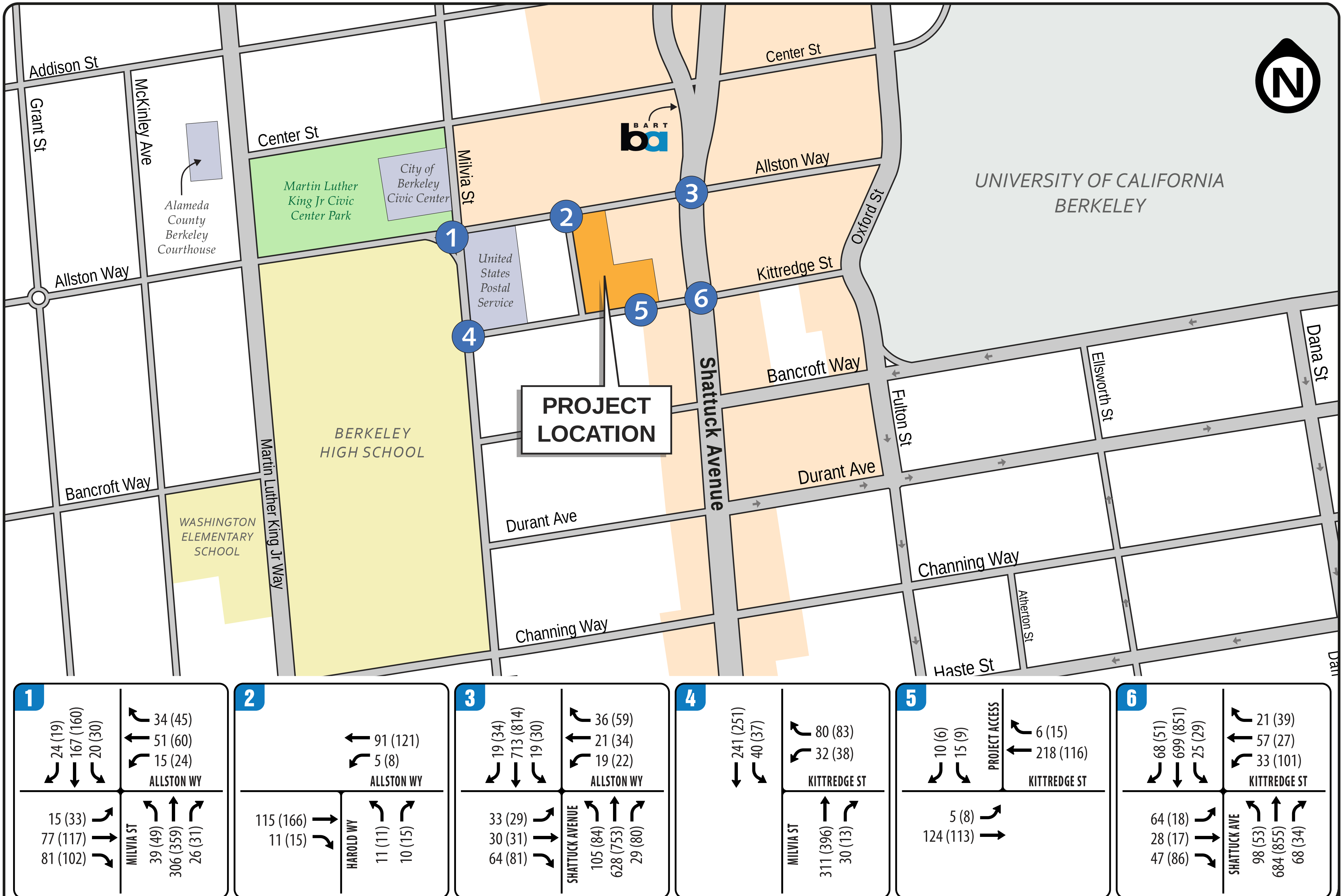


FIGURE 8 | BASELINE PLUS PROJECT AM(PM) PEAK HOUR TRAFFIC VOLUMES

TRAFFIC IMPACT REPORT

2065 Kittredge Street Project

City of Berkeley

Abrams Associates
TRAFFIC ENGINEERING, INC.

study intersections. Please note that the corresponding LOS analysis calculation sheets are presented in the appendix. As shown in **Table 6**, all of the study intersections would continue to have acceptable conditions (LOS D or better) during the weekday AM and PM peak hours and the addition of project traffic to these intersections would not be considered a significant impact according to the standards established by the City of Berkeley.

5.6 Internal Circulation and Access

No site circulation or access issues have been identified that would cause any traffic safety issues or any unusual traffic congestion or delay. Accident records for surrounding streets within a block of the project site and for each of the study intersections are included in the technical appendix to this report.

5.7 Parking

This section discusses the City of Berkeley's zoning and estimated parking demand for the project. Section 23E.56 of the Berkeley Municipal Code specifies that no parking spaces are required for projects within the downtown specific plan area. The code also specifies that occupants of residential units without parking shall not be entitled to receive parking permits under the Residential Permit Parking Program. In addition, all use permits issues shall be subject to a condition of approval requiring payment of a Transportation Services Fee if and when adopted. Please note the BMC sections that apply to this site do not require bicycle parking for residential uses. It should also be noted that there are draft bicycle parking standards that have been proposed that, once approved, would increase the bicycle parking requirements for the project. Based on the draft standards the project would require 194 long term bicycle parking spaces and also 15 short term spaces.

Parking Demand in Berkeley - For this location on a major bus route the parking demand would be less than the typical ITE rate in the Parking Generation Manual. This is based on many of the same characteristics that are discussed in the trip generation section. The availability of transit, the use of bicycles, and the attractiveness of walking in a mixed-use environment clearly results in reduced vehicle trip generation and an associated reduction in the need for parking. Since Berkeley has numerous opportunities for public transportation and the apartment residents are not all expected to have personal vehicles, it is anticipated that a substantial portion of all travel will occur by walking, bicycling, and through the use of public transit. Please note in addition to being less than two blocks from a BART station there are bus stops near the site that include access to local routes as well as transbay and all-nighter bus routes.

Summary of Findings on Parking - Based on these the above factors, the residential parking could still meet the City's zoning requirements, subject to approval by the City. With an approved use permit the zoning could allow the project to proceed with the proposed 43 space parking garage. The following are considerations that may affect the parking demand and shortfall:

1) The availability of transit has been shown to result in a significant reduction in the demand for parking.[1] The Downtown Berkeley BART station is located less than two blocks from the site. This station is located on the Richmond-Fremont Line which connects to other destinations in the Bay Area, including San Francisco, at the MacArthur Station. There is also extensive bus transit service provided by Alameda-Contra Costa County (AC) Transit at the BART Station. Please note the nearest bus stops are less than a block from the site at Shattuck Avenue and Kittredge Street. Therefore, for this project it is anticipated that a higher portion of travel will occur by walking and through the use of public transit.[2] As a result, it is also expected that some of the apartment residents will forego owning a car, or having an extra car, because of the close proximity to transit.[3]

2) The project is proposing to exceed the requirements for on-site bicycle parking.

3) There are numerous existing car sharing locations in the area.

5.8 Pedestrian and Bicycle Conditions

The proposed project would not generate a significant increase in pedestrian traffic in the area (in comparison to the existing volumes) given the size of the proposed project. Based on ITE data and data from MTC's Bay Area Travel Survey for projects within 1/2 mile of a BART station during the peak commute hours the project would be forecast to generate approximately 21 transit trips, 11 bicycle trips and 18 pedestrian trips. In addition to the relatively low vehicle trip generation, the proposed project would not be forecast to significantly impact or change the design of any existing pedestrian facilities and should not create any new safety problems in the area.

The proposed project would also not significantly impact any existing bicycle facilities. The project will add some pedestrians and bicyclists who will utilize sidewalks and bicycle facilities in the area. Please note there are existing sidewalks and crosswalks along the route from the project to the BART station. In relation to the existing conditions, the proposed project would not cause substantial changes to the pedestrian or bicycle traffic in the area and would not significantly impact or require changes to the design of any existing bicycle or pedestrian facilities.

[1] *Evaluating the Impact of Transit Service on Parking Demand and Requirements*, Transportation Research Board, Washington D.C., 2010.
[2] *Trip and Parking Generation at Transit-Oriented Developments: Five US Case Studies*, University of Utah, Salt Lake City, UT, 2016.
[3] *Effects of TOD on Housing, Parking, and Travel*, Transportation Research Board, Washington D.C., 2010.

5.9 Transit

The proposed project would not interfere with any existing bus routes and would not remove or relocate any existing bus stops. The proposed Project also would not conflict with any transit plans or goals of the City of Berkeley. Based on the size of the project, it is not forecast to cause a degradation of the level of service (or a significant increase in delay) on any roadway segments currently being utilized by bus transit in the area and, as such, no significant impacts to transit are expected.

5.10 Vehicle Miles Traveled

The vehicle miles traveled (VMT) in an area is one performance measure that can be used to quantify potential changes in travel from a project. This letter presents the extent of the VMT-related transportation impacts forecast to be caused by the Project. VMT is a particularly useful metric for evaluating the impacts of growth on greenhouse gas (GHG) emissions because it can be used to estimate fuel consumption by motor vehicles. Increases in VMT cause proportional increases in greenhouse gas emissions and air pollution. The Office of Planning and Research (OPR) released their final guidelines in a Technical Advisory on Evaluating Transportation Impacts in CEQA, dated December 2018. This analysis is based on the City of Berkeley's adopted guidelines as set forth in a staff report to the planning commission on September 2, 2020.[1]

VMT is typically estimated using an area-wide travel demand model from a regional transportation agency that calculates VMT based on the number of vehicles multiplied by the typical distance traveled by each vehicle originating from or driving to a certain area. The volume of traffic and distance traveled depends on land use types, density, and location as well as the existing and planned future supporting transportation system, including availability of public transportation. A travel demand model attempts to represent this relationship when forecasting vehicle trips and VMT.

This analysis uses the Alameda County Transportation Commission (ACTC) Travel Demand Model data on VMT per capita for various areas within the City of Berkeley. The Travel Demand Model divides areas within ACTC's jurisdiction into transportation analysis zones, or TAZs. TAZs are used in transportation planning models for transportation analysis and other planning purposes. The apartments and commercial space proposed to be built by the Project would be expected to have similar VMT as other developments in the same TAZ. The VMT per resident and per employee estimated by the ACTC Travel Model for the Project's TAZ would therefore be assumed represent the approximate VMT that would be generated by the Project as well.

[1] *General Plan Amendment: Vehicle Miles Traveled (VMT) for Transportation Impact Analysis under the California Environmental Quality Act (CEQA)*, Planning Commission Staff Report, Planning and Development Department, City of Berkeley, September 2, 2020.

As per Attachment 1 of the September 2, 2020 Planning Commission staff report, the proposed project at 2136 San Pablo Avenue is located in a transit priority area (TPA) and also is within an area with an average VMT per resident and per worker that is at least 15% below the respective Bay Area averages. OPR's 2018 Technical Advisory also states the following: "*Presumption of Less Than Significant Impact Near Transit Stations - Proposed CEQA Guideline Section 15064.3, subdivision (b)(1), states that lead agencies generally should presume that certain projects (including residential, retail, and office projects, as well as projects that are a mix of these uses) proposed within ½ mile of an existing major transit stop or an existing stop along a high quality transit corridor will have a less-than-significant impact on VMT*." However, the City of Berkeley VMT analysis guidelines specify that the presumption of a less-than-significant VMT impact might not be appropriate if the project:

- Has a floor area ratio (FAR) of less than 0.75.
- Includes more than 200,000 square feet of office or commercial space.
- Includes more parking supply than the project's estimated demand
- Is inconsistent with the City's General Plan, an applicable Specific Plan, or an applicable Sustainable Communities Strategy (as determined by the City, with input from the MTC).
- Replaces affordable residential units with market-rate residential units.
- Has project-specific or location-specific information that indicates that the project will generate significant levels of VMT.

In this case none of the above factors would apply to the proposed project. The project is located less than two blocks from the Downtown Berkeley BART station and is located near bus stops for numerous bus lines at the intersection of Shattuck Avenue and Kittredge Street. The project also meets the other screening criteria described above and therefore, subject to City approval, this project would be assumed to have a less than significant impact on VMT in the area.

5.11 Summary of Transportation Issues and Potential Improvement Measures

TR-1 Demolition and construction activities associated with the proposed project would result in an increase in traffic to and from the site and would require an appropriate construction management plan developed and approved by the City of Berkeley, consistent with the already existing and broadly applicable standard conditions that apply to projects similar in nature.

The increase in traffic as a result of demolition and construction activities associated with the proposed project has been quantified assuming single phase construction period of 12 months.

Heavy Equipment

Heavy equipment transport to and from the site could cause traffic impacts in the vicinity of the project site during construction. However, each overweight/oversized load would be required to obtain all necessary permits, which would include conditions. Prior to issuance of grading and building permits, the project applicant would be required to submit and have approved a Traffic Control Plan.

The requirements within the Traffic Control Plan include, but are not limited to, the following: truck drivers would be notified of and required to use the most direct route between the site and the freeway, as determined by the City Traffic Engineering Department; all site ingress and egress would occur only at the main driveway to the project site and construction activities may require temporary traffic controls as determined by the City Engineer. Please note construction traffic will be directed to use Adeline Street as the City has a goal of minimizing construction traffic on local streets. Specifically, designated travel routes for large vehicles would be monitored and controlled by flaggers for large construction vehicle ingress and egress. Any debris and mud caused by trucks would be monitored daily and may require instituting a street cleaning program. In addition, several loads of heavy equipment being hauled to and from the site each month would be short-term and temporary.

Employees

The weekday work is expected to begin around 7:00 AM and end around 4:00 PM. The construction worker arrival peak would occur between 6:30 AM and 7:30 AM, and the departure peak would occur between 4:00 PM and 5:00 PM. These peak hours are slightly before the citywide commute peaks. It should be noted that the trips generated during construction would be temporary

Based on past construction of similar projects, construction workers could require parking for up to 40 vehicles during the peak construction period. Additionally, deliveries, visits, and other activities may generate peak non-worker parking demand of 5 to 10 trucks and automobiles per day. Therefore, up to 50 vehicle parking spaces may be required during the peak construction period for the construction employees. It should be noted the developer and their construction team are required to provide off-street parking for their employees on the site, if possible. Furthermore, the Traffic Control Plan requires that if construction employee parking cannot be provided on the project site then other provisions will need to be made for off-site parking, subject to approval of the City Traffic Engineering Department.

Construction Material Import

The project would also require the importation of construction material, including raw materials for the building pads, the buildings, the parking area, and landscaping. Based on past construction of similar projects, importing this material is estimated to require substantial amounts of truck traffic. Under the provisions of the Traffic Control Plan, if importation and exportation of material becomes a traffic nuisance, then the City Engineer may limit the hours the activities can take place.

Impacts of Construction on Pedestrians and Bicyclists

The project would most likely require temporary closures of sidewalks and/or vehicle lanes adjacent to the site for safety. This would require a detailed plan for detouring pedestrian and bicycle traffic. This plan will need to be reviewed and approved by the City Engineer. The analysis of traffic operations at the driveway indicates there would be no significant changes to the traffic volumes, delay, or safety on the study roadways with the addition of traffic from the proposed project. The City requires permission to close sidewalks and an acceptable traffic control plan for closures to be permitted. In general, the pedestrian and bicycle operations in the area would not be expected to change significantly during construction beyond the addition of truck traffic to the area.

Traffic Control Plan

The Traffic Control Plan would indicate how parking for construction workers would be provided during construction and ensure a safe flow of traffic in the project area during construction. This analysis assumed construction of the entire project in one phase to identify the potential worst-case traffic effects. Each phase will be subject to a Traffic Control Plan and oversight by the City Engineer and construction traffic is not forecast to exceed the post construction traffic conditions created by the proposed project. As a result, the potential construction traffic impacts have been adequately addressed through the project impact analysis. The goal of the conditional requirements of the City is to make construction impacts less than significant. There is some increase in traffic associated with all construction projects, however the required traffic management plan is intended to ensure the effects of construction are acceptable to the City. Therefore, the demolition and construction activities associated with the proposed project or its individual phases would be expected to result in a ***less-than-significant*** impact.

<u>Mitigation Measure(s)</u>
None required.

TR-2 Impacts related to site access and circulation.

Based on a review of the proposed site plan it was determined that the internal garage circulation should function well and should not cause any safety or operational problems. The project site design has been required to conform to City design standards and is not expected to create any significant impacts to pedestrians or bicyclists. Therefore, impacts related to site access and circulation would be ***less-than-significant***.

<u>Mitigation Measure(s)</u>
None required.

TR-3 Impacts regarding emergency vehicle access on and surrounding the proposed project site.

Sufficient emergency access is determined by factors such as number of access points, roadway width, and proximity to fire stations. The land use plan for the proposed project would be subject to approval of the fire department. All lane widths adjacent to the project would meet the minimum width that can accommodate an emergency vehicle; therefore, the width of the roadways would be adequate. Therefore, the development of the proposed project is expected to have ***less-than-significant*** impacts regarding emergency vehicle access.

Mitigation Measure(s)
None required.

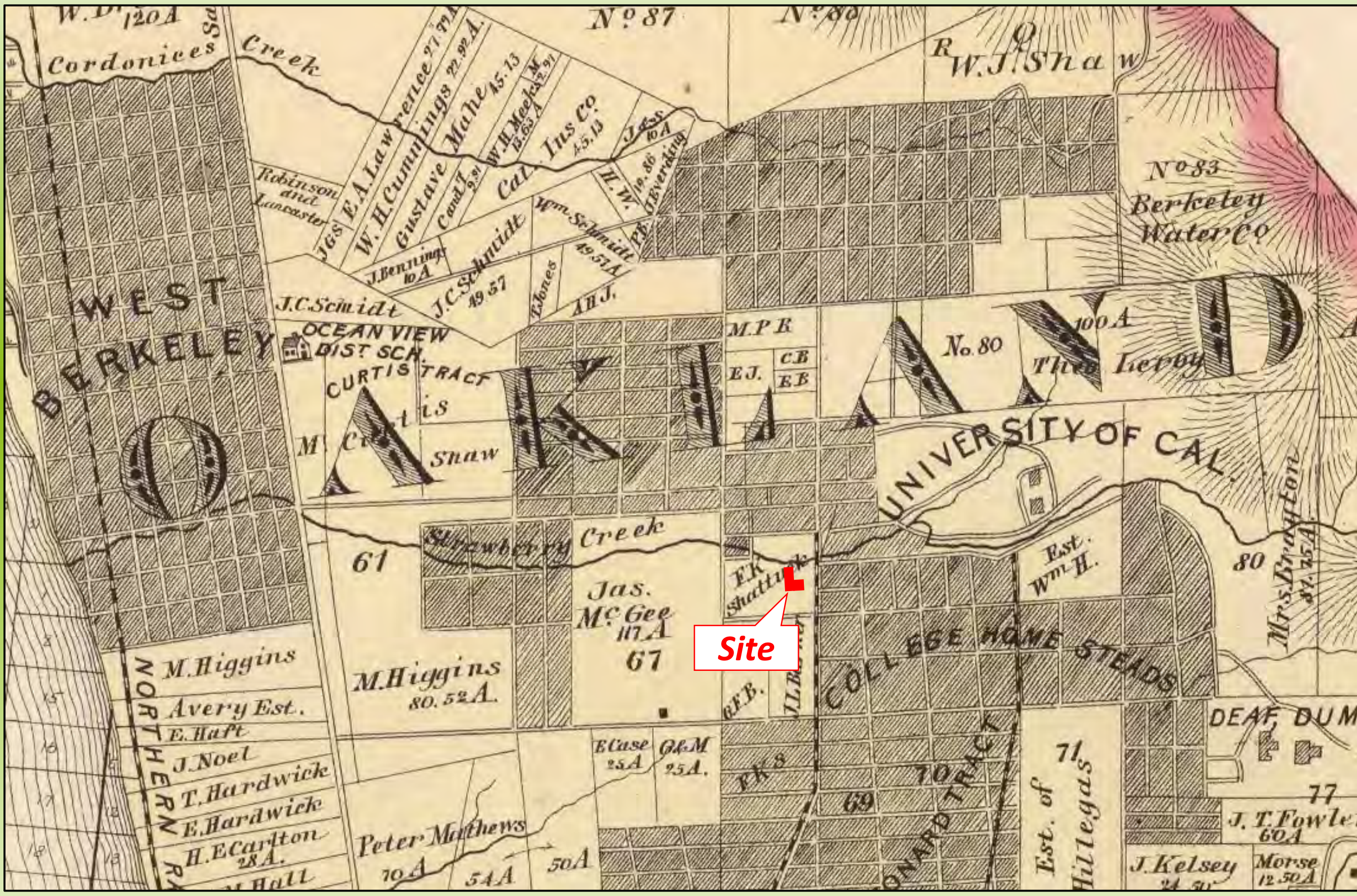
5.11 Mitigations

Based on this analysis there would be no significant transportation impacts according to established standards and no off-site traffic or transportation mitigations would be required.

Appendix E

Geotechnical Investigation Report

Geotechnical Investigation Report
Berkeley Plaza Project
2211 Harold Way
Berkeley, California



Map Source: Thompson & West, 1878

SUBMITTED TO:

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August 24, 2021 DRAFT

A3GEO

August 24, 2021

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Geotechnical Investigation Report
Berkeley Plaza Project
2211 Harold Way
Berkeley, California

Dear Mr. Sugiyama:

This report presents the results of our geotechnical investigation for the proposed Berkeley Plaza project at 2211 Harold Way in Berkeley, California. We obtained information about the Project through discussions with you and our review of preliminary floor plans for the building prepared by Niles Bolton Associates. Our work was performed in accordance with our 16 February 2021 proposal and 4 March 2021 Consulting Services Agreement.

Based on review of the information available at this time, we understand the Project will consist of five stories of Type-IIIA construction (wood) over three stories of Type-IA (podium) with a partial basement to house 42 parking spaces. The subject site is presently occupied by buildings with a contiguous single-story basement which is significantly larger, in plan, than the proposed partial basement. This report includes geotechnical recommendations for spread footings and structural mat foundations. We anticipate that foundations within the area of the partial basement will likely be lower (in elevation) than the existing basement. The bottom elevations of future footings/mats located outside of the planned partial basement have yet to be determined.

This report includes data and interpretations pertaining to geotechnical and geologic conditions at the site and presents conclusions and recommendations for the geotechnical aspects of the project, as currently envisioned. The conclusions and recommendations presented in this report were developed in accordance with generally-accepted geotechnical principles and practices at the time the report was prepared. No other warranty, expressed or implied, is made.

Thank you for inviting us to complete this work, and we look forward to our continued service during final design and subsequent construction phases of the project. Should you have questions or concerns regarding our findings, the design concepts discussed, or our recommendations, please do not hesitate to call.

Yours very truly,

A3GEO, Inc.

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TABLE OF CONTENTS

1. INTRODUCTION

This report presents the results of a geotechnical investigation by A3GEO, Inc. (A3GEO) for the proposed Berkeley Plaza (Project) at 2211 Harold Way in Berkeley, California. This report was prepared under the Consulting Services Agreement between A3GEO and CASL Holdings, LLC dated 4 March 2021. A list of references used in preparing this report is presented in Section 9. Following the reference list are a series of illustrative plates, a Site Plan (Figure 1), and a set of appendices.

1.01 Site Overview

As shown on Plates 1 and 2, the Project site (Site) is located in downtown Berkeley within the block bounded by Harold Way to the west, Allston Way to the north, Shattuck Avenue to the east, and Kittredge Street to the south. The existing 2211 Harold Way structure occupies the west portion of the block; the remainder of the block is occupied by the Hotel Shattuck Plaza (the Shattuck Hotel). The aerial photographs on Plates 1 and 2 show the approximate configuration of the Site, which is L-shaped in plan. Towards the north, the Site is separated from the Shattuck Hotel by a narrow alley accessed from Allston Way. Towards the south, the east edge of the Site directly abuts the Shattuck Hotel. The existing 2211 Harold Way buildings and portions of the Shattuck Hotel have a 1-story basement, the configuration of which is complex. East of the Shattuck Hotel, the southbound lanes of Shattuck Avenue overlie the Bay Area Rapid Transit (BART) system's underground tunnel. A culvert, which carries water from a prominent local creek (Strawberry Creek), runs below Allston Way to the north of the Site.

1.02 Project Description

Based on information provided by CA Ventures of Chicago, Illinois, we understand that the envisioned Project will demolish the existing building(s) within the Site and construct a new 8-story residential building with a single-level basement garage. Preliminary floor plans for the building, prepared by Niles Bolton Associates of Atlanta, Georgia, show the basement garage accessed by ramps that lead down from Kittridge Street. The approximate limits of the below-grade garage and ramps shown on the 28 June 2021 plan update drawings by Niles Bolton Associates are indicated on Plate 2.

Anticipated structural loads and other detailed design information was not available at the time this report was prepared (August 2021). Based on our discussions with CA Ventures, we understand that the upper portion of the structure will include conventional lightweight framing and the lower portion of the structure (including the basement garage and ramps) will be constructed of reinforced concrete. Information available through the City of Berkeley describes the project as "five stories of Type-IIIA construction (wood) over three stories of Type-IA (podium) with a partial basement to house 42 parking spaces." In preparing this report, we have assumed that foundation loads will be moderate and typical for this type of construction and that uplift-resisting elements will not be required.

1.03 Previous Geotechnical Investigation

In 2019, A3GEO investigated subsurface conditions at the Site and prepared a design-level geotechnical investigation report for a previously-envisioned project that was never built. The scope of that investigation included a detailed review of available information and data, two geotechnical borings, a suite of geotechnical laboratory tests, and four cone penetration tests (CPTs). The two geotechnical borings both extended approximately 170 feet below adjacent street grades. The four CPTs extended between about 76 feet and 96 feet below adjacent street grades. Data from our 2019 borings, CPTs and laboratory tests are attached in Appendix A through Appendix C. We understand that during the acquisition of the property, CA Ventures received permission for these data to be used in association with the currently-envisioned Project.

1.04 Special Project Consideration

The California Geological Survey (CGS) publishes maps delineating official zones in which special investigations are required to evaluate earthquake-related hazards. The CGS map for this area shows the northern portion of the Site traversed by an official Seismic Hazard Zone for soil liquefaction. CGS Special Publication 117A (SP-117A: CGS, 2008) and the 2019 California Building Code (CBC) provide regulatory guidance pertaining to geotechnical investigations for projects within CGS-mapped liquefaction hazard zones. The City of Berkeley is responsible for enforcing local compliance with the published CGS guidelines and CBC requirements. The investigations and analyses in this report are intended to comply with SP-117A guidance, which essentially constitutes the state of the practice in evaluating and mitigating potential liquefaction hazards in California.

1.05 Purpose and Scope

The primary purpose of this geotechnical study was to: 1) engage with the Project team to provide necessary geotechnical inputs: and 2) prepare a geotechnical investigation report for the Project based upon information and data contained in our previous (2019) report. The scope of services outlined in our 4 March 2021 Consulting Services Agreement included:

- Initial consultations with CA Ventures and members of the Project design team;
- Project-specific geotechnical analyses utilizing information and data from our 2019 report; and
- Preparation of this design-level geotechnical investigation report.

As noted in our 16 February 2021 proposal to CA Ventures, our authorized scope excludes environmental services (to be provided by others), new subsurface explorations (e.g., borings, CPTs, surface geophysics, test pits) and site-specific seismic ground motion analysis. Other limitations of our study are discussed in Section 8.

1.06 Elevation Data

The available civil survey drawings include spot elevations that we have assumed are relative to City of Berkeley Datum (COBD). Published maps and geotechnical reference information can be converted to COBD datum per the following:

- To convert from NGVD 29 to COBD, subtract 3.13 feet (NOAA 2018; City of Berkeley, 2009);
- To convert from North American Vertical Datum of 1988 (NAVD 88) to COBD, subtract 5.89 feet (City of Berkeley, 2009); and
- To convert from NGVD 29 to NAVD 88, add 2.76 feet (NOAA, 2018).

All elevations in this report should be considered approximate.

2. METHODS OF INVESTIGATION

2.01 Subsurface Explorations and Laboratory Testing

2.01.1 Geotechnical Borings

From June 10 through 14, 2019, A3GEO subcontracted with Pitcher Drilling (Pitcher) of East Palo Alto, California to advance geotechnical borings B-1 and B-2 at the approximate locations shown on Figure 1. Both borings were drilled from the Harold Way pavement surface using truck-mounted rotary wash drilling equipment. Interpreted ground surface elevations and approximate boring depths are indicated in the following table:

Boring ID	Interpreted Ground Surface Elevation[1]	Approximate Boring Depth
B-1	+172.0 feet	170.8 feet
B-2	+172.0 feet	170.5 feet

During drilling, our engineering geologist logged the borings, directed the drilling, and obtained soil samples. Soils were visually/manually classified in general accordance with ASTM D2488 classifications, which are based on the Unified Soil Classification System (USCS). Field classifications were subsequently checked and revised, where appropriate, based on laboratory test data. The logs of the borings are attached in Appendix A.

Samples were obtained at frequent intervals using a 2-inch outer diameter (O.D.) Standard Penetration Test (SPT) sampler without liners, a 3-inch O.D. California Modified sampler with liners, or a 3-inch O.D. Pitcher barrel sampler. The SPT and California Modified samplers were driven with a 140-pound mechanically automated trip hammer with an approximate 30-inch fall. The hammer blows required to drive the final 12 inches of each 18-inch drive are presented on the boring logs. Where a full 12-inch drive could not be achieved, the number of blows and the amount of penetration achieved is shown. Sampler blow counts presented on the logs are adjusted N-values. Blow counts have been adjusted for sampler type only. Following drilling, boreholes were backfilled with grout using the tremie method, in accordance with the approved City of Berkeley Toxics Management Permit.

The boring logs in Appendix A represent our interpretation of the subsurface materials at the boring locations at the time of drilling; the passage of time may result in changes to the subsurface conditions. Appendix A includes two figures that explain the descriptions and symbols used on the logs. The boring locations shown on Figure 1 were determined by measuring from Site features and should be considered approximate.

2.02 Cone Penetration Tests (CPTs)

On June 12, 2019, we subcontracted with Gregg Drilling of Martinez, California, to advance four (4) CPT probes, identified as CPT-2 through CPT-5, using a truck-mounted CPT rig, at the approximate locations shown on Figure 1. Interpreted ground surface elevations and approximate CPT depths are indicated in the following table:

CPT ID	Interpreted Ground Surface Elevation[1]	Approximate CPT Depth
CPT-2	+172.0 feet	93.4 feet
CPT-3	+172.0 feet	96.6 feet
CPT-4	+172.0 feet	76.0 feet
CPT-5	+177.0 feet	93.5 feet

[1] Interpreted from available civil survey drawings and site observations; assumed City of Berkeley datum.

The CPT method involves pushing a small-diameter instrumented conical probe into the ground under the weight of the CPT rig. The tip of the conical probe and the cylindrical sleeve directly above it are instrumented to measure tip resistance and sleeve friction; the probe also has instrumentation to measure soil pore water pressure. These measured properties can then be correlated to obtain geotechnical parameters such as standard penetration resistance (N) values, undrained shear strength (S_U) values, and soil behavior type (SBT).

Logs of CPT probes are presented in Appendix B along with explanatory information. The CPT locations shown on Figure 1 were determined by measuring from Site features and should be considered approximate.

2.02.1 Geotechnical Laboratory Testing

Our geotechnical laboratory testing program was directed toward a quantitative and qualitative evaluation of the physical properties of the soils at the site. Samples retrieved from the borings were reviewed in our laboratory to select suitable specimens for testing. The following geotechnical laboratory tests were performed:

- Atterberg Limits by ASTM D4318;
- Sieve analysis by ASTM D422 or D1140;
- Moisture content by ASTM D2216;
- Dry density by ASTM D2937; and
- 1-D consolidation using incremented loading by ASTM D2435.

Laboratory tests were performed by B. Hillebrandt Soils Testing, Inc. of Alamo, California. Geotechnical laboratory testing data sheets from this study are presented in Appendix C.

2.03 Review of Existing Information

We reviewed a variety of published and unpublished references containing information on geologic, seismic and historical conditions. A list of references used in preparing this report is presented in Section 9. Selected references are noted below:

2.03.1 Previous Geotechnical Reports

We reviewed previous geotechnical reports prepared for nearby downtown Berkeley projects, which we retrieved from A3GEO and City of Berkeley files. The geotechnical feasibility report prepared previously for the Project (ENGEO, 2013) did not identify any previous borings drilled within the 2211 Harold Way or Shattuck Hotel sites.

Dames & Moore (1964) performed a geotechnical investigation for the BART alignment prior to construction. Multiple exploratory borings drilled along Shattuck Avenue to the east of the Site provide information on local subsurface conditions. These borings typically ranged in depth from approximately 50 to 60 feet. Boring R-005-11 is the closest boring to the Site, and its approximate location is shown on Figure 1. Available subsurface data from the BART investigation is included in Appendix D.

Historic BART drawings for the area adjacent to the Site did not specify the elevation datum used. Based on review of BART drawings in other portions of the Bay Area, we expect these drawings refer to United States Coast Guard and Geodetic Survey (U.S.C. & G.S.) datum, which is equivalent to National Geodetic Vertical Datum of 1929 (NGVD 29). NGVD 29 can be converted to City of Berkeley Datum by subtracting 3.13 feet (NOAA 2018; City of Berkeley, 2009).

2.03.2 Geologic, Seismic and Historical References

We researched the geologic, seismic and historical setting of the site by reviewing a verity of published and unpublished references, including:

- U.S. Geological Survey (USGS) regional geologic maps by Radbruch (1957), Graymer (2000), and Graymer and others (2006);
- California Geological Survey (CGS) maps titled “Earthquake Zones of Required Investigation” (CGS, 2003a), Fault Activity Map of California (Jennings and Bryant, 2010), and “Tsunami Inundation Map for Emergency Planning (CGS, 2009);
- USGS Liquefaction Susceptibility and Quaternary Deposits maps by Knudsen and others (2000) and Witter and others (2006);
- Federal Emergency Management Authority (FEMA) National Flood Insurance Rate Maps (FEMA, 2009);
- USGS topographic maps;
- Historical creek maps from the City of Berkeley and the Oakland Museum (Sowers, 1993);
- Sanborn Fire Insurance maps dated 1890, 1894, 1903, 1911, 1929, 1950, and 1980; and
- Historical aerial photographs dated 1930, 1950, 1966, 1968, 1969, 1979, and 1994 from Pacific Aerial Surveys (PAS) in Novato, California.

The Sanborn maps we obtained for the Site are attached in Appendix E. The georeferenced aerial photographs we obtained from PAS are attached in Appendix F.

2.03.3 Civil Survey Drawings

We obtained information from civil survey drawings provided to us by CA Ventures and others. The civil survey drawing reproduced on Figure 1 (BKF, 2019) includes features within the Site that are not shown on the July 2021 “Preliminary” map by Niles Bolton Associates (NBA, 2021). The ground surface elevation callouts on the 2021 map by Niles Bolton Associates appear consistent with the spot elevations shown on the 2015 drawing titled *Conceptual Grading & Drainage Plan*, prepared by Telamon Engineering Consultants (Telamon, 2015).

2.03.4 Seismic Design Maps

We accessed the SEAOC and OSHPD[2] web interface (https://seismicmaps.org/), which utilizes the USGS web services to retrieve seismic design data and present it in a report format. ASCE 7-16 seismic design criteria for the 2211 Harold Way Site (Latitude: 37.86911010, Longitude: -122.26927650) are provided in Section 7.02.

2.04 Basement Reconnaissance

On August 19, 2021, an A3GEO Principal Engineer conducted a reconnaissance of existing basement areas within the site to “ground truth” interpretations made based on available drawings and survey data.

[2] Structural Engineers Association of California (SEAOC) and California Office of Statewide Health Planning and Development (OSHPD)

3. GEOLOGIC, SEISMIC AND HISTORICAL SETTING

This section presents an overview of the geologic and seismic setting of the site based primarily on our review of published information and references maps that are presented on Plates.

3.01 Regional Geology

The San Francisco Bay Region is characterized by hills and valleys that trend southeast/northwest. This characteristic topography is partly the result of the SFBR's location at the boundary between the North American and Pacific crustal plates, which are in relative motion with respect to each other. Over geologic time, the topography of the region formed through a complex series of processes that have included deposition, accretion, faulting, folding, uplift, volcanism, and changes in sea level. San Francisco Bay and the adjacent flatlands presently occupy a structural depression between the East Bay Hills and the roughly parallel hills of the San Francisco Peninsula and Marin County. Plate 3 provides an overview of the regional geology of the San Francisco Bay Region.

As shown on Plate 3, the San Francisco Bay Region includes three primary "basement" rock complexes: the Great Valley Complex, the Franciscan Complex, and the Salinian Complex. All were formed during the Mesozoic Era (225 to 65 million years ago) and have been brought together by movement occurring along faults. These Mesozoic basement rock complexes are locally overlain by sedimentary and volcanic rocks deposited during the Tertiary Period (about 25 million to 2.6 million years ago). Since their deposition, the Mesozoic and Tertiary rocks have been extensively deformed by repeated episodes of folding and faulting. Significantly, the Bay Area experienced several episodes of uplift and faulting during the late Tertiary Period (about 25 million to 2.6 million years ago), that produced the region's characteristic northwest-trending mountain ranges and valleys.

Rocks within the San Francisco Bay Region are locally overlain by soils deposited during the Quaternary Period (about 2.6 million years ago until present). World-wide climate fluctuations influenced the nature and distribution of soils deposited in the bay and the adjacent flatlands. During the Pleistocene Epoch (about 2.6 million to 11 thousand years ago), climate fluctuations caused sea levels worldwide to rise and fall by hundreds of feet. During glacial periods, sea levels were substantially lower than they are today as much of the earth's water was locked up large ice sheets, polar ice caps and long valley glaciers. During interglacial periods, melting of ice caused sea levels to rise and flood low-lying coastal areas. Locally, high sea levels favored the rapid and widespread deposition of sediments in the bay and on the surrounding flatlands, whereas low sea levels steepened the gradients of streams and rivers encouraging erosional downcutting.

The most recent glacial interval (the Wisconsin glaciation) extended from about 75,000 to 11,000 years ago. During last glacial maximum, sea level was several hundred feet below its present elevation and the valley now occupied by San Francisco Bay drained to the Pacific Ocean more than 30 miles west of the Golden Gate. Near the beginning of the Holocene (about 11 thousand years ago) the rising sea re-entered the Golden Gate, and sediments accumulated rapidly beneath the rising San Francisco Bay and on the surrounding flatlands. Marine sediments that now cover the bottom of the bay and parts of the adjacent lower flatlands are less than 11,000 years old. In upper flatland areas, streams flowing from the hills deposited Holocene-age alluvial deposits within valleys and channels on top of older Pleistocene-age alluvium. Typically, Holocene-age surface deposits are less dense, weaker, more compressible, and more susceptible to earthquake-induced soil liquefaction[3] than adjacent/deeper Pleistocene-age soils that pre-date the last sea level rise.

3.02 Regional Active Faults

Within the SFBR, the relative motion of the Pacific and North American crustal plates is presently accommodated by a series of active northwest-trending faults that exist over a width of more than 50 miles

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[3] Liquefaction is a phenomenon by which certain types of soils below groundwater can lose strength, compress (settle), and gain mobility (liquefy) a result of strong earthquake groundshaking.

(Plate 4). Faults that are defined as active exhibit one or more of the following: (1) evidence of Holocene-age (within about the past 11,000 years) displacement, (2) measurable aseismic fault creep, (3) close proximity to linear concentrations or trends of earthquake epicenters, and (4) prominent tectonic-related aseismic geomorphology. Potentially active faults are defined as those that are not known to be active but have evidence of Quaternary-age displacement (within about the past 2.6 million years).

The major active faults shown on Plate 4 include the Hayward, Rogers Creek, San Andreas, San Gregorio, Concord-Green Valley, Calaveras, West Napa, and Greenville faults. These major faults are near-vertical and generally exhibit right-lateral strike-slip movement (which means that the movement is predominantly horizontal and when viewed from one side of the fault, the opposite side of the fault is observed as being displaced to the right). Approximate distances and directions from the Site to major Bay Area active faults are presented in the table that follows.

Distances and Directions to Major Bay Area Active Faults (Jennings and Bryant, 2010)

Fault System	Approximate Distance from Site	Approximate Direction from Site
Hayward-Rodgers Creek	1 mile	East-Northeast
Calaveras	13 miles	East-Southeast
Concord-Green Valley	15 miles	East-Northeast
Pleasanton	17 miles	Southeast
Greenville – Clayton – Marsh Creek	17 miles	East-Northeast
San Andreas	18 miles	West-Southwest
West Napa	20 miles	North-Northeast
San Gregorio	20 miles	West-Southwest

As noted in the preceding table, the closest regional Holocene active fault to the Site is the Hayward fault, located about 1 mile to the east-northeast of the site. The Hayward/Rodgers Creek fault system is one of the primary active faults in the San Francisco Bay region, and overall has the highest probability of generating a large-magnitude earthquake within the next 30 years (WGCEP, 2008). The Hayward/Rodgers Creek fault system extends approximately 95 miles from Fremont to Healdsburg and is interpreted as stepping to the right beneath San Pablo Bay (Plate 4).

3.03 Regional Seismicity

Since 1836, six earthquakes of magnitude 6.5 or greater have occurred in the region (Bakun, 1999); the dates, magnitudes (M) and epicentral locations of these six large earthquakes are summarized in the table that follows.

Magnitude 6.5 or Greater Earthquakes; 1836-1998
(Bakun, 1999; Tuttle and Sykes, 1992)

Date	Magnitude	Epicenter Location
June 10, 1836	6.5	East of Monterey Bay
June 1838	6.8 – 7.2	Peninsula section of the San Andreas fault
October 8, 1865	6.5	Southwest of San Jose
October 21, 1868	6.8	Southern Hayward fault (Hayward Earthquake)
April 18, 1906	7.8	San Andreas fault (San Francisco Earthquake)
October 18, 1989	6.9	Santa Cruz Mountains (Loma Prieta Earthquake)

The Working Group on California Earthquake Probabilities (WGCEP) has developed authoritative estimates of the magnitude, location, and frequency of future earthquakes in California, which are published in Uniform California Earthquake Forecast (UCERF) reports. The most recent forecast (UCERF3) indicates the following likelihoods for one or more earthquake events of the specified magnitude occurring within the SFBR in the next 30 years (starting in 2014).

SFBR UCERF3 Forecast (WGCEP, 2013)

Earthquake Magnitude (greater than or equal to)	30-year Likelihood of one or more earthquake events
≥ 5.0	100%
≥ 6.0	98%
≥ 6.7	72%
≥ 7.0	51%
≥ 7.5	20%
≥ 8.0	4%

UCERF3 forecasts for the Hayward Fault are shown in the following table:

Hayward Fault UCERF3 Forecast (WGCEP, 2013)

Earthquake Magnitude (greater than or equal to)	30-year Likelihood of one or more earthquake events
≥ 6.7	14.3%
≥ 7.5	3.6%
≥ 8.0	<0.1%

The WGCEP has also made estimates of the likelihood of earthquakes with magnitude greater than or equal to 6.7 occurring on specific faults. These probabilities are summarized in the table below.

SFBR UCERF3 Forecast (Aagaard et al., 2016)

Earthquake Fault	30-year Likelihood of One or More Earthquake Events with M≥6.7
Hayward - Rodgers Creek	33%
Calaveras - Paicines	26%
San Andreas	22%
Hunting Creek, Berryessa, Green Valley, Concord, Greenville	16%
Maacama	8%
San Gregorio	6%

Compared to the previous forecast (UCERF 2; WGCEP, 2008), the likelihoods of moderate-sized earthquakes (magnitude 6.5 to 7.5) are generally lower, whereas the likelihoods of larger events are higher. UCERF 2 indicated a 30-year likelihood of 31% for one or more earthquakes of magnitude 6.7 or larger occurring on the Hayward-Rodgers Creek fault system.

3.04 Surficial Geology

The site is situated near the eastern edge of a broad, gently-sloping alluvial plain deposited by streams flowing westward from the Berkeley Hills. Prior to development, the Berkeley plain was dissected by a series of east-west trending creeks that flowed from the Berkeley Hills west towards San Francisco Bay. During the development of downtown Berkeley, which occurred during the mid to late 1800s, culverts were installed within the creek beds, the creeks were filled in, and the mostly rectangular grid of streets was laid out and graded. There is no record of how much fill was placed in specific areas in this initial stage of development, however, deeper fills commonly exist in former low-lying areas adjacent to creeks.

The USGS regional geologic map on Plate 5 (Graymer, 2000) maps the near surface soils at the site as alluvial fan and fluvial deposits of Holocene age (map symbol Qhaf). Knudsen et al. (2000) describes the Qhaf unit as follows:

> ***Holocene Alluvium (Qhaf):*** *Sediments deposited by streams emanating from mountain canyons onto alluvial valley floors or alluvial plans as debris flows, hyperconcentrated mudflows, or braided stream flows. Alluvial fan sediment includes sand, gravel, silt, and clay, and is moderately to poorly sorted and moderately to poorly bedded. Sediment clast size and general particle size typically decrease downslope from the fan apex. Many Holocene alluvial fans exhibit levee/interlevee topography, particularly the fans associated with the fans flowing west from the eastern San Francisco Bay hills. Alluvial fan deposits are identified primarily on the basis of fan morphology and topographic expression. Holocene alluvial fans are relatively undissected, especially when compared to older alluvial fans. In places, Holocene deposits may be only a thin veneer over Pleistocene deposits. Soils are typically entisols, inceptisols, mollisols, and vertisols. Greater than 5 percent of the nine-county San Francisco Bay Area is covered by Holocene alluvial fan deposits. It is the most extensive Quaternary map unit in the region.*

The USGS Quaternary Deposits Map on Plate 6 (Plate 6) also shows most of the Site within an area mapped as alluvial fan deposits of Holocene age (map symbol Qhf). Witter et al. (2006; Figure 6) map a narrow band of artificial channel fill (map symbol acf) traversing the far northern end of the Site, which is not shown on the previous geologic map by Graymer (2000; Plate 5).

Witter et al. (2006; Plate 6) map Pleistocene alluvial fan deposits (map symbol Qpf) to the north and south of the Site, outside of the areas mapped as Holocene alluvium and artificial channel fill. It can also be inferred that Pleistocene alluvial fan deposits underlie the Holocene alluvial soils and artificial channel fill mapped within the site. Knudsen et al. (2000) describes the Pleistocene alluvial fan unit as follows:

> ***Pleistocene Alluvium (Qpf):*** *This unit is mapped on alluvial fans where latest Pleistocene age is indicated by greater dissection than is present on Holocene fans, and/or the development of alfisols. Latest Pleistocene alluvial fan sediment was deposited by streams emanating from mountain canyons onto alluvial valley floors or alluvial plains as debris flows, hyperconcentrated mudflows, or braided stream flows. Alluvial fan sediment typically includes sand, gravel, silt, and clay, and is moderately to poorly sorted, and moderately to poorly bedded. Sediment clast size and general particle size typically decreases downslope from the fan apex. Latest Pleistocene alluvial fan sediment is approximately 10 percent denser than Holocene alluvial fan sediment and has penetration resistance values about 50 percent greater than values for Holocene alluvial fan sediment* (Clahan et al., 2000). *Pleistocene alluvial fans may be veneered or incised by thin unmapped Holocene alluvial fan deposits. Along the west-facing hills of Oakland and Berkeley, where latest Pleistocene alluvial fan deposits are mapped, the age of these deposits is not well constrained and the deposits may actually be a combination of early to late Pleistocene alluvial fan and thin pediment deposits, and latest Pleistocene alluvial fan deposits.*

The narrow band of artificial channel fill shown on Plate 6 is presumably intended to coincide with the historical alignment of Strawberry Creek; although the creek maps and historical maps we reviewed (Plates 7 through 9) disagree as to the exact location of the historical Strawberry Creek channel. Water from Strawberry Creek presently flows within a culvert beneath Allston Way, just beyond the Site's northern boundary, as indicated on Plate 7 (Sowers, 1993) and Figure 1 (City of Berkeley, 2010).

3.05 Bedrock Geology

Franciscan complex bedrock, which is present near the ground surface within the UCB Main Campus to the east-northeast, underlies the alluvial deposits at the site. Franciscan complex sandstone (map symbol KJfs) and mélange (map symbol KJfm) are mapped on the UCB Main Campus to the east of the site (Figure 5). Graymer (2000) describes these basement rock units as follows:

> ***KJfs****: Franciscan complex sandstone, undivided (Late Cretaceous to Late Jurassic) – Graywacke and meta-graywacke.*
>
> ***KJfm****: Franciscan complex mélange (Cretaceous and/or Late Jurassic) – Sheared black argillite, graywacke, and minor green tuff, containing blocks and lenses of graywacke and meta-graywacke (fs), chert (fc), shale, metachert, serpentinite (sp), greenstone (fg), amphibolite, tuff, eclogite, quartz schist, greenschist, basalt, marble, conglomerate, and glaucophane schist (fm). Blocks range in size from pebbles to several hundred meters in length. Only some of the largest blocks are shown on the map.*

3.06 Geologic Hazard Mapping

The City of Berkeley's Environmental Constraints Map (Plate 10) includes the locations of hazard zones mapped by the California Geological Survey (CGS). As shown on Plate 10, the Site is neither within nor proximate to the nearest CGS earthquake fault zone (EFZ) for surface fault rupture, which surrounds the active Hayward fault. The closest CGS Seismic Hazard Zone (SHZ) for earthquake-induced landsliding is located in hilly areas north and east of the UC Berkeley main campus. A narrow CGS Seismic Hazard Zone (SHZ) for liquefaction passes through the northern portion of the site, which is intended to coincide with the location of the filled-in Strawberry Creek Channel.

The CGS seismic hazard zone map (CGS, 2003a) delineates "areas where historical occurrence of liquefaction or local geotechnical and ground water conditions indicate a potential for permanent ground displacements that mitigation as defined in Public Resources Code Section 2693(c) would be required". The Seismic Hazard Zones mapped by the CGS are also referred to as "zones of required investigation" (CGS-prepared hazard maps delineate areas in which hazard investigations are required and not areas where hazards are known to be present). The USGS Liquefaction Susceptibility Map on Plate 11 (Witter et al., 2006) is shows the southern portion of the Site within an area of "Moderate" liquefaction susceptibility and the northern portion of the Site (within the historic Strawberry Creek channel) within an area of "Very High" liquefaction susceptibility. Note that the zone of Very High susceptibility on Plate 11 coincides with the zone of artificial channel fill mapped on Plate 6 (also from Witter et al., 2006), which is based on their interpretation of the historical Strawberry Creek channel location and alignment.

The Site is located above the line of maximum predicted run-up shown on the CGS Information Warehouse Tsunami database maps (CGS, 2018). Federal Emergency Management Agency (FEMA) flood hazard maps show the Site within an "Area of Minimal Flood Hazard" (FEMA, 2009).

3.07 Local Development History

The following discussion of development history refers to Sanborn maps and historical aerial photographs that are attached in Appendices E and F (respectively). The earliest document we reviewed was the Sanborn Map dated 1890 (Plate 9), which shows the Site as occupied by a dwelling and a stable. Plate 9 generally shows Strawberry Creek as running through the far northern north edge of the Site along an alignment that differs from what shown on the maps prepared by Witter et al. (Plates 6 and 11).

The 1894 Sanborn Map shows the Site occupied by two dwellings and a stable with Strawberry Creek no longer present within the Site. The 1903 Sanborn map shows conditions similar to those seen in 1894, except a small wood shed is now present in the center of the Site. According to *Picturing Berkeley, a Postcard History,* these dwellings were part of the Shattuck Estate (Willes, Ed., 2005).

The northern portion of the Shattuck Hotel was built in 1909, and the southern portion was constructed in 1913, both on the Shattuck Estate property. The northern portion of the Shattuck Hotel is visible on the 1911 Sanborn Map (Plate 12). Plate 13 presents two photographs of the original Shattuck Hotel, circa 1909 and 1912. Plate 14 presents photographs of two houses shown on the 1911 Sanborn map (Plate 12), which were reportedly built in 1868 and 1891. Plate 15 shows the Shattuck Hotel extending along Shattuck Avenue from Alston Way south to Kittridge Street and that by 1915 the Shattuck Hotel had been renamed the Hotel Whitecotton. The 1929 Sanborn map (Plate 16) shows the Hotel Whitecotton in essentially the same configuration as the current Shattuck Hotel.

Plate 16 also shows two new buildings present within the Site: 1) a structure in the south portion of the Site, identified to be part of/contiguous with J.F. Hink and Son Department Store (Hink's) and constructed in 1926-1927, and 2) a separate smaller building at the north end of the Site with multiple addresses. These conditions are consistent with what can be seen on the 1930 aerial photograph in Appendix F. Conditions on the 1950 Sanborn Map and the 1950 aerial photograph appear similar to the 1929/1930 conditions, except the Hotel is once again referred to as the Hotel Shattuck.

The 1966 aerial photograph appears to show that the building at the north end of the 2211 Harold Way Site had been demolished and replaced with a new structure that appears generally consistent with present-day building configurations. According to the BART website, construction on the "Oakland subway", which possibly includes the portion of the BART subway tunnel through Berkeley, began in January 1966 (BART, 2019). As-built drawings for the portion of the BART alignment adjacent to the Site are dated August 1969, so the tunnel subway and tunnel must have been complete by this time or earlier (T&PBTB, 1969). An aerial photograph from April 1966 (Appendix F) shows no evidence of construction along Shattuck Way, however a blurry aerial photograph from April 1968 shows a possible open trench along Shattuck just east of the Hotel. An aerial photograph from May 1969 again shows no evidence of construction along Shattuck, suggesting that adjacent BART construction was essentially complete by this time.

The photograph on Plate 17 generally indicates the building within the Site at the corner of Harold Way and Allston Way was originally part of the Hink's Department Store. The 1980 Sanborn Map identifies the structure in the northern portion of the Site as possibly constructed from 1958-1959 and consisting of a steel-framed reinforced concrete building. By 1980, the alley off Allston Way appears on the 1980 Sanborn map. The Hink's department store reportedly closed in 1985 (Markel, 2009). Conditions on the 1994, 2005, and 2015 aerial photographs appear essentially unchanged from those prior to the department store's closing.

Plate 18 presents an interpretation of the approximate years of construction for each building based on our review of available information. This interpretation is only approximate due to the absence of accurate information relating to the timing and extent of the actual construction.

4. SITE CONDITIONS

4.01 Surface Conditions

The north, west and south sides of the site are bordered by concrete sidewalks and city streets that slope gently down towards the west. Available civil survey drawings (Telamon, 2015; NBA, 2021) contain exterior spot elevations (datum undefined), which we have assumed to be relative to the City of Berkeley Datum. Based on the available survey drawings, we estimate that the exterior ground surface along the Harold Way side of the building is generally at or near Elevation +172 feet. Along Allston Way, the entrance to the alley that bounds the east side of the Site is at Elevation +175 feet. On Kittridge Street, the available civil drawings generally show that the ground surface slopes up from about Elevation +172 feet at the corner of Harold Way to about Elevation +177 at the corner of Shattuck Avenue. In general, the surfaces surrounding the site are paved with asphalt or concrete, which at the time of our investigation appeared in reasonably good condition with no obvious indications of major distress.

4.02 Existing Building Conditions

As discussed in Section 3.07, the buildings and building additions within the subject block appear to have been completed within the 44-year period between 1909 and 1953. Plate 18 shows the buildings within the Site were constructed at three different times (prior to 1927; circa 1927, and circa 1953). At the time of this report, existing foundation drawings were only available for the south portion of the 2211 Harold Way structure constructed in 1927 (Plate 18).

Based on measurements from our August 2021 reconnaissance, we estimate that the top of the basement floor slab within the Site is approximately 5.5 to 7.0 feet below the level of the adjacent Harold Way sidewalk. The basement floor level in the 1927 portion of the building appears to be up to about a foot lower in elevation than the circa 1958 portion of the building. For the purposes of this geotechnical investigation, we estimate that the top of the basement floor slab within the 1927 building is at approximately Elevation +166.5 feet (172.0 – 5.5 feet). Relative to this top-of-slab elevation, plans for the 1927 building show a 4-3/4 inch floor slab, a 1'4" deep exterior wall footing and, and interior footings up to about 4 feet deep. The buildings within the Site have single-level basements that are contiguous and connect to the existing basement within the 1913 portion of the Shattuck Hotel adjacent to Kittridge Street (Plate 18). Approximately midway along the west side of the Site there is a ramp that leads down from the edge of the Harold Way sidewalk to a small basement-level loading area.

4.03 Subsurface Conditions

4.03.1 General

As noted in the preceding sections (Sections 4.02 and 4.03), surface grades adjacent to the site slope gently down towards the west and there is an existing basement within the site. The boring and CPT explorations conducted for this study were advanced from the level of paved surfaces outside of the existing building. The difference of elevation between exterior street grades and the bottoms of the existing building footings is estimated to be between 15 feet (175 feet street elevation and 160 feet footing elevation) and 11 feet (172 feet street elevation and 161 feet footing elevation). The following discussions focus on subsurface conditions within the Site below the level of the existing basement.

4.03.2 Fill

Fill was encountered in Borings B-1 and B-2 to depths of approximately 8 and 5 feet below the Harold Way asphalt pavement section (down to Elevations +164 and +167 feet, respectively). Fill that was encountered in the borings generally consisted of yellowish-brown clayey sand or grayish brown sandy lean clay.

The methodology of advancing the CPT does not allow for visual observation of the soil; therefore, it was not possible to determine fill thickness from our CPT probes. However, the plots of cone tip resistance (qt) in Appendix B generally show a marked increase in tip resistance at depths between about 7 and 10 feet below the adjacent street grades, which could mark the transition between artificial fill and underlying natural alluvial deposits.

4.03.3 Alluvial Deposits

The available data generally indicates that the Site is underlain by naturally deposited, bedded, heterogeneous alluvial deposits. The full thickness of alluvial soils was encountered in Boring B-1 and Boring B-2, which encountered weathered rock at depths of approximately 155 feet and 151 feet, respectively. For the purposes of this study, we define two levels of alluvium with the following general characteristics:

> ***Shallow Alluvium –*** The interpreted Soil Behavior Type (SBT) plots on the CPT logs in Appendix B generally depict shallow alluvial soils that include sand and silty sand. Predominantly silty/sandy soils are most noticeable in the SBT plots for CPT-3 and CPT-4, where they extend to a maximum depth of about 20 feet. The SBT plots for CPT-2 and CPT-5 show lesser amounts of sand that extend to maximum depths of about 12 and 22 feet, respectively. These interpreted conditions appear generally consistent with those shown on the logs of BART borings drilled east of the site along Shattuck Avenue. A subsurface cross section prepared for the BART project by Dames & Moore (1964) shows a laterally continuous deposit of generally similar coarse-grained materials extending to about 20 feet below the ground surface. The logs for Borings B-1 and B-2 (Appendix A; this study) show predominantly granular soils within this same range. In Boring B-1, layers of clayey sand and clayey sand with gravel were logged extending to a depth of 18 feet. In Boring B-2, generally similar predominantly granular soils were logged to a depth of 23 feet (Elevation +149 feet).
>
> ***Deep Alluvium*** - Below the shallow alluvium, the SBT plots in Appendix B show predominantly silty and clayey soils with intermittent sand and gravel layers to a depth of roughly 90 to 95 feet below the ground surface. As encountered in the borings, the deeper alluvial soils consisted of light gray to grayish brown very stiff to hard lean clay with sand. Laboratory testing performed on five samples of deeper alluvium soils resulted in Plasticity Indices (PIs) of 9, 15, 16, 17, and 29, and Liquid Limits (LLs) of 27, 33, 38, 40, and 47; data that collectively indicates the clays classify as lean. Triaxial unconsolidated-undrained (TXUU) tests performed on three samples of deep alluvium resulted in undrained shear strength values of 2480, 2760, and 4900 pounds per square foot (psf). Interpretations of CPT data indicates undrained shear strengths of clayey materials in the deep alluvium range from approximately 2500 psf to 7000 psf. Below the predominantly clayey layer of the deep alluvium, a layer of yellowish brown very dense clayey sand with gravel was encountered in Borings B-1 and B-2. Each of the four CPTs is presumed to have met refusal near the top of this layer. Interbedded layers of clay and sand were observed below the very dense sand layer in both borings, down to the top of bedrock.

4.03.4 Bedrock

Weathered bedrock was interpreted to be at depths of approximately 155 and 151 feet below the ground surface in Borings B-1 and B-2, respectively. The actual top of bedrock was difficult to discern in samples due to the highly weathered nature of the material and the similarities between the weathered bedrock and the overlying alluvial soils. The bedrock materials observed in samples from the borings are generally consistent with rocks of the Franciscan formation.

4.03.5 Groundwater Conditions

Borings B-1 and B-2 were drilled using rotary wash methods, which utilize drilling fluids such that it is not possible to determine the depth to groundwater with accuracy. CPT pore pressure dissipation tests provide an indirect method of estimating groundwater depths. The pore pressure dissipation tests performed in our CPT probes generally suggest groundwater at the time of our investigation (June 2019) was approximately 35 to 40 feet below existing street grades.

In downtown Berkeley, groundwater levels are known to rise significantly during and following periods of heavy and/or sustained rainfall with the highest groundwater levels generally coinciding with wet-winter conditions. To assess local variations in groundwater levels over time, we reviewed groundwater depth information/data contained in the geotechnical reports referenced in Section 9. This limited research into groundwater levels is summarized in the following table (the groundwater depths indicated with an asterisk (*) reflect measurements recorded a significant amount of time after drilling when groundwater levels may have had time to stabilize):

Historic Groundwater Data from Nearby Sites
(all data approximate)

Identifying Information	Distance and Direction from Site	Measurement Date	Groundwater Depth
BART Boring R-005-13	600 feet northeast	Nov. 1963	9* feet
BART Boring R-005-11	200 feet east	Oct. 1963	17 feet
Berkeley City College/YMCA	200-400 feet northwest	Mar. 1992	17* to 38 feet
		1984	22 to 27.5 feet
		1981	22 to 23.5 feet
2150 Shattuck Ave.	300-400 feet north	Sept. 1999	25 to 26 feet
Berkeley High School Building D	500 feet west	Apr. 1998	25 feet
Berkeley Community Theater	800 feet west	Nov. 2018	24 to 25 feet
Berkeley High School Building H	1,000 feet west	Apr./May 1993	16 * to 20* feet
Berkeley High School Building C	800 feet southwest	Aug./Sept. 1978	21 to 27 feet
Brower Center; 2200 Oxford St.	700 feet east-northeast	Dec. 2004	18.5 to 23 feet
		Jan. 2005	16* feet
GAIA Building	600 feet east-northeast	1998	14 to 20 feet
UCB BAMPFA	1,000 feet northeast	Dec. 2012	5* to 12* feet
2009 Addison Street	900 feet northwest	Oct. 1990	20 feet

Locally, groundwater generally flows from the hills east of the Site west towards San Francisco Bay with a groundwater surface that is roughly parallel to the overlying surface grades. It is currently unknown how the presence of the BART tunnels below Shattuck Avenue may influence groundwater and drainage patterns at the Site. Further, the presence of the Strawberry Creek box culvert, located below Allston Way and shown on Figure 1, may also affect localized groundwater flows and levels.

5. GEOLOGIC HAZARD ASSESSMENT

5.01 Earthquake Ground Shaking

Strong earthquake ground shaking is a hazard shared throughout the region and the direct risks posed to structures by ground shaking are mitigated through the structural design provisions of the California Building Code (CBC). The seismic design provisions of the 2019 CBC include a methodology based on ASCE 7-16 by which sites are classified as A through F based on geotechnical properties within the upper 100 feet of the subsurface profile. Based on the results of our investigation, we judge that Site Class D is applicable for the Site. Geotechnical parameters for use with the 2019 CBC are presented in Section 7.02.

5.02 Liquefaction

5.02.1 Local Geologic Context

The CGS maps the northern portion of the site within a narrow "zone of required investigation" for liquefaction that follows the historic alignment of Strawberry Creek. This mapping generally coincides with the narrow zone of artificial channel fill (Plate 6) and "Very High" liquefaction susceptibility (Plate 11) mapped by the USGS (Witter, et al., 2006). The same maps show Holocene alluvial fan deposits outside the narrow artificial channel fill zone and characterized liquefaction susceptibility within this unit as "Moderate".

The USGS maps on Plates 6 and 11 were prepared at the regional level and, as such, are interpretive and not site-specific. The USGS publication by Graymer (2000) includes the statement: "Alluvial fan deposits are identified primarily on the basis of fan morphology and topographic expression", which is consistent with our understanding of the methodology used in preparing USGS regional maps. Notably, development of the downtown Berkeley area in the latter half of the 1800s would appear to have erased most, if not all, of the subtle surface features used to identify fan morphology. Consequently, the limits of any Holocene-age deposits in the vicinity of the historical Strawberry Creek alignment would appear to be highly uncertain.

Geologic maps, in general, depict interpreted conditions at or near the ground surface and do not include information on the thickness of the interpreted surficial deposits. As noted in Section 4.03.2, the results of our investigation generally show that the fill materials encountered in borings surrounding the Site do not extend as deep as the existing basement within the Site. Consequently, the artificial channel fill mapped as having very high liquefaction susceptibility (Plate 6 and 11) may have already been removed from beneath the Site. The USGS maps the liquefaction susceptibility of the surrounding and underlying Pleistocene alluvial fan deposits as very low (Plates 6 and 11).

Soils that are most likely to experience "classic" liquefaction-type behavior include loose (adjusted blow counts less than 20), clean, course-grained soils (i.e., sands and gravels) that are below groundwater. Recent and ongoing research (e.g. Bray and Sancio, 2006; Idriss and Boulanger, 2008) has demonstrated that fine-grained materials (i.e., silts and clays) with very low plasticity that are below groundwater can also experience generally similar cyclic degradation in response to earthquake shaking and are considered susceptible to liquefaction-type behavior if certain criteria are met. Sands and gravels are deposited naturally by rapidly flowing water within creek channels that meander over time. Silts and clays are deposited in slow-moving water such as occurs on floodplains when the banks of natural creek channels are overtopped. Locally, these natural processes tend to create laterally-discontinuous lenticular deposits of sands and gravels that can be susceptible to liquefaction if not in a dense condition. Fine-grained soils of very low plasticity are not common in Berkeley due, in part, to the nature and composition of the rocks east of the Hayward fault where the local alluvial fans originate.

5.02.2 Liquefaction Analysis

We analyzed liquefaction susceptibility, potential, and effects using the data from the borings and CPTs. For the purpose of our liquefaction evaluation, we assumed that soils below a depth of 12 feet could potentially be below groundwater at the time an earthquake occurs. This depth can be viewed as is approximately equivalent to the bottom of existing building foundations within the Site. Soils encountered in the borings and CPTs that are above groundwater (i.e., above the level of the existing building foundations) are considered to have a negligible potential for liquefaction assuming that they will not be saturated at the time that a major (i.e., analysis-level) earthquake occurs.

Data presented on the logs of Boring B-1 and Boring B-2 (Appendix A) generally indicate that most of the soils encountered below groundwater are of sufficient density and/or plasticity to preclude liquefaction. The laboratory test results in Appendix B include five Atterberg Limits determinations that produced Plasticity Index (PI) values of 16, 29, 15, 9, and 17. Current and ongoing research suggests that only the PI of 9 (obtained on a sample from Boring B-2 at a depth of 26 feet) correlates to soil with the potential to liquefy. At the location of Boring B-2, the layer from which this lower-plasticity material was obtained is interpreted to be about 5.5 feet thick; however, the 4.5-foot-thick layer of soil below it (for which there is no PI data) could also be susceptible to liquefaction.

Based on the continuous subsurface data obtained from CPT logs, we primarily utilized CPT-based analysis to evaluate liquefaction potential and dynamic settlement. We performed an analysis using data from the CPTs using commercially-available liquefaction assessment software (CLiq v. 2.3.1.15 by GeoLogismiki), which utilizes the methodology of Boulanger and Idriss (2014). In addition to the raw data, key inputs to the liquefaction analyses include the earthquake moment magnitude (M_w), peak ground acceleration (PGA), and groundwater depth. We used the following values in our analyses:

> ***Mw = 7.33****;* the mean characteristic magnitude for the rupture of the Hayward Fault (the Maximum Considered Earthquake, or MCE);
>
> ***PGA = 1.00 g****;* the geometric PGA (PGA_M) for the Site per ASCE 7-16 (Section 7.02);
>
> ***Groundwater Depth = 12 feet***, see discussion above; and
>
> ***Factor of Safety (FS) = 1.3***; liquefaction was assumed to occur if the FS is below 1.3.

In CPT-based liquefaction analyses, soil behavior (i.e. “sand-like” or “clay-like”) is interpreted based on the soil behavior type index (I_c). In our CPT-based liquefaction susceptibility evaluation, we considered soils with an I_c less than or equal to 2.6 susceptible to liquefaction. Based on the preceding inputs, the CLiq program produced plots showing variations with depth for Cyclic Stress Ratio & Cyclic Resistance Ratio (CSR & CRR), Factor of Safety (FS) against liquefaction, Liquefaction Potential Index (LPI), and vertical settlements.

The results of our liquefaction analyses are presented in Appendix G. Estimates of liquefaction settlement under the analysis-level earthquake event (M=7.3 on the Hayward fault) are summarized in the table that follows.

Liquefaction Settlement Summary

Location	Estimated Total Liquefaction Settlement
CPT-2	1.1 inch
CPT-3	0.5 inch
CPT-4	0.3 inch
CPT-5	0.7 inch

Based on our understanding of the local geology, we interpret that were liquefaction to occur, it would likely take place within relatively thin, discontinuous layers, rather than in a widespread manner. The principal consequence of liquefaction occurrence would be settlement, and based on the available data and our analyses, we estimate that any seismic-related settlements at the Site would be small, with a total settlement of up to about 1 inch and a differential settlement of about ½ inch over a horizontal distance of 30 feet.

Surface manifestation of liquefaction, such as sand boils that occur when liquefied, near-surface soil escapes to the ground surface, can result in ground subsidence due to loss of material that is in addition to dynamic settlement. The Liquefaction Potential Index (LPI) described by Iwasaki et al. (1978) was computed from the results of our liquefaction analysis with the CPT data to evaluate the potential for surface manifestation of liquefaction. The computed values of the LPI, presented in Appendix G, indicate that the potential for surface manifestation of liquefaction effects is low.

5.03 Geologic Hazards Not Present

Lateral spreading is a phenomenon in which blocks of non-liquefied soil move laterally on top of an underlying continuous (or near-continuous) liquefied layer. Hazards posed by lateral spreading are typically greatest where there is a nearby topographic free face towards which spreading can occur. Because the potentially liquefiable layers are discontinuous and there is no significant topographic free face nearby, we judge the overall potential for significant earthquake-induced lateral spreading to occur at the Site is very low.

The site is not within an AP Zone and no active faults are mapped in the direct vicinity of the site. The closest AP Zone surrounds the active Hayward fault, which is approximately 1 mile to the east (Plate 10). Based on the foregoing, we judge there to be very low hazard for surface fault rupture at the site.

The site is located within a gently-sloping alluvial plain with no slopes in the direct vicinity of the site. The closest hills are about 1 mile to the east of the site. We judge there to be essentially no potential for large-scale landsliding to affect the site.

The site is near Elevation +172 feet and is about 1½ miles inland from the tsunami zone shown on the CGS Tsunami Inundation Map (CGS, 2018). A flood map by FEMA shows the site outside of areas considered susceptible to significant flooding. We judge there to be a low potential for flooding to affect the Site.

6. GEOTECHNICAL EVALUATIONS AND CONCLUSIONS

6.01 General

Based on the results of our investigation, it is our opinion that that the concept design described in this report is feasible and appropriate from a geotechnical standpoint, provided that the geotechnical recommendations presented in this report are appropriately implemented during the design and construction of the project. Geotechnical considerations for the project are discussed in the subsections that follow.

6.02 Seismic Considerations

The site is relatively free of geologic hazards except for strong earthquake groundshaking, a hazard shared throughout the San Francisco Bay region, which is mitigated through the seismic design provisions of the California Building Code. Geotechnical criteria for seismic design per the 2019 California Building Code and ASCE 7-16 are presented in Section 7.02 of this report.

The results of our analyses indicate that the overall potential for seismically-induced soil liquefaction to significantly affect the design and construction of the project is low. Our analysis of liquefaction potential and effects predict the Site may experience dynamic total settlement of up to 1 inch and a differential settlement of about ½ inch over a horizontal distance of 30 feet with liquefaction likely occurring in relatively thin, discontinuous layers. We judge that the small amounts of settlement predicted should be within the limits of what a new structure of the type envisioned can reasonably tolerate. Notably, amounts of liquefaction settlement predicted for this Site are not unique and we believe that generally similar amounts of settlement would be predicted for most sites in and around downtown Berkeley.

6.03 Foundation Support

Existing buildings in and around the site are supported on conventional spread footing foundations that appear to have performed acceptably well since the buildings were constructed. The adjacent Shattuck Hotel, built prior to 1914 (Plate 15), is five to six stories high with a single-story basement. Based on the results of our investigation, we judge that spread footings would also be an appropriate means of foundation support for the currently-envisioned Berkeley Plaza project, which involves eight stories of mostly lightweight construction over a single-story basement. Alternatively, a structural mat foundation below the basement garage would also appear to be appropriate.

At least two alternative options are considered feasible for the support of columns and other load-bearing elements outside the basement garage area: 1) deeper spread footings supported on natural soils at or below the level of the existing building foundations (i.e., below about Elevation +160 feet); or 2) shallower spread footings supported on engineered fill several feet below the new building's ground-floor level. For Option 2 (shallower footings), it will be necessary to remove all undocumented materials below the footing zone of influence to obtain adequate bearing and predictable settlement performance. Recommendations for these two foundation support scenarios are presented in Section 7.03.

We estimate that the long term post-construction settlement of spread footings designed and constructed as recommended in this report will be less than about one inch for footings/mats supported on natural soils below the level of the existing basement. For this case, we estimate that differential settlement between two hypothetical footings 30 feet apart will not exceed about one-half inch. Additional geotechnical analyses should be performed during the design phase to further quantify long-term settlement potential after preliminary foundation designs have been developed and anticipated foundation loading conditions are known (not in current scope).

6.04 Undocumented Fill Mitigation

In this context, the term "undocumented" refers to fill for which there are no records indicating that the fill was placed and compacted under engineering controls. Undocumented fill is commonly considered unsuitable for the support of new foundations and exterior flatwork (e.g., concrete slabs-on-grade and pavements) without mitigation. The building that currently occupies the Site has a single-story basement. Any fill that may be present below the existing basement floor slab would be considered undocumented. Where undocumented fill extends below the design bottom elevations of slabs-on-grade, mat foundations, or spread footings, mitigation will be required. This report provides recommendations for mitigation by removal-and-replacement.

6.05 Expansive Soil Mitigation

Expansive soils have the potential to shrink and swell with changes in moisture and can cause significant damage to improvements with which they are in contact unless appropriately mitigated. For engineering purposes, soil can be considered "non-expansive" if it has a Plasticity Index (PI) no greater than 15 and a Liquid Limit (LL) no greater than 40. Quarried granular materials (such as Caltrans Class 2 Aggregate Base and Class 2 Permeable Material) are inherently non-expansive as plastic silt and clay particles are essentially absent. Seasonal shrinking and swelling of expansive soils is not a concern below the depths of significant seasonal moisture change, which locally extends only a few feet below the ground surface. Expansive soil mitigation is typically not required below basement-level slabs-on-grade, mat foundations, or spread footings. It should, however, be anticipated that soils generated during excavation may not be suitable for use as fill in the upper several feet below future at-grade sidewalks and patio areas.

6.06 Design Considerations related to Groundwater

For liquefaction hazard analysis purposes, we assumed an "analysis-level" groundwater surface 12 feet below the ground surface. For building design purposes, we recognize the possibility that free water may occasionally be present at shallower depths due to extreme wet-weather events, changes in climate, or other unforeseen events such as pipe leaks or breaks. For this reason, we believe that the below grade portion of the new building should be waterproofed, unless the potential transmission of water into below-grade spaces is considered acceptable or otherwise accounted for in the project design.

Basements that are built to be waterproofed need to account for the possibility hydrostatic pressure, which is often evaluated based on a "design" groundwater surface elevation. Along the upslope sides of the future building, we estimate that the 12-foot groundwater depth used for liquefaction analysis purposes corresponds to about Elevation +163 feet (175 feet – 12 feet). This report recommends that hydrostatic forces be evaluated using a design groundwater elevation that is two feet higher (design Elevation = +165 feet).

At the time of this report, details involving the depth/elevation of the new basement floor and foundation type(s) at the basement level (e.g., footings/mats) had not been determined. Where waterproofed basements extend a significant distance below groundwater, hydrostatic uplift may have a strong influence on the design of basement foundations and floor slabs. In cases where hydrostatic uplift is moderate, it can commonly be resisted by the weight of the building provided that the basement slab/mat has the capacity to transfer the load to the building walls and columns. Hydrostatic pressures can also be resisted by deep foundation elements (e.g., piers, tiedown anchors, micropiles) through skin friction in deeper soils.

If a watertight basement is required, it is our opinion that recommendations pertaining to the selection, design and implementation of an appropriate waterproofing system should be provided by an experienced waterproofing consultant retained by the project design team.

6.07 Construction Considerations

6.07.1 Site Preparation and Monitoring

Prior to the start of onsite activities, all utilities within and surrounding the project area should be located, marked and protected or appropriately abandoned. The contractor should be required to thoroughly document the condition of nearby streets, structures, and utilities prior to the commencement of the onsite work. The contractor should also perform regular surveys during excavation and throughout the period of construction to monitor for settlement, lateral deflection, or construction-related damage. It is the contractor's responsibility to protect adjacent offsite improvements throughout the period of construction. Construction survey and monitoring requirements and action levels will be influenced by the project design and should be defined in a future phase prior to the issuance of the project Contract Documents.

6.07.2 Demolition, Shoring and Underpinning

The building that presently occupies the site was constructed in multiple phases and physical relationships between the exterior basement walls and the adjacent ground are locally complex. It should be anticipated that some, or all, of the existing exterior basement walls may be presently restrained at their tops by ground-level floors and at their bottoms by basement-level floor slabs. In addition, it should be anticipated that some adjacent building foundations may be supported above the basement floor level and/or planned depths of excavation. Site shoring and underpinning requirements should be evaluated prior to the start of demolition to ensure that adjacent existing improvements to remain (streets, sidewalks, underground utilities, structures, etc.) are not damaged during demolition, excavation, or new building construction.

The design, installation, monitoring, and appropriate removal/abandonment of temporary shoring is typically considered to be the responsibility of the contractor. The contractor should anticipate that the City of Berkeley may impose restrictions, fees, and/or abandonment requirements (e.g., tieback de-tensioning) on any temporary shoring elements that encroach upon or extend beneath City streets and sidewalks. The design of permanent support systems (including foundation underpinning) is typically considered the responsibility of the project Structural Engineer. It should be anticipated that permanent support may be required within the interior of the site if it is found that adjacent foundations for the Shattuck Hotel are supported above planned depths of excavation. Underpinning would require the permission and cooperation of the property owner whose foundation is to be underpinned.

6.07.3 Excavation and Dewatering

We anticipate that most materials within the Site can likely be excavated with conventional heavy excavation equipment (excavators, hoe-rams, pulverizers, etc.); however, materials could be encountered that would require equipment capable of cutting steel to remove. Foundation excavations for new footings/mats will need to be accomplished "in the dry" and it should be anticipated that dewatering may be needed prior to excavating down to foundation level. Temporary construction dewatering is considered the contractor's responsibility. The near-surface sandy soils that surround the Site are permeable and groundwater flows may be appreciable depending upon the time of year that excavation and foundation construction work is performed. In addition, sandy soils with little to no cohesion are prone to caving and may "flow" into excavations. Construction dewatering demands and ground loss risks associated with sandy soils can be reduced by using continuous low-permeability shoring such as secant piles (soil columns mix with embedded "H" sections). Dewatering demands can be minimized by extending low permeability shoring into underlying clayey soils. We anticipate that areal dewatering using wellpoints will likely not be necessary to construct a single-level basement and that under most conditions localized dewatering will likely be accomplished by pumping from within sumps or other low points within Site excavations. The contractor's responsibilities should include all necessary handling, storage, testing, and disposal of pumped groundwater.

6.07.4 Wet-Weather Construction

Although it is possible for excavation and/or construction to proceed during or immediately following the wet winter months, several geotechnical problems may occur which may increase costs and cause project delays. The water content of onsite soils may increase during the winter and rise significantly above optimum moisture content for compaction of subgrade or backfill materials. If this occurs, the contractor may be unable to achieve the specified levels of compaction. Dewatering requirements will potentially increase due to rainfall, surface runoff, seepage and rises in groundwater level. If footing or utility excavations are left open during winter rains, caving of the excavation walls may occur. Subgrade preparation beneath footings and slabs may prove difficult or infeasible. In general, we note that it has been our experience that increased clean-up costs may be incurred, and greater safety hazards may exist, if the work proceeds during the wet winter months.

6.07.5 Environmental Considerations

We recommend that the project environmental consultant provide additional guidance to the owner on issues relating to soils and groundwater generated by the contractor's operations. Environmental services are outside A3GEO's area of expertise and were excluded from the scope of this geotechnical investigation.

7. RECOMMENDATIONS

7.01 General

The following sections contain geotechnical recommendations for the design and construction of the proposed Berkeley Plaza project described in this report. In cases where the future design differs significantly from that described in this report, we should be consulted regarding the applicability of the conclusions and recommendations presented herein, and be provided the opportunity to provide supplemental recommendations, where appropriate.

7.02 Seismic Design

Structures at the site should be designed to resist strong ground shaking in accordance with the applicable building codes and local design practice. The seismic design parameters provided for the 2019 CBC include the following assumptions: (1) the structure will not contain a seismic isolation or damping system; and (2) the seismic response coefficient, Cs, will be determined as specified in Section 11.4.8 Exception 2 of ASCE 7-16. If the project structural engineer indicates that these assumptions are not valid, additional analysis may be needed to evaluate seismic design parameters. A summary of ASCE 7 seismic design parameters for the Site is presented below (the outdated ASCE 7-10 values shown for 2016 CBC are provided for comparison purposes):

ASCE 7 Seismic Design Parameters

Parameter	Factor/Coefficient	2016 CBC (ASCE 7-10) Value	2019 CBC (ASCE 7-16) Value
Short-Period MCE_R at 0.2s	S_s	2.326 g	**2.168 g**
1.0s Period MCE_R	S_1	0.967 g	**0.836 g**
Soil Profile Type	Site Class	D	**D**
Site Coefficient	F_a	1.00	**1. 0**
Site Coefficient	F_v	1.50	**(See CBC Section 11.4.8)**
Risk Coefficient	C_{RS}	1.007	**0.904**
Risk Coefficient	C_{R1}	0.984	**0.985**
Site-Specific Design Spectral Acceleration Parameters	S_{DS}	1.551	**1.445**
	S_{D1}	0.967	**(See CBC Section 11.4.8)**
Site Modified Peak Ground Acceleration	PGA_M	0.894 g	**1.002 g**

7.03 Spread Footings and Mat Foundations

7.03.1 Footing/Mat Zones of Influence

Spread footings and mat foundations should bear directly on firm natural undisturbed soils or on engineered fill placed directly on firm natural undisturbed soils. If footings/mats are to be founded above the depths/elevations where firm natural undisturbed soils are present, any and all undocumented materials below the footing/mat zone of influence will need to be removed prior to the placement of new engineered fill. For design purposes the footing/mat zone of influence can be assumed to project down and outward from the bottom of the footing/mat at an inclination of 1:1 (45 degrees). Within zones of influence, existing concrete floor slabs and spread footings should be removed along with any old fill, disturbed soil, or other unsuitable materials at the direction of A3GEO.

7.03.2 Soil Bearing

Footings and mats can be designed using the following bearing pressures:

Bearing Pressures for Footings/Mats on Natural Undisturbed Soil

Load Case	Bearing Pressure (psf)	Minimum Factor of Safety
DL Allowable	2,000	3.0
DL + LL Allowable	3,000	2.0
Total Allowable	4,000	1.5
Ultimate	6,000	1.0

Continuous and isolated spread footings should have minimum widths of 18 inches and 24 inches, respectively. Footings located adjacent to other footings or utility trenches should have their bearing surfaces situated below an imaginary 1.5 horizontal to 1 vertical (1H:1V) plane projected upward from the bottom of the adjacent footing or utility trench.

Mat foundations can be initially evaluated using a subgrade modulus (k) value of 150 pounds per square inch per inch (pci). Because the modulus of subgrade reaction is a function of soil stiffness as well as the rigidity of the mat, A3GEO should consult with the project Structural Engineer during mat foundation design, particularly in cases where soil subgrade modulus has a strong influence. We recommend that we review the results of initial analyses performed using the recommended subgrade modulus value so that we can provide supplemental geotechnical recommendations, if appropriate.

Additional geotechnical analyses should be performed during the design phase to further quantify allowable bearing pressures and long-term settlement potential after preliminary foundation designs have been developed and anticipated foundation loading conditions are known.

7.03.3 Lateral Load Resistance

Resistance to lateral loads may be achieved through a combination of passive soil resistance and base friction. The passive resistance of footings surrounded by soil can be evaluated using an equivalent fluid weight of 300 pounds per cubic foot (pcf) above the design water table and 150 pcf below the design water table. In this report, we recommend a design groundwater elevation of +165 feet (about two feet above the level of the existing building basement floor level) be assumed for structural design purposes.

The preceding equivalent fluid weights can be increased by one-third for dynamic loading. A friction coefficient of 0.35 can be used to evaluate frictional resistance for structural concrete in direct contact with soil. A lower frictional coefficient of 0.15 should be used to evaluate frictional resistance where structural concrete is separated from soil by a moisture barrier or waterproofing membrane. The passive and frictional resistance values in this section include a factor of safety of at least 1.5 and can be fully mobilized with deformations of less than ½- and ¼- inch, respectively.

7.03.4 Footing/Mat Construction

Footing/mat excavations should be checked by A3GEO for proper depth, bearing, and cleanout prior to the placement of reinforcing steel. Any wet, weak, soft, or otherwise unsuitable soils found to be present should be excavated and replaced in accordance with A3GEO's recommendations. Foundation excavations should be kept moist and free of loose material and standing water prior to concrete placement. The bottoms of mat foundation excavations should be checked by A3GEO and confirmed to be uniformly firm and non-yielding.

7.04 Permanent Basement Retaining Walls

7.04.1 Lateral Earth Pressures

This section presents static lateral earth pressure distributions for use in the design of permanent basement retaining walls. The recommended earth pressure distribution for the static case is based on "at-rest" earth pressures, which are appropriate for walls that are not free to rotate to a degree that would allow active earth pressures to be used. The lateral earth pressure distributions in the following table are in pounds per square foot (psf) per foot of depth, which can also be expressed terms of an equivalent fluid unit weight in pounds per cubic foot (pcf).

Static (Non-Earthquake) Lateral Earth Pressure Distributions for Basement Retaining Walls

Loading Condition	At-Rest Pressure Equivalent Fluid Unit Weight
Above design groundwater elevation	65 pcf
Below design groundwater elevation	95 pcf

We recommend a uniform lateral pressure of 100 psf be applied over the top 10 feet of walls where it is physically possible for vehicles (such as fire trucks) to be present behind the top of the wall. Large and/or concentrated surcharge loads should be evaluated on a case-by-case basis; the contractor should be responsible for evaluating and protecting basement walls from all construction-related surcharge loadings. The recommended lateral pressure distributions presented in this section are unfactored and should be viewed as reasonable approximates of actual lateral pressures under the specified loading conditions.

7.04.2 Seismic Lateral Pressures

This section presents seismic lateral earth pressure distributions for use in the design of permanent basement retaining walls. The recommended earth pressure distribution for the seismic case is based on "active" earth pressures, to which a uniform seismic increment representing the increase in lateral pressure caused by earthquake shaking is added. The active lateral earth pressure distributions in the following table are in pounds per square foot per foot of depth (pcf). The recommended uniform seismic increment (18H) is in psf, where "H" is the height of retained soil (wall height), in feet.

Seismic (Earthquake) Lateral Earth Pressure Distributions for Basement Retaining Walls

Loading Condition	Active Pressure Equivalent Fluid Unit Weight	Seismic Increment (H = wall height in feet)
Above design groundwater elevation	45 pcf	18H psf

Below design groundwater elevation	85 pcf	18H psf

7.05 Earthwork

7.05.1 Unsuitable Materials

Unsuitable materials include, but may not be limited to dry, loose, soft, wet, expansive, organic, or compressible natural soil, and undocumented or otherwise deleterious fill materials. Excavations should be backfilled with engineered fill or controlled low strength material (CLSM).

If unsuitable materials are encountered during construction, we recommend that all unsuitable soils be removed from within the bearing zone below and surrounding planned foundations. We recommend that the bearing zone be defined by imaginary planes inclined at 1:1 (horizontal to vertical) extending downwards and outwards from the outer edge of the foundations. The minimum vertical extent of overexcavation will depend upon the depth of unsuitable material requiring removal, which A3GEO will determine in the field during overexcavation.

7.05.2 Fill Materials

General fill can be used as engineered fill, except where non-expansive material is specifically required. Foundations and slabs founded at shallow depths (relative to adjacent street grades) should be founded on non-expansive material. We recommend that the non-expansive layer beneath shallow footings/mats and concrete slabs that are cast on-grade be at least 18 inches thick. These recommendations do not apply to footings or slabs/mats at the basement level, which can be considered below the depth of seasonal moisture change. Fill materials should conform to the requirements presented below:

General Fill - General fill material should have an organic content of less than 3 percent by volume and should not contain rocks or lumps larger than 6 inches in greatest dimension.

Non-Expansive Fill - Non-expansive fill material should:

- Be free of 6-inch plus material with no more than 15 percent of material larger than 2.5 inches;
- Be free of organic material, debris and environmental contaminants;
- Have a Plasticity Index of 12 or less; and
- Have a Liquid Limit of 40 or less.

All proposed fill materials should be approved by A3GEO prior to their use. Some of the materials cleared or excavated from the site may be suitable for re-use as fill, from a geotechnical standpoint, if they can be processed (i.e., by crushing and/or blending) to meet the above requirements. Import material should be evaluated by our firm prior to its importation to the site.

7.05.3 Fill Placement

Fill materials should be placed in a manner that minimizes lenses, pockets and/or layers of materials differing substantially in texture or gradation from the surrounding fill materials. The soils should be spread in uniform layers not exceeding 8 inches in loose thickness prior to compaction. Each layer should be compacted using mechanical means in a uniform and systematic manner. The fill should be constructed in layers such that the surface of each layer is nearly level. Fill should be placed and compacted based on the following requirements (per ASTM D-1557 Test Methods):

- General fill should be moisture conditioned, as necessary, to between 3 and 5 percent over optimum moisture content and compacted to 90 percent, or more, relative compaction.

- Non-expansive fill containing an appreciable amount of fines (silt and/or clay) should be moisture conditioned, as necessary, to near optimum moisture content and compacted to at least 90 percent relative compaction.
- Non-expansive fill that is predominantly granular (sand and/or gravel) should be moisture conditioned, as necessary, to near optimum moisture content and compacted to at least 95 percent relative compaction.

It is possible that the soil to be compacted may be excessively wet or dry depending on the moisture content at the time of construction. If the soils are too wet, they may be dried by aeration or by mixing with drier materials. If the soils are too dry, they may be wetted by the addition of water or by mixing with wetter materials. The contractor should take appropriate precautions (such as temporary bracing or the use of lightweight equipment) when placing and compacting backfill behind retaining walls to avoid overstressing the wall.

7.05.4 Utility Trenches

Utility trenches should be backfilled with fill placed in lifts not exceeding 8 inches in uncompacted thickness. Trenches should be filled by placing a granular layer (shading) beneath and around the pipe, and then 6 to 12 inches of shading should be carefully placed and tamped above the pipe. The remaining portion of the trench should be backfilled with onsite or import soil. The backfill (above shading layers) should be placed and compacted to a minimum relative degree of compaction of 90 percent based on ASTM D-1557. The compaction requirements given above should be considered minimum recommended requirements. If the City of Berkeley and/or utility company specifications require more stringent backfill requirements, those specifications should be followed.

If imported granular soil is used, sufficient water should be added during the trench backfilling operations to prevent the soil from “bulking” during compaction. All compaction operations should be performed by mechanical means only. We recommend against jetting.

Where granular backfill is used in utility trenches, we recommend an impermeable plug or mastic sealant be used where utilities pass beneath shallow improvements (e.g., pavements, slabs, shallow foundations) to minimize the potential for free water or moisture to affect any underlying or adjacent expansive soil materials. Finally, because of the potential for collapse of trench walls, we recommend the contractor carefully evaluate the stability of all trenches and use temporary shoring, where appropriate. The design and installation of the temporary shoring should be wholly the responsibility of the contractor. In addition, all state and local regulations governing safety around such excavations should be carefully followed.

7.05.5 Exterior Slabs-on-Grade

We recommend exterior slabs-on-grade be supported on a minimum of 18 inches of non-expansive material. Subgrades beneath future slabs-on-grade should be proof-rolled under our observation and confirmed to be uniform and non-yielding prior to the placement of the slab reinforcement. Concrete slabs that may be subject to vehicle loadings should be evaluated on an individual basis.

Slab reinforcing should be provided in accordance with the anticipated use and loading of the slab. We recommend that exterior slabs-on-grade be at least 4 inches thick and be reinforced with steel bar reinforcement. Exterior slabs should be structurally independent from buildings and be free floating. Score cuts or construction joints should be provided and minor movement and cracking of the slab should be expected. Steps to the building from exterior slab areas should include a gap between the steps and the building foundations. The recommendations presented above, if properly implemented, should help reduce the frequency and magnitude of exterior slab cracking.

7.06 Construction Monitoring and Instrumentation

An instrumentation program should be implemented to evaluate design assumptions, and monitor vibrations at adjacent structures, groundwater levels, deformations of the excavations, and ground surface settlement. The monitoring program should include seismographs, groundwater observation wells, and an array of surface control points. The data obtained should be distributed to appropriate parties during the course of construction. We recommend an instrumentation and monitoring program be implemented, consisting of the components in the following sections.

7.06.1 Preconstruction Conditions Surveys

We recommend preconstruction conditions surveys be completed before the beginning of construction on structures within approximately 50 feet of proposed construction activities. Preconstruction condition surveys should include the exterior and interior of the adjacent neighboring structures. Surveys should include photographs and measurements of relevant site features and hardscape features, including distress features, such as cracks and/or separations that may be present. Consideration may be given to videotaping the survey.

7.06.2 Survey Reference Points

Survey reference points should be installed on the faces of existing adjacent building walls to monitor for potential movement. Additional survey reference points should be placed on adjacent streets, sidewalks, and at other locations determined by the design team. A survey monitoring plan should be developed by the design team prior to construction, and monitoring program threshold and limiting criteria should be incorporated into the Contract Documents. The survey targets should be installed near the excavations at approximately 20-foot spacings. We recommend that the contractor be responsible for maintaining total settlement or horizontal displacement at any survey point to less than ½ inch. If the settlements reach this limit, we recommend that a further review of construction methodologies be performed and appropriate changes be made.

7.06.3 Construction Vibration Monitoring

Humans can detect vibrations at very low levels which may result in complaints and damage claims. Published data indicate that transient vibrations from construction activities, such as pile driving, are noticeable at peak particle velocities as low as 0.02 to 0.06 inches per second (ips). At peak particle velocities as low as 0.2 to 0.4 ips, the vibrations are disturbing and may result in complaints and damage claims. However, these vibration levels are typically below the peak particle velocity threshold considered to cause cosmetic damage to modern commercial/residential construction.

An additional concern is the possibility of settlement of the sand, silty sand and sandy silt underlying structures during construction activities. This settlement may result in damage to the structures. Based on our experience with past projects in similar conditions, if the construction vibrations can be maintained below a peak particle velocity of 0.2 ips, the settlement can likely be limited to acceptable levels.

We recommend that vibration caused by construction activities be monitored in terms of peak particle velocity during construction with seismographs positioned near the adjacent structures and monitored during construction. Based on the type and condition of adjacent structures, an appropriate peak particle velocity threshold should be selected by the vibration monitoring specialist. If peak particle velocities exceed this threshold, construction activity should stop, and construction procedures should be re-evaluated to reduce the potential for excessive vibration. Of greater concern is the possibility of settlement of the sand, silty sand and sandy silt underlying structures during construction activities. This settlement may result in damage to the structures. Based on our experience with past projects in similar conditions, if the construction vibrations can be maintained below a peak particle velocity of 0.2 ips, the settlement can likely be limited to acceptable levels.

7.07 Future Geotechnical Services

7.07.1 Design Consultation and Plan Reviews

We recommend that we provide geotechnical consultation to the project team during the design phase in order to: (1) check that the design recommendations presented in this report are appropriately incorporated into the project plans and specifications; and (2) provide supplemental geotechnical recommendations, as needed. We recommend that we review the project plans and specifications as they are being developed so that we may provide timely input. We should also perform a general review of the geotechnical aspects of the final plans and specifications, the results of which we should document in a formal plan review letter.

7.07.2 Review of Contractor Requests and Submittals

During the bidding and construction phases, we should review all Requests for Clarification (RFCs) and Requests for Information (RFIs) that are geotechnical in nature. We recommend that we also review all geotechnical submittals from the contractor, including (but not necessarily limited to) those pertaining to shoring, dewatering, excavation/grading and geotechnical materials.

7.07.3 Construction Observation and Testing

The analyses and recommendations submitted in this report are based in part upon interpretations and data obtained from our subsurface exploration and offsite borings by others. These interpretations and data pertain to specific locations at specific times; the nature and extent of any subsurface variations present may therefore not become evident until construction. If variations then become apparent, it will be necessary to re-examine the recommendations of this report.

It is critical that we be retained to provide geotechnical engineering services during the construction phases of the work in order to observe compliance with the design concepts, specifications, and recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated prior to the start of construction. The scope of our construction-phase observation and testing services should include (but not necessarily be limited to) site preparation, shoring installation, mass excavation, footing excavations, fill placement and compaction, retaining wall construction, pavement and slab-on-grade subgrade preparation, placement and compaction of aggregate base, and utility installations.

8. LIMITATIONS

This report has been prepared for the exclusive use of CA Ventures and their consultants for specific application to the Berkeley Plaza Project described herein. The opinions presented in this report were developed in accordance with generally-accepted geotechnical and engineering geologic principles and practices. No other warranty, expressed or implied, is made. In the event that any changes in the nature or design of the Project are planned, the conclusions and recommendations contained in this report should not be considered valid unless the changes are reviewed, and the conclusions of this report are modified or verified in writing.

The findings of this report are valid as of the present date. However, the passing of time will likely change the conditions of the existing property due to natural processes or the works of man. In addition, due to legislation or the broadening of knowledge, changes in applicable or appropriate standards will occur. Accordingly, this report should not be relied upon after a period of three years without being reviewed by this office.

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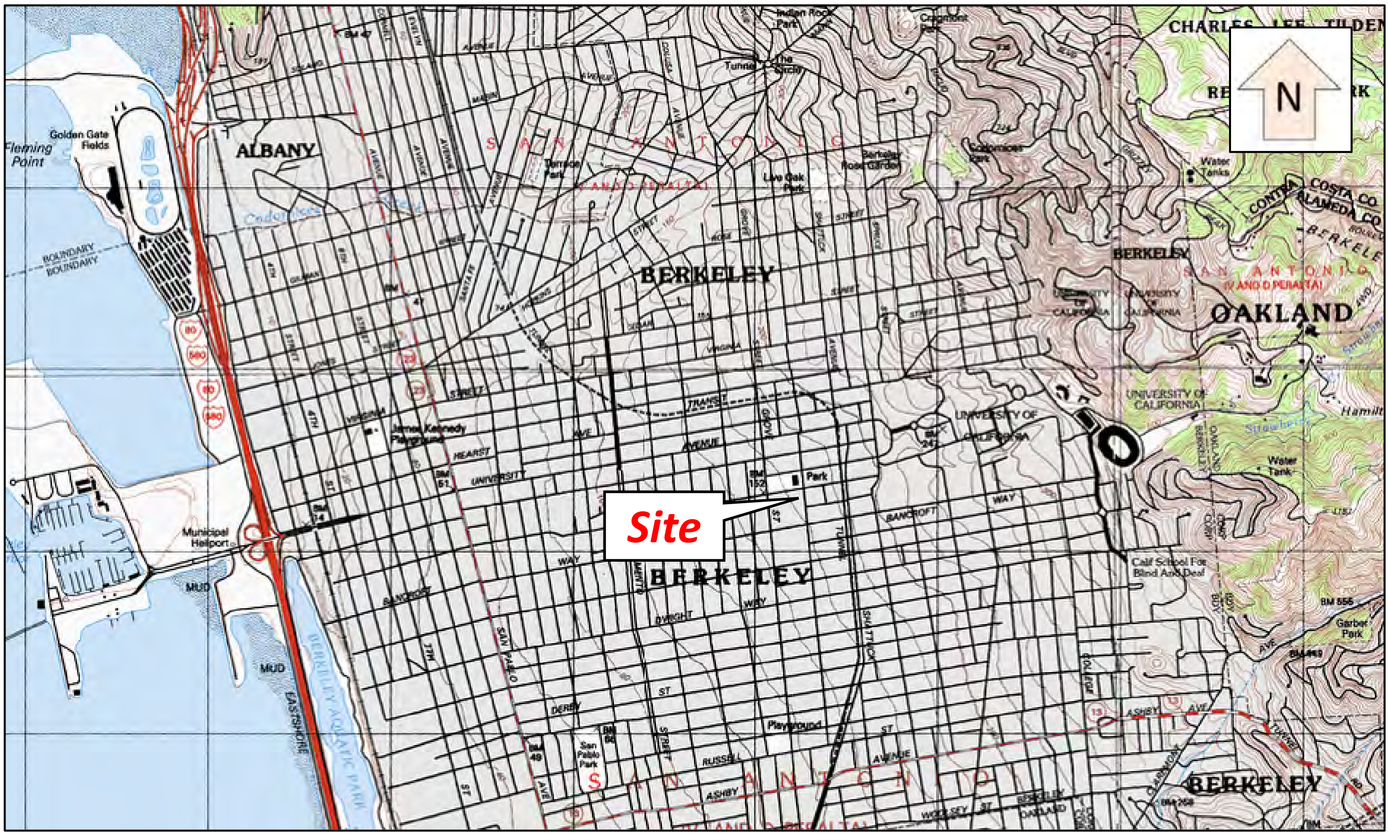
A3GEO

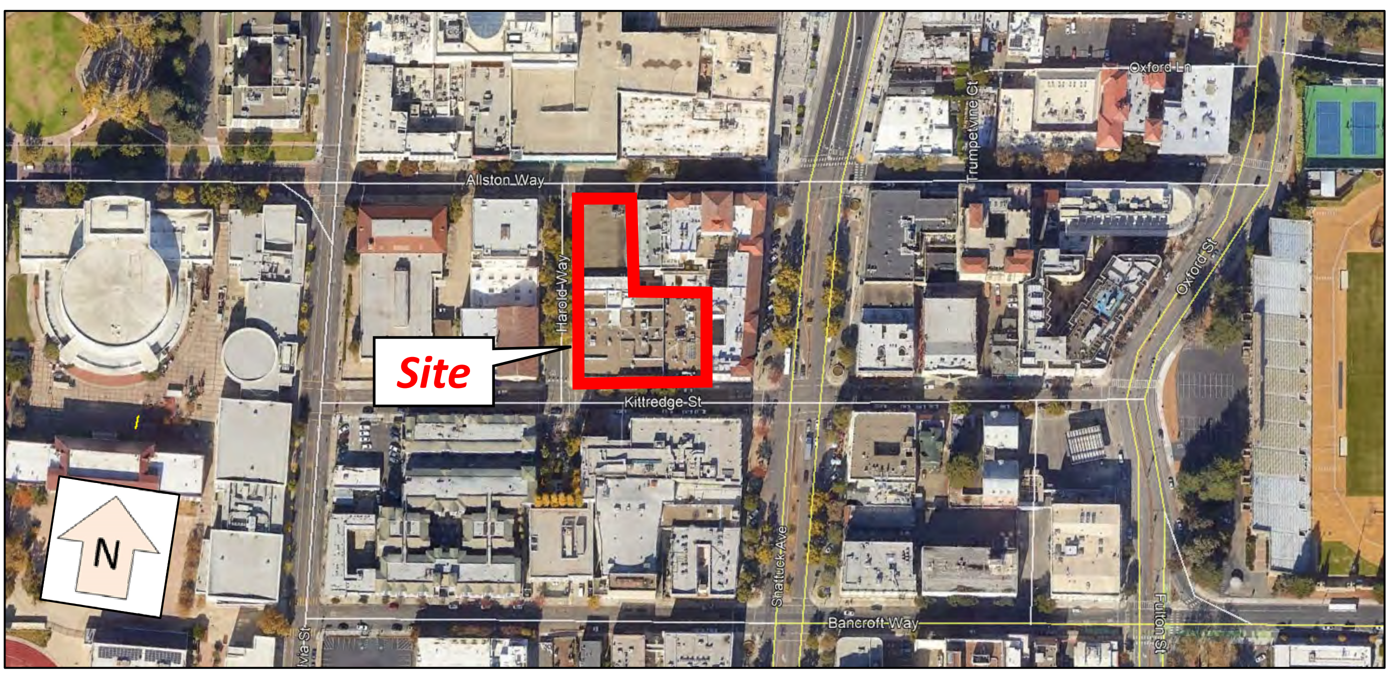
PLATES

BERKELEY PLAZA
BERKELEY, CALIFORNIA

A3GEO

Source: U.S. Geologic Survey (USGS) Quadrangle Maps

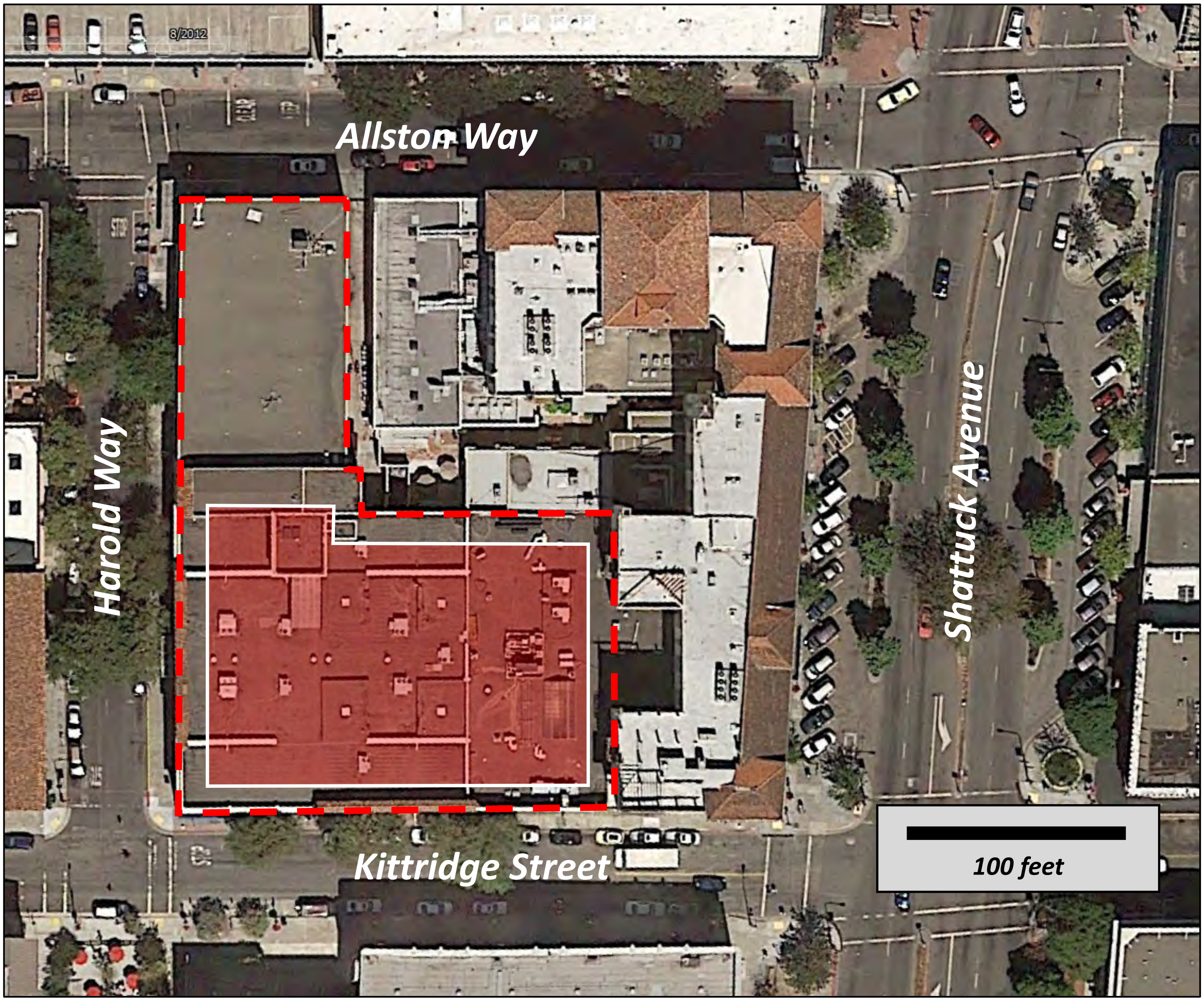




BERKELEY PLAZA
BERKELEY, CALIFORNIA

Plate 1
Vicinity and Location Maps

Source: Google Earth (imagery date: 8/28/2012)



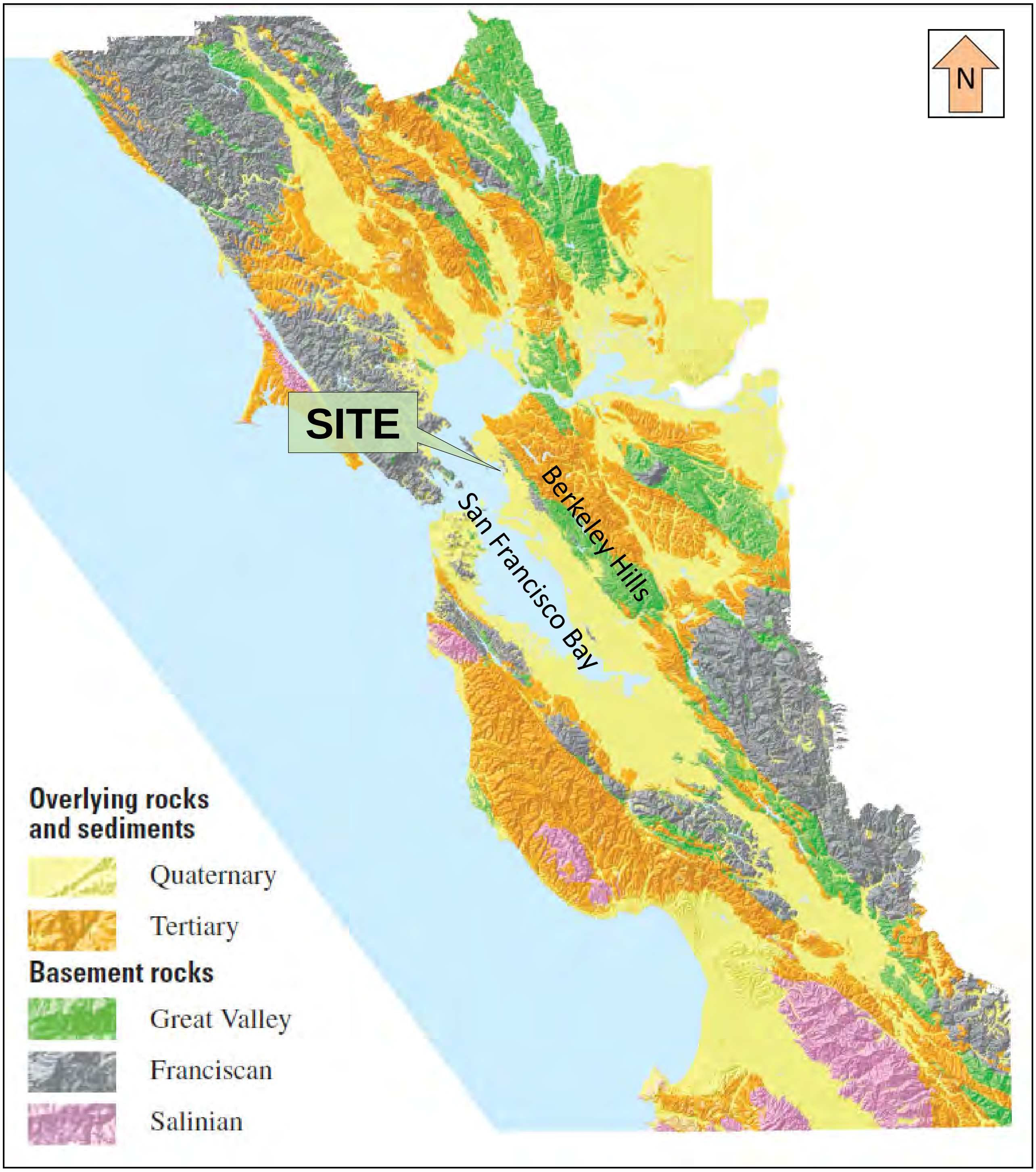
Approximate Site Limits

Approximate Limits of Planned Below-Grade Construction

BERKELEY PLAZA
BERKELEY, CALIFORNIA

Plate 2
Site Aerial Photograph

SOURCE: Graymer, et al, 2006



BERKELEY PLAZA
BERKELEY, CALIFORNIA

Plate 3
Regional Geology Map

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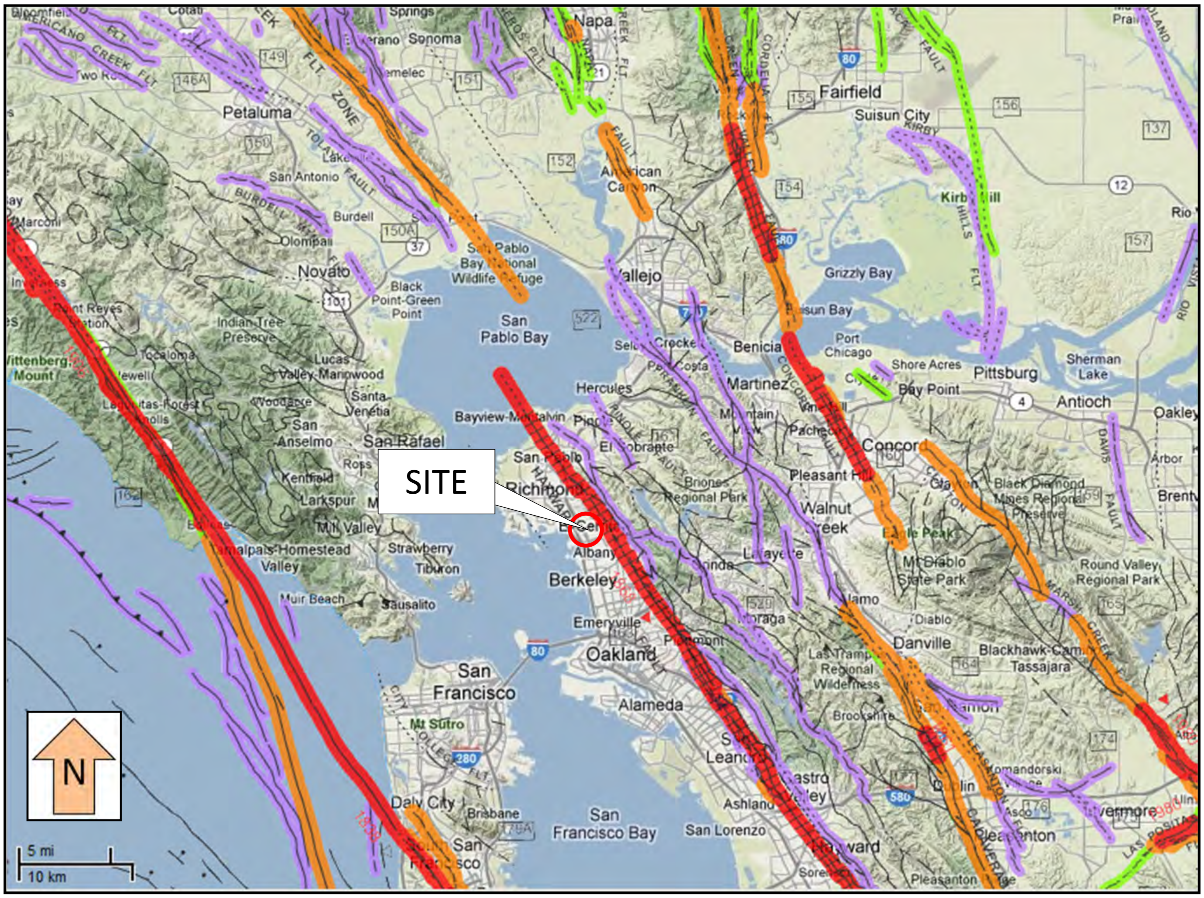
Rodgers Creek

Green Valley - Concord



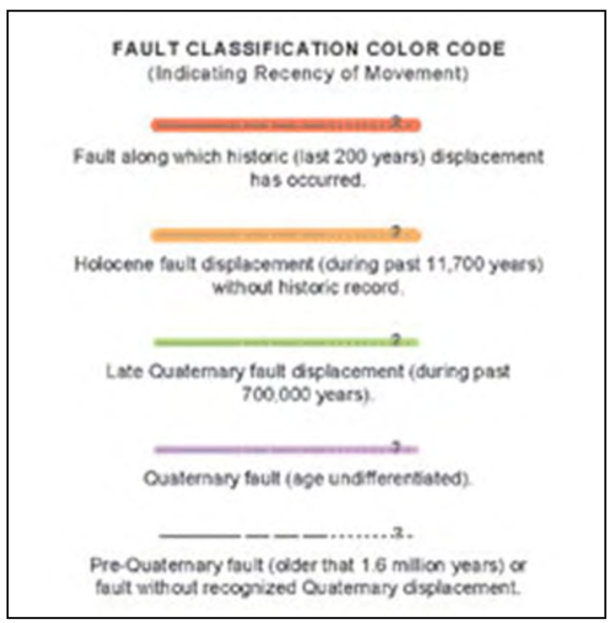
Greenville

San Gregorio

San Andreas

Hayward

Calaveras



SOURCE:
http://www.quake.ca.gov/gmaps/FAM/faultactivitymap.html

Jennings and Bryant, 2010

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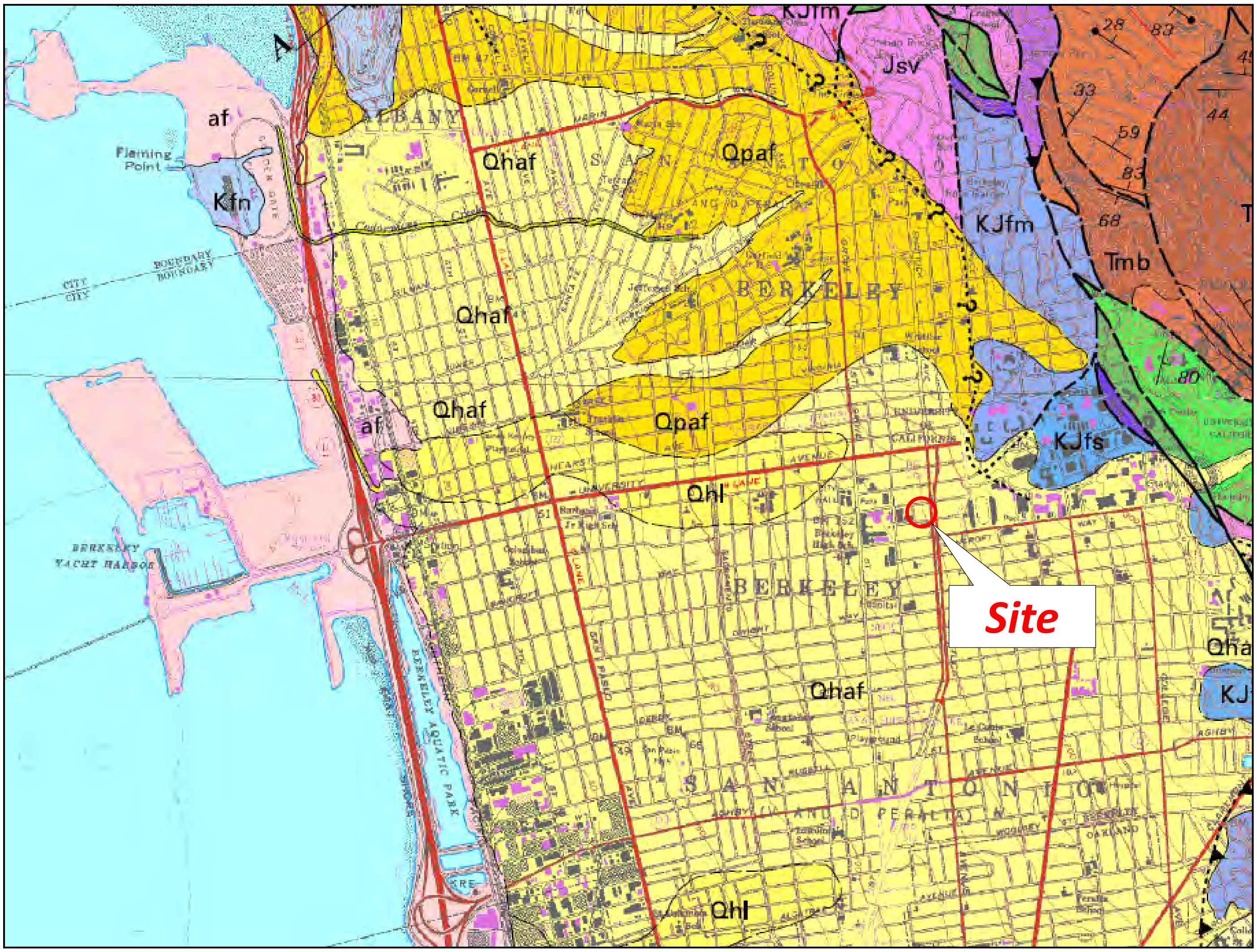
BERKELEY, CALIFORNIA

Plate 4
CGS Fault Activity Map

SOURCE: Graymer, 2000 , USGS MF-2342



LOCAL MAP UNITS

Qhaf	**Alluvial fan and fluvial deposits (Holocene)**
Qhl	**Natural levee deposits (Holocene)**
Qpaf	**Alluvial fan and fluvial deposits (Pleistocene)**
KJfs	**Franciscan complex sandstone, undivided (Late Cretaceous to Late Jurassic)**
KJfm	**Franciscan complex, mélange (Cretaceous Late Jurassic), includes mapped locally:**
fs	**Graywacke and meta-graywacke blocks**

APPROXIMATE SCALE

0 1 mile 2 miles

Contact-- Depositional or intrusive contact, dashed where approximately located, dotted where concealed

Fault-- Dashed where approximately located, small dashes where inferred, dotted where concealed, queried where location is uncertain.

Reverse or thrust fault-- Dashed where approximately located, dotted where concealed

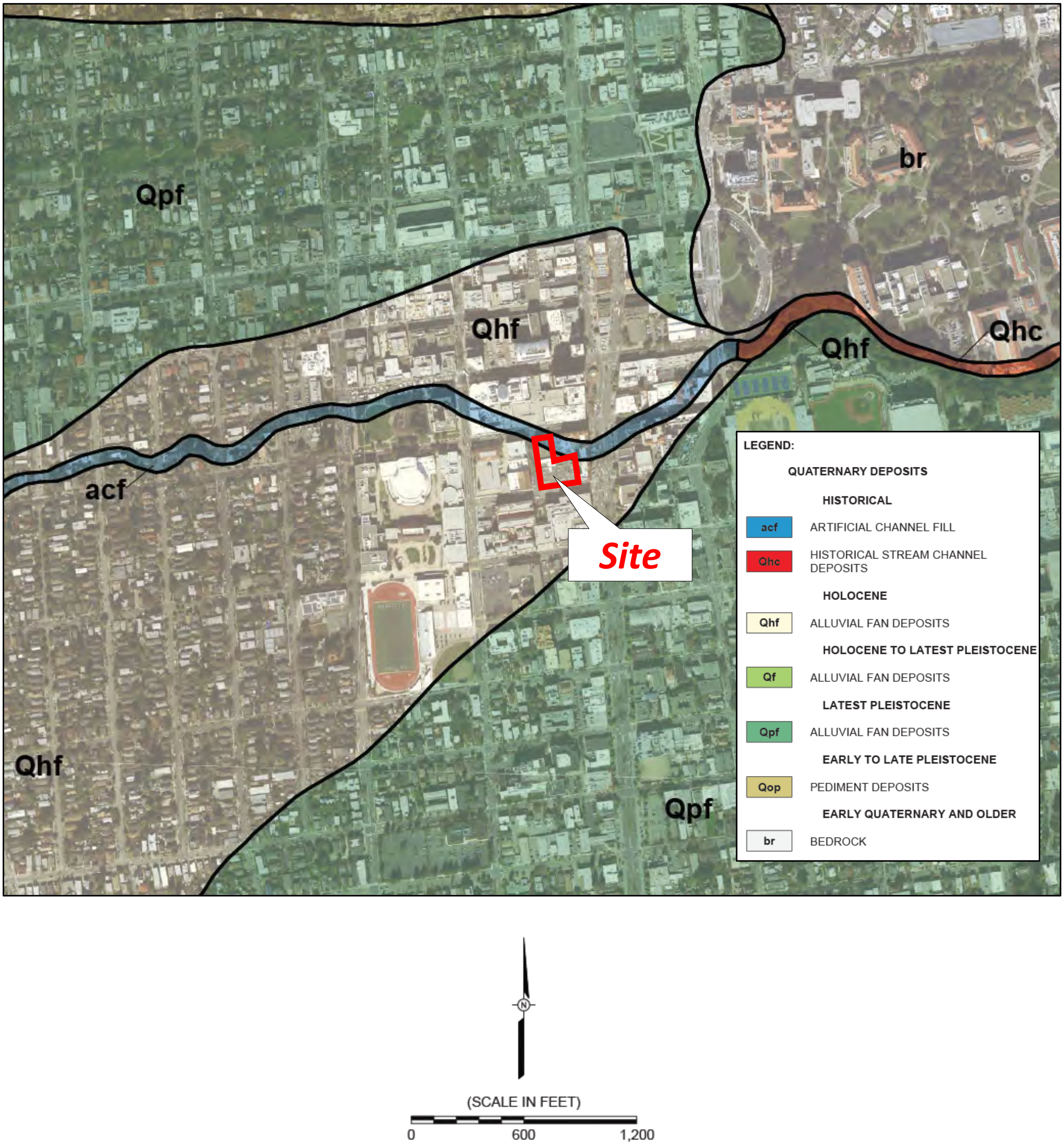
Normal fault-- Dashed where approximately located, dotted where concealed

BERKELEY PLAZA
BERKELEY, CALIFORNIA

Plate 5
USGS Regional Geologic Map

SOURCE: Witter, et al., 2006 , USGS OFR 2006-1037

A3GEO



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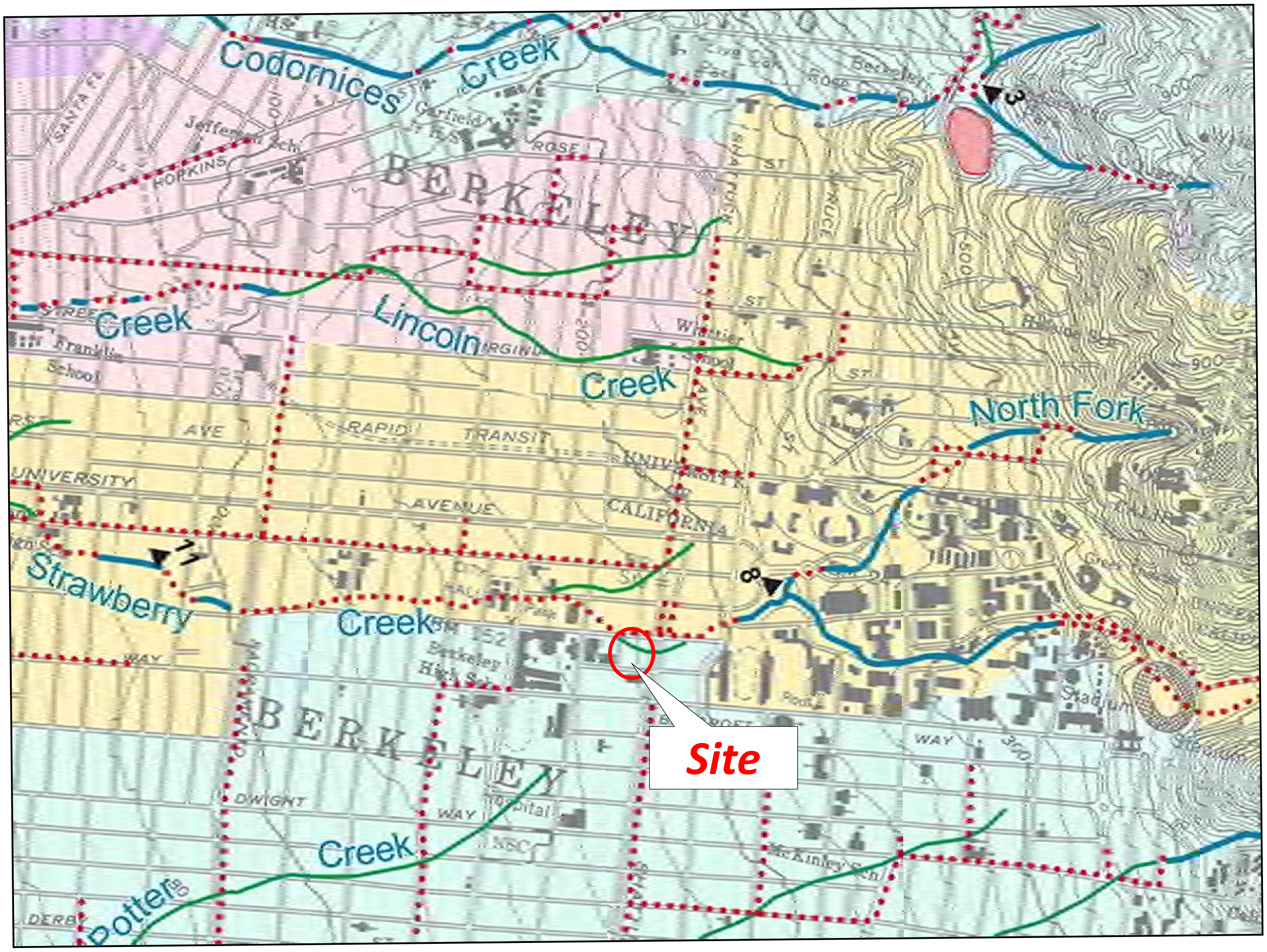
BERKELEY, CALIFORNIA

Plate 6
USGS Quaternary Deposits Map

A3GEO



Creeks

Former creeks, buried or drained, circa 1850

Natural end of creek channel, circa 1850

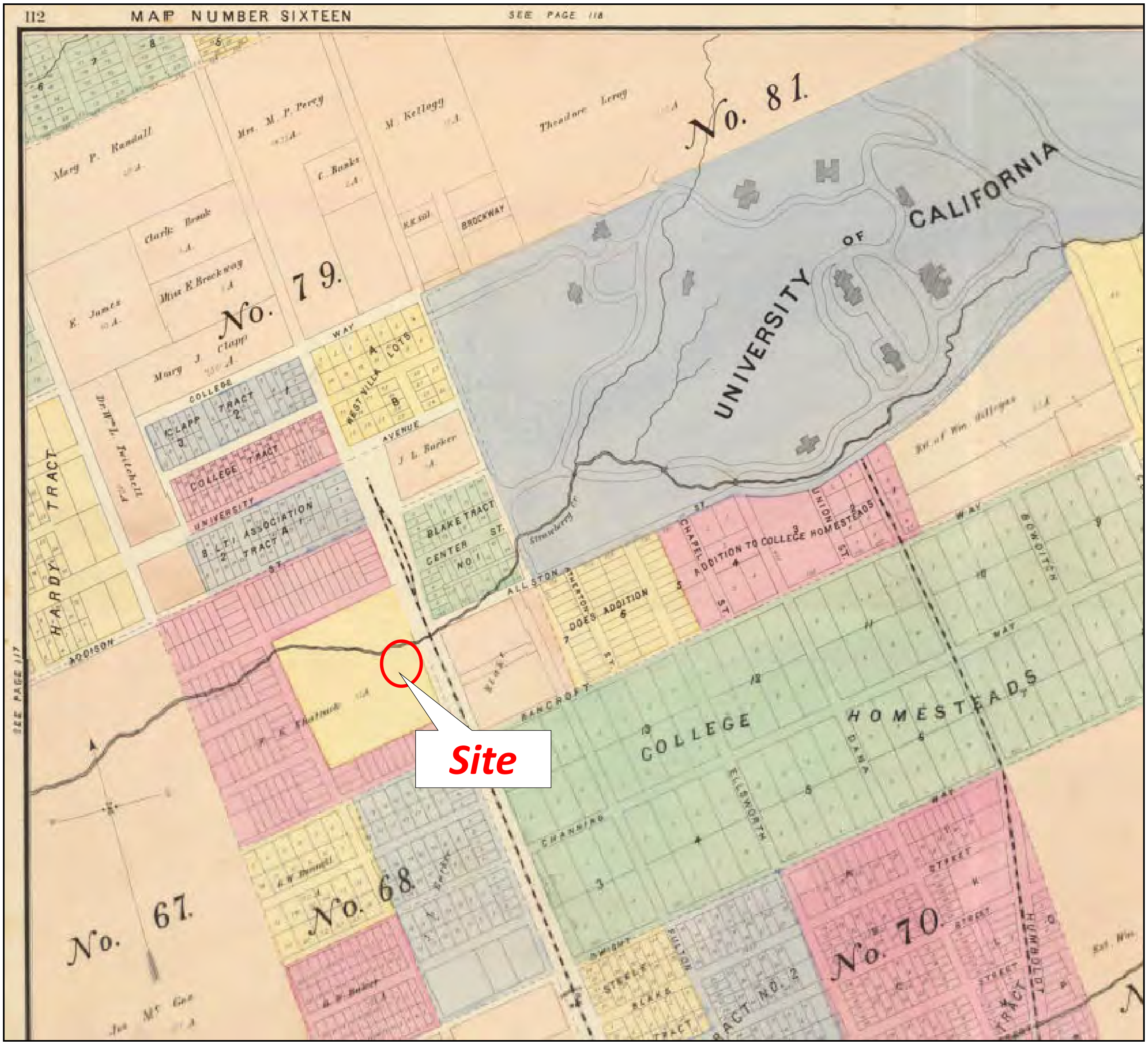
Underground culverts and storm drains

Engineered channels

BERKELEY PLAZA
BERKELEY, CALIFORNIA

Plate 7
Berkeley Creek Map

A3GEO



BERKELEY PLAZA
BERKELEY, CALIFORNIA

Plate 8
1878 Thompson & West Map

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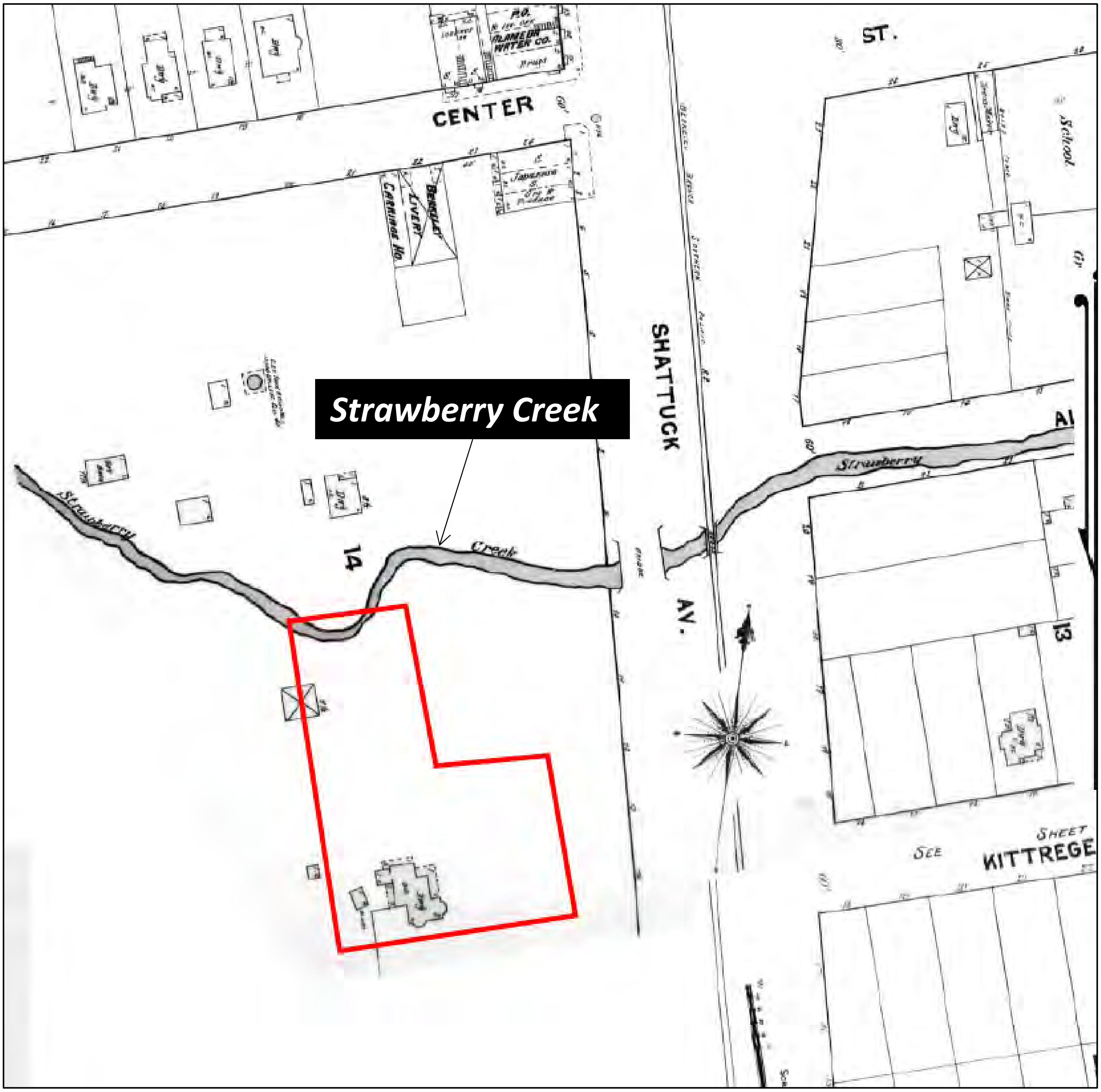

BERKELEY PLAZA
BERKELEY, CALIFORNIA

Plate 9
1890 Sanborn Map

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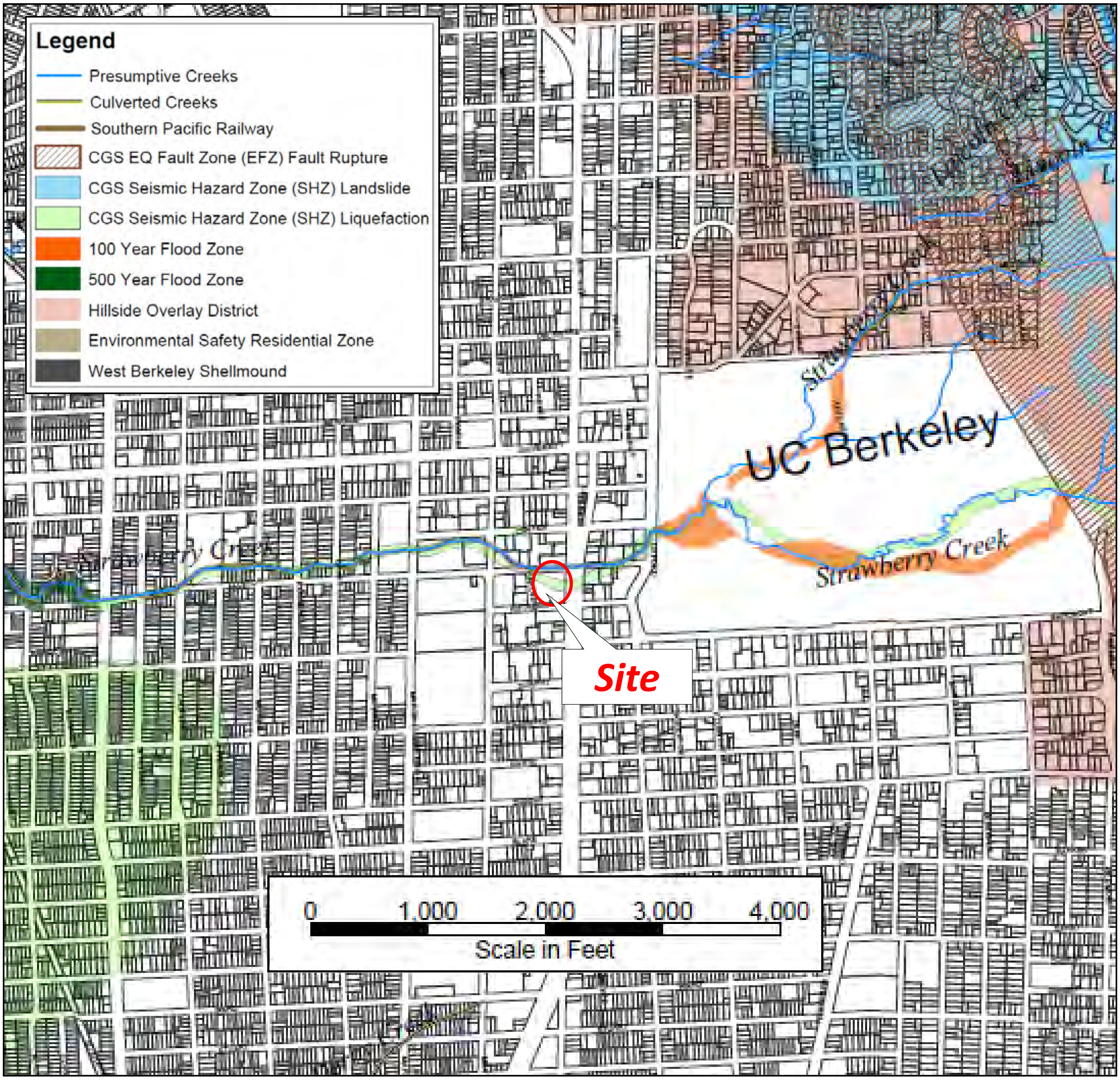
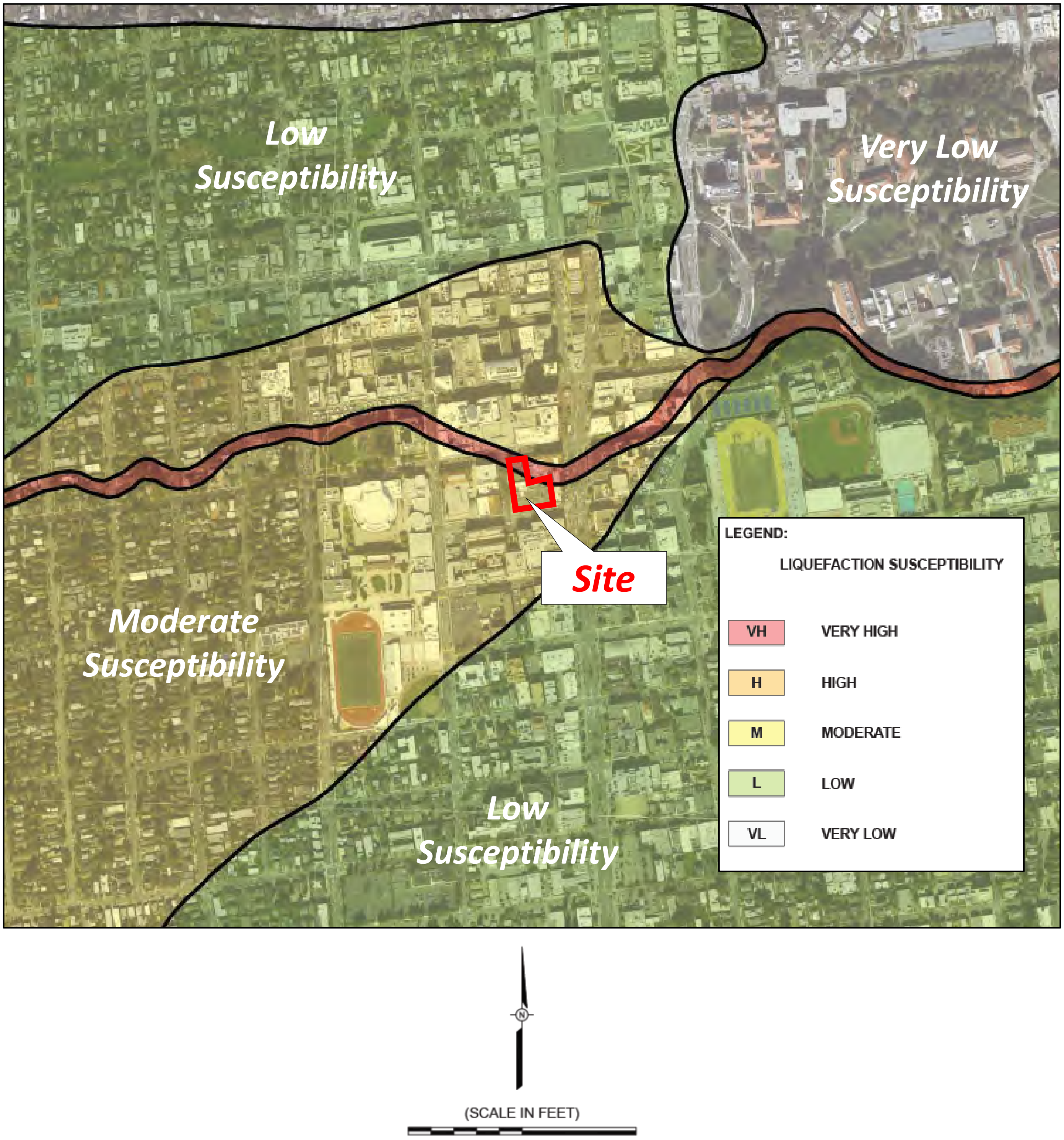


BERKELEY PLAZA
BERKELEY, CALIFORNIA

Plate 10
Berkeley Environmental Constraints Map

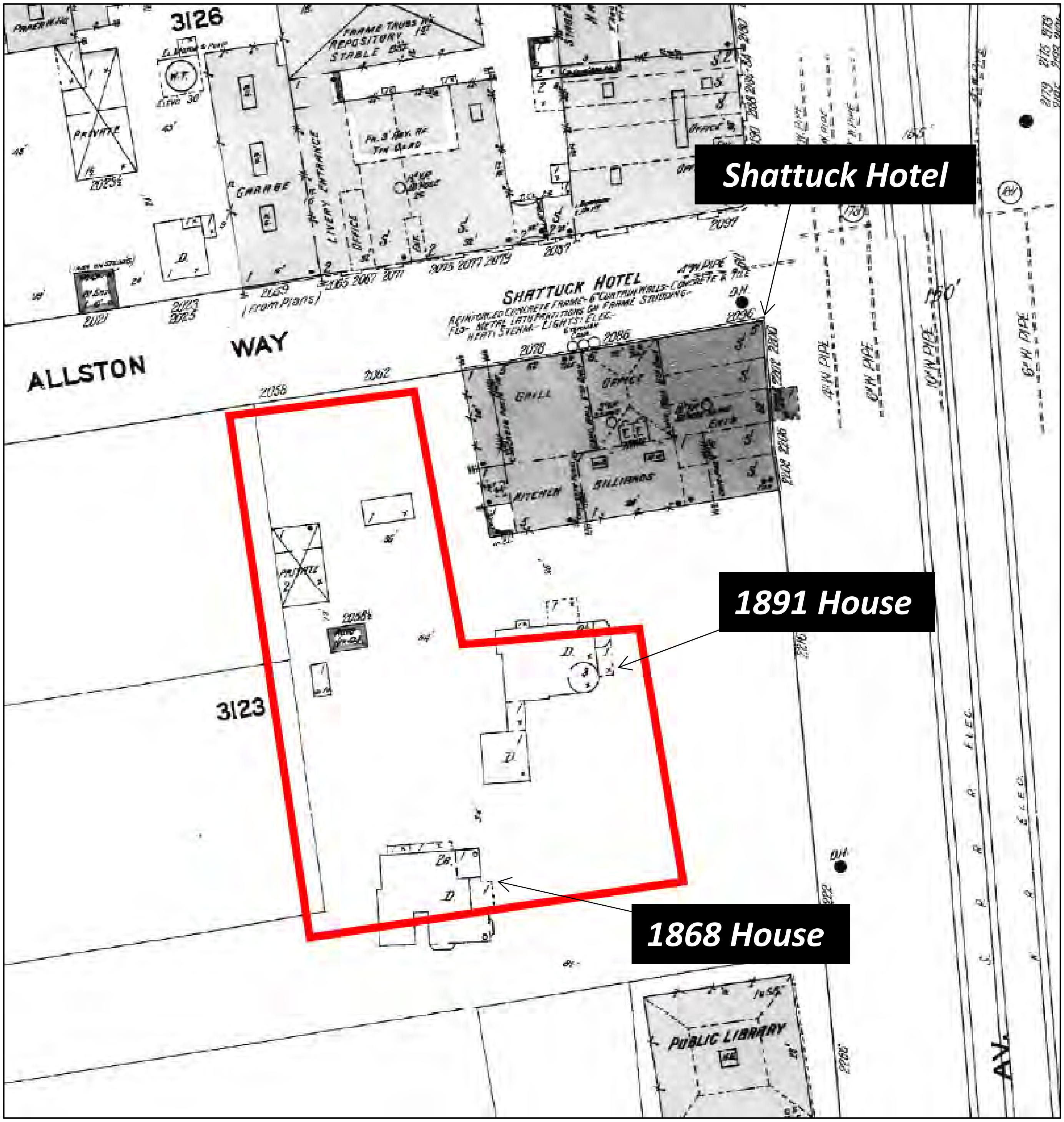
A3GEO

SOURCE: Witter, et al., 2006 , USGS OFR 2006-1037



BERKELEY PLAZA
BERKELEY, CALIFORNIA

Plate 11
USGS Liquefaction Susceptibility Map



BERKELEY PLAZA
BERKELEY, CALIFORNIA

Plate 12
1911 Sanborn Map

Source: https://berkeleyplaques.org/plaque/shattuck-hotel/

Plate 13
Shattuck Hotel

A3GEO

Source: berkeleyheritage.com

1868 House

1891 House

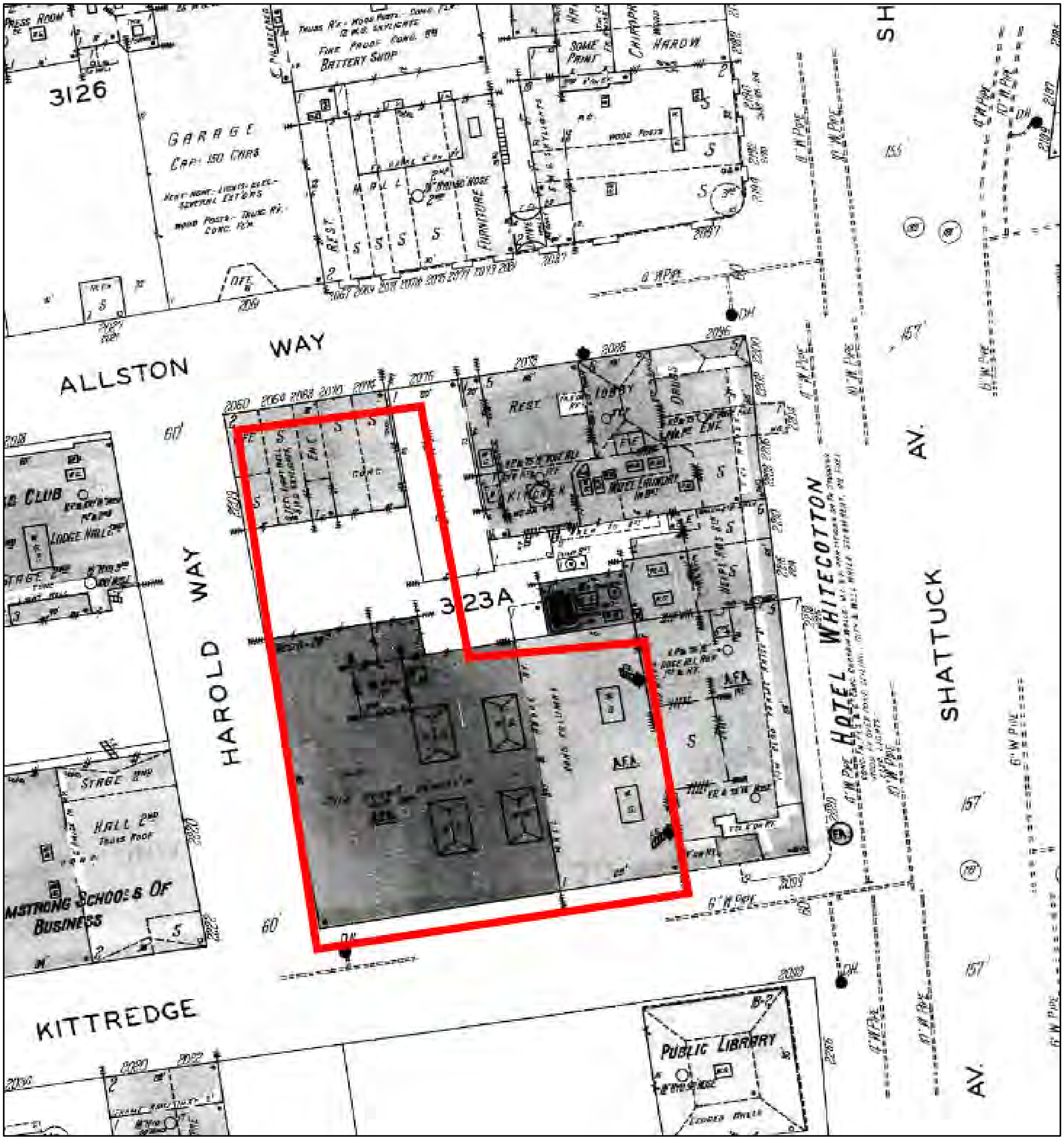
c. 1914

c. 1915

BERKELEY PLAZA
BERKELEY, CALIFORNIA

Plate 15
Shattuck Hotel - Hotel Whitecotton

A3GEO



BERKELEY PLAZA
BERKELEY, CALIFORNIA

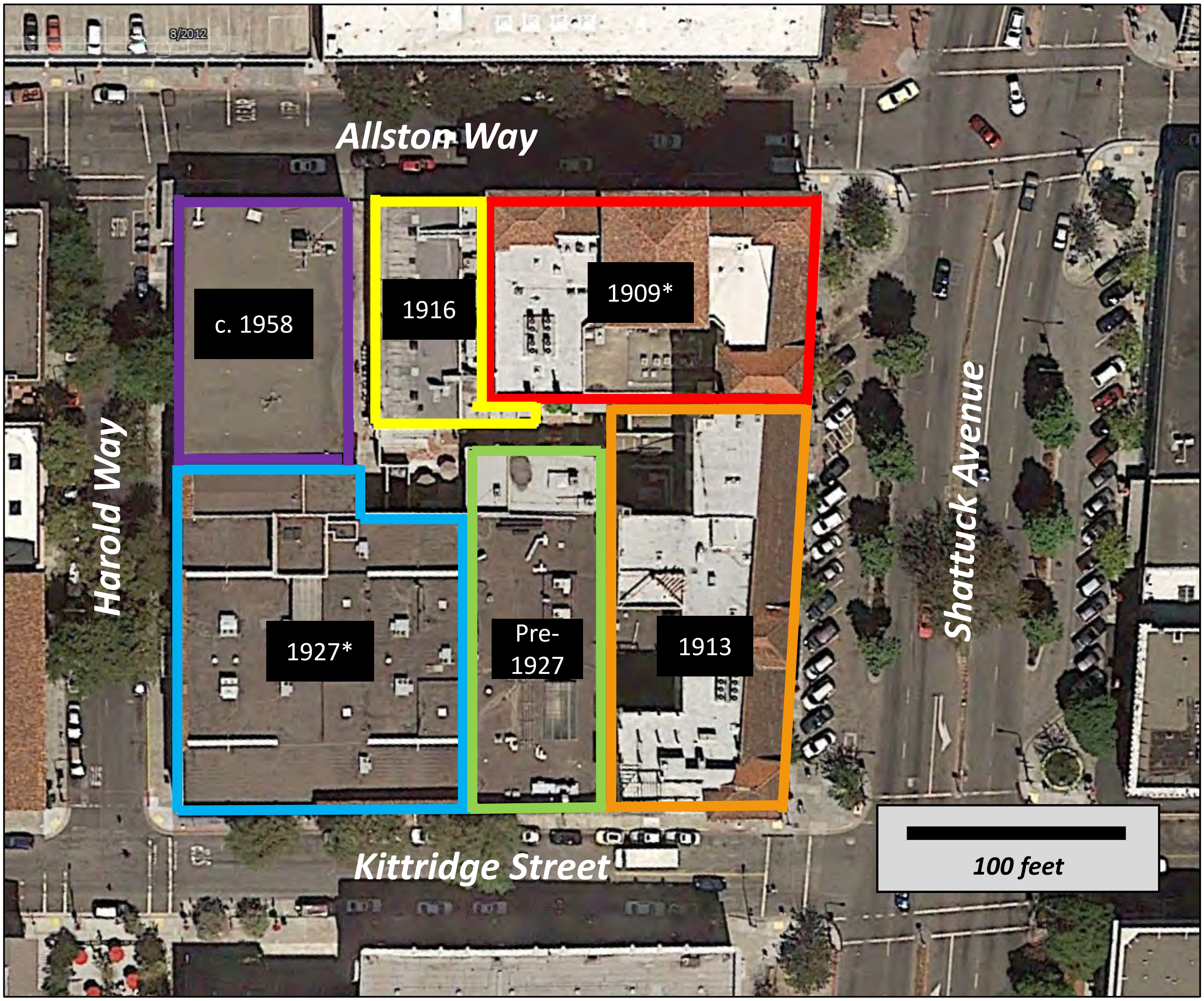
Plate 16
1929 Sanborn Map

Source: a+h, 2013

Plate 17
Hinks 1958-1959 Addition

Source: Google Earth (imagery date: 8/28/2012)

A3GEO



* Foundation Drawings Available

Shattuck Hotel (North)
Shattuck Hotel (South)
Shattuck Hotel Allston Way Addition
Shattuck Hotel Kittridge Street Addition
2211 Harold Way (South)
2211 Harold Way (North)

BERKELEY PLAZA
BERKELEY, CALIFORNIA

Plate 18
Approximate Years of Construction

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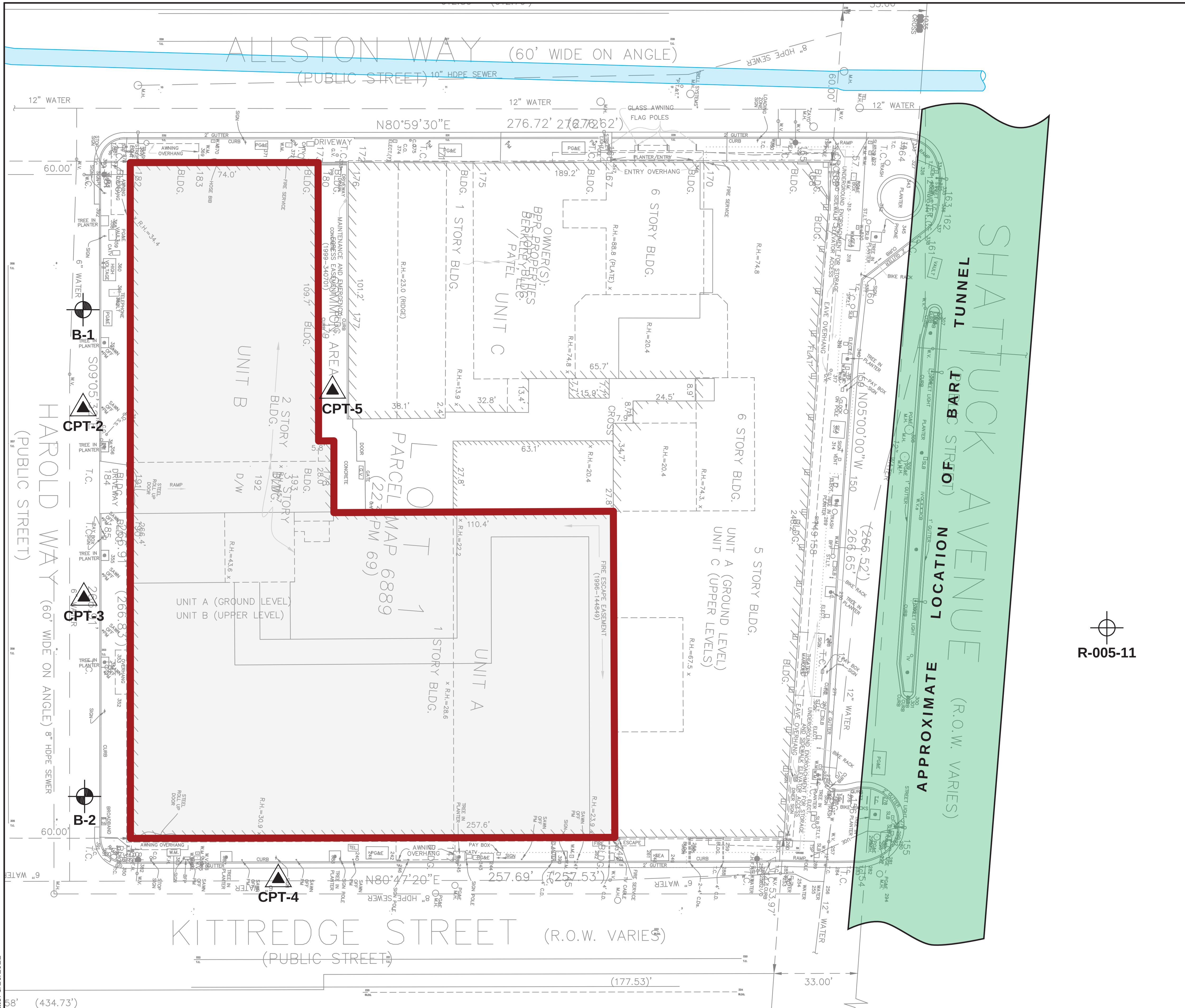
FIGURES

BERKELEY PLAZA
BERKELEY, CALIFORNIA



LEGEND:

APPROXIMATE SITE BOUNDARY

APPROXIMATE LOCATION OF STRAWBERRY CREEK CULVERT

APPROXIMATE LOCATION OF BART TUNNEL

B-2 A3GEO 2019 SOIL BORING LOCATION

CPT-5 A3GEO 2019 CPT LOCATION

R-005-11 HISTORIC BART BORING - DAMES AND MOORE 1963

Notes:

1. BASE PLAN TAKEN FROM DRAWING C1.0 TITLED "EXISTING CONDITIONS", PREPARED BY BKF ENGINEERS OF WALNUT CREEK, CA, AND DATED 30 MAY 2019.
2. LOCATION OF HISTORIC BART BORING IS APPROXIMATE AND BASED ON LIMITED INFORMATION.
3. CPT-1 WAS ELIMINATED DUE TO UTILITY CONFLICTS
4. LIMITS OF BART TUNNEL ESTIMATED BASED ON HISTORIC DRAWINGS. ACTUAL LIMITS SHOULD BE VERIFIED BY OTHERS.

(SCALE IN FEET)

0 40 80

BERKELEY PLAZA, 2211 HAROLD WAY
BERKELEY, CALIFORNIA

Project No. 1182-1A

SITE PLAN

A3GEO

FIGURE 1

APPENDIX A

Boring Logs
(A3GEO, 2019)

BERKELEY PLAZA
BERKELEY, CALIFORNIA

A3GEO, Inc.
1331 Seventh Ave, Suite E
Berkeley, CA 94710
Telephone: 510-705-1664

BORING NUMBER B-1

CLIENT HSR Berkeley Investments
PROJECT NAME Berkeley Plaza
PROJECT NUMBER 1114-10A
PROJECT LOCATION 2211 Harold Way, Berkeley, CA
DATE STARTED 6/12/19 **COMPLETED** 6/14/19
GROUND ELEVATION 172 ft **HOLE SIZE** 6
DRILLING CONTRACTOR Pitcher Drilling Co.
GROUND WATER LEVELS:
DRILLING METHOD Mud Rotary
AT TIME OF DRILLING --- Not Measured
LOGGED BY M. Hachey **CHECKED BY** SK
AT END OF DRILLING --- Not Measured
NOTES
AFTER DRILLING --- Not Measured

DEPTH (ft)	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	ADJUSTED BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	RECOVERY % (RQD)	OTHER LAB TESTS / NOTES
0	Note: Advanced to 5 ft using air vacuum excavation to clear utilities. No samples taken [FILL]							
5	CLAYEY SAND (SC) - yellowish brown to grayish brown, medium dense, fine to coarse sand, some silt pockets, some fine gravel, moderate to strong cementation, dry [Probable FILL]	MC	28					
	Note: Top of natural soils estimated from surrounding samples							
10	CLAYEY SAND WITH GRAVEL (SC) - brown, medium dense, fine to coarse gravel up to 1-inch in dia., subrounded to rounded gravel, moderate to strong cementation, dry [Probable ALLUVIUM]	MC	28		127	13		Gravel=36% Sand=45% -#200=19%
	SANDY LEAN CLAY (CL) - light gray with orange and black staining, hard, low to medium plasticity, moist [ALLUVIUM]							
15		MC	33					
	LEAN CLAY WITH SAND (CL) - reddish light brown with black staining, hard, low plasticity, moist [ALLUVIUM]							
20		MC	36					Gravel=1% Sand=20% -#200=79%
25	similar to above except very stiff, trace coarse sand and fine gravel	MC	27					
30		ST			100	24		Gravel=1% Sand=28% -#200=71% LL=38, PI=16
	SANDY LEAN CLAY (CL) - yellowish brown, very stiff, fine to coarse sand, some fine gravel, low plasticity, moist [ALLUVIUM]							
35								

(Continued Next Page)

A3GEO, Inc.
1331 Seventh Ave, Suite E
Berkeley, CA 94710
Telephone: 510-705-1664

BORING NUMBER B-1

CLIENT HSR Berkeley Investments
PROJECT NAME Berkeley Plaza
PROJECT NUMBER 1114-10A
PROJECT LOCATION 2211 Harold Way, Berkeley, CA
DATE STARTED 6/12/19 **COMPLETED** 6/14/19
GROUND ELEVATION 172 ft **HOLE SIZE** 6
DRILLING CONTRACTOR Pitcher Drilling Co.
GROUND WATER LEVELS:
DRILLING METHOD Mud Rotary
AT TIME OF DRILLING --- Not Measured
LOGGED BY M. Hachey **CHECKED BY** SK
AT END OF DRILLING --- Not Measured
NOTES
AFTER DRILLING --- Not Measured

DEPTH (ft)	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	ADJUSTED BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	RECOVERY % (RQD)	OTHER LAB TESTS / NOTES
35	SANDY LEAN CLAY (CL) - yellowish brown, very stiff, fine to coarse sand, some fine gravel, low plasticity, moist [ALLUVIUM]*(continued)*	MC	21					
	CLAYEY SAND WITH GRAVEL (SC) - yellowish brown, dense, fine to coarse gravel, subrounded to angular, low plasticity fines, medium to strong cementation, moist [ALLUVIUM]							
40		MC	45					Gravel=15% Sand=49% -#200=36%
	yellowish brown and variable coloration, very dense, increase in gravel content							
45		MC	32/5.0"					
	LEAN CLAY WITH SAND (CL) - light gray, medium plasticity, moist [ALLUVIUM]							
50		ST			102	21		Gravel=0% Sand=20% -#200=80% LL=47, PI=29
55	light yellowish brown, very stiff, predominantly fine sand	MC	20		100	26		TXUU Su=1.24 tsf
60	CLAYEY SAND WITH GRAVEL (SC) - grayish brown, dense, fine to coarse sand, trace silt, medium cementation, moist [ALLUVIUM]	MC	39					Gravel=17% Sand=51% -#200=32%
65	SANDY LEAN CLAY (CL) - light brown, hard, fine to coarse sand, some fine gravel, low plasticity, moist [ALLUVIUM]	MC	33					
70								

(Continued Next Page)

A3GEO, Inc.
1331 Seventh Ave, Suite E
Berkeley, CA 94710
Telephone: 510-705-1664

BORING NUMBER B-1

CLIENT HSR Berkeley Investments
PROJECT NAME Berkeley Plaza
PROJECT NUMBER 1114-10A
PROJECT LOCATION 2211 Harold Way, Berkeley, CA
DATE STARTED 6/12/19 **COMPLETED** 6/14/19
GROUND ELEVATION 172 ft **HOLE SIZE** 6
DRILLING CONTRACTOR Pitcher Drilling Co.
GROUND WATER LEVELS:
DRILLING METHOD Mud Rotary
AT TIME OF DRILLING --- Not Measured
LOGGED BY M. Hachey **CHECKED BY** SK
AT END OF DRILLING --- Not Measured
NOTES
AFTER DRILLING --- Not Measured

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	ADJUSTED BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	RECOVERY % (RQD)	OTHER LAB TESTS / NOTES
70		SANDY LEAN CLAY (CL) - light brown, hard, fine to coarse sand, some fine gravel, low plasticity, moist [ALLUVIUM]*(continued)* yellowish brown, some gravel up to 1-inch in dia.	MC	31					
		CLAYEY SAND (SC) - light yellowish brown, very dense, fine to coarse sand, some fine to coarse gravel up to 2-inch in dia., rounded to subangular, moist [ALLUVIUM]							
75			MC	52					Gravel=11% Sand=44% -#200=45%
		LEAN CLAY WITH SAND (CL) - light yellowish brown with light gray and brown staining, hard, fine to medium sand, low plasticity, moist [ALLUVIUM]							
80			MC	32/5.5"					
85		some gravel	MC	52		112	19		Gravel=6% Sand=38% -#200=56% LL=33, PI=15 TXUU Su=2.45 tsf
		CLAYEY SAND WITH GRAVEL (SC) - yellowish brown and variable coloration, very dense, fine to coarse sand, wet [ALLUVIUM]							
90			MC	32/5.0"					
95									
100		mottled yellowish brown and light gray with black staining, less gravel content	MC	32/5.0"					
105									

(Continued Next Page)

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BORING NUMBER B-1

CLIENT HSR Berkeley Investments
PROJECT NAME Berkeley Plaza
PROJECT NUMBER 1114-10A
PROJECT LOCATION 2211 Harold Way, Berkeley, CA
DATE STARTED 6/12/19 **COMPLETED** 6/14/19
GROUND ELEVATION 172 ft **HOLE SIZE** 6
DRILLING CONTRACTOR Pitcher Drilling Co.
GROUND WATER LEVELS:
DRILLING METHOD Mud Rotary
AT TIME OF DRILLING --- Not Measured
LOGGED BY M. Hachey **CHECKED BY** SK
AT END OF DRILLING --- Not Measured
NOTES
AFTER DRILLING --- Not Measured

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	ADJUSTED BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	RECOVERY % (RQD)	OTHER LAB TESTS / NOTES
105		CLAYEY SAND WITH GRAVEL (SC) - yellowish brown and variable coloration, very dense, fine to coarse sand, wet [ALLUVIUM]*(continued)*							
110		dense	MC	35					Gravel=14% Sand=61% -#200=25%
115		SANDY LEAN CLAY WITH GRAVEL (CL) - light yellowish brown and light gray with iron staining, hard, highly weathered gravel (sandstone) [ALLUVIUM]							
120			MC	32/5.5"					
125		LEAN CLAY WITH SAND (CL) - light gray with iron staining, hard, trace weathered gravel , low plasticity [ALLUVIUM]							
130			MC	45					
135		SILTY CLAYEY SAND WITH GRAVEL (SC-SM) - orange-brown with some light gray and black staining, very dense, predominantly fine sand with few coarse sand, fine gravel, medium to strong cementation [ALLUVIUM]							
140									

(Continued Next Page)

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BORING NUMBER B-1

CLIENT HSR Berkeley Investments
PROJECT NAME Berkeley Plaza
PROJECT NUMBER 1114-10A
PROJECT LOCATION 2211 Harold Way, Berkeley, CA
DATE STARTED 6/12/19 **COMPLETED** 6/14/19
GROUND ELEVATION 172 ft **HOLE SIZE** 6
DRILLING CONTRACTOR Pitcher Drilling Co.
GROUND WATER LEVELS:
DRILLING METHOD Mud Rotary
AT TIME OF DRILLING --- Not Measured
LOGGED BY M. Hachey **CHECKED BY** SK
AT END OF DRILLING --- Not Measured
NOTES
AFTER DRILLING --- Not Measured

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	ADJUSTED BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	RECOVERY % (RQD)	OTHER LAB TESTS / NOTES
140		SILTY CLAYEY SAND WITH GRAVEL (SC-SM) - orange-brown with some light gray and black staining, very dense, predominantly fine sand with few coarse sand, fine gravel, medium to strong cementation [ALLUVIUM]*(continued)*	MC	32/5.5"					
145		SANDY LEAN CLAY (CL) - mottled light gray and orangish brown with some black staining, hard, fine to medium sand, low plasticity [ALLUVIUM]							
150			MC	50					
155		SANDY LEAN CLAY WITH GRAVEL (Weathered Conglomerate) - yellowish brown and variable coloration, hard, fine to coarse gravel, subangular and consists of some sandstone fragments [WEATHERED BEDROCK]							
160			MC	32/5.0"					
165		weathered Claystone/Conglomerate							
170			MC	32/4.0"					

Bottom of borehole at 170.8 feet.
1. Stratification lines represent the approximate boundaries between material types and the transitions may be gradual.
2. Modified California (MC) blowcounts adjusted by multiplying field blowcounts by a factor 0.63.
3. Borhole was backfilled with cement grout upon completion of the drilling.

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1331 Seventh Ave, Suite E
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Telephone: 510-705-1664

BORING NUMBER B-2

CLIENT HSR Berkeley Investments
PROJECT NAME Berkeley Plaza
PROJECT NUMBER 1114-10A
PROJECT LOCATION 2211 Harold Way, Berkeley, CA
DATE STARTED 6/10/19 **COMPLETED** 6/12/19
GROUND ELEVATION 172 ft **HOLE SIZE** 6
DRILLING CONTRACTOR Pitcher Drilling Co.
GROUND WATER LEVELS:
DRILLING METHOD Mud Rotary
AT TIME OF DRILLING --- Not Measured
LOGGED BY M. Hachey **CHECKED BY** SK
AT END OF DRILLING --- Not Measured
NOTES
AFTER DRILLING --- Not Measured

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	ADJUSTED BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	RECOVERY % (RQD)	OTHER LAB TESTS / NOTES
0		Note: Advanced to 5 ft using air vacuum excavation to clear utilities. No samples taken [FILL]							
5		CLAYEY SAND WITH GRAVEL (SC) - brown with trace iron staining, medium dense, medium to coarse sand, moist [Probable ALLUVIUM]	MC	14		108	18		Gravel=18% Sand=51% -#200=31%
		increase in gravel content							
		SILTY, CLAYEY GRAVEL WITH SAND (GC-GM) - variable brown , dense, fine to coarse subangular gravel up to 3-inch in dia., moist [ALLUVIUM]							
10			MC	44					
		SILTY, CLAYEY SAND WITH GRAVEL (SC-SM) - grayish brown with some iron staining, dense, fine to coarse sand, fine to coarse subangular gravel up to 3-inch in dia., moist [ALLUVIUM]							
15			MC	34					Gravel=21% Sand=61% -#200=18%
20		decrease in gravel content, fine to medium gravel	MC	31					
		LEAN CLAY WITH SAND (CL) - mottled grayish and orange brown, stiff, medium to coarse sand, low plasticity, moist [ALLUVIUM]							
25			MC	13					Gravel=5% Sand=19% -#200=76% LL=27, PI=9
		SILTY SAND (SM) - grayish brown to brown with iron staining, fine to coarse sand, few gravel, moist [ALLUVIUM]							
30			ST						
		LEAN CLAY WITH SAND (CL) - light to yellowish brown with black staining, very stiff, fine to coarse sand, trace fine gravel, low to medium plasticity, moist [ALLUVIUM]							
35									

(Continued Next Page)

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BORING NUMBER B-2

CLIENT HSR Berkeley Investments
PROJECT NAME Berkeley Plaza
PROJECT NUMBER 1114-10A
PROJECT LOCATION 2211 Harold Way, Berkeley, CA
DATE STARTED 6/10/19 **COMPLETED** 6/12/19
GROUND ELEVATION 172 ft **HOLE SIZE** 6
DRILLING CONTRACTOR Pitcher Drilling Co.
GROUND WATER LEVELS:
DRILLING METHOD Mud Rotary
AT TIME OF DRILLING --- Not Measured
LOGGED BY M. Hachey **CHECKED BY** SK
AT END OF DRILLING --- Not Measured
NOTES
AFTER DRILLING --- Not Measured

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	ADJUSTED BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	RECOVERY % (RQD)	OTHER LAB TESTS / NOTES
35		LEAN CLAY WITH SAND (CL) - light to yellowish brown with black staining, very stiff, fine to coarse sand, trace fine gravel, low to medium plasticity, moist [ALLUVIUM]*(continued)*	MC	20		99	27		Gravel=1% Sand=17% -#200=82% LL=40, PI=17 TXUU Su=1.38 tsf
40		brown	MC	25					
		CLAYEY SAND WITH GRAVEL (SC) - grayish brown and variable coloration, dense, fine to coarse sand, angular gravel up to 1-inch in dia., moderate to strong cementation, moist [ALLUVIUM]							
45			MC	42					
50			MC	32/5.5"		118	16		Gravel=30% Sand=47% -#200=23% TXUU Su=1.25 tsf
		brown, very dense							
55		increase in coarse sand, gravel up to 2-inch in dia.	MC	32/5.5"					
60		predominantly fine sand, some medium to coarse sand, subrounded gravel up to 1-inch in dia.	MC	32/5.0"					
		CLAYEY SAND (SC) - light brown, medium dense, fine to coarse sand, few fine gravel, moist [ALLUVIUM]							
65			MC	25					Gravel=3% Sand=52% -#200=45%
		SANDY LEAN CLAY (CL) - mottled grayish and orange brown, very stiff, mostly fine sand, low plasticity, moist [ALLUVIUM]							
70									

(Continued Next Page)

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BORING NUMBER B-2

CLIENT HSR Berkeley Investments
PROJECT NAME Berkeley Plaza
PROJECT NUMBER 1114-10A
PROJECT LOCATION 2211 Harold Way, Berkeley, CA
DATE STARTED 6/10/19 **COMPLETED** 6/12/19
GROUND ELEVATION 172 ft **HOLE SIZE** 6
DRILLING CONTRACTOR Pitcher Drilling Co.
GROUND WATER LEVELS:
DRILLING METHOD Mud Rotary
AT TIME OF DRILLING --- Not Measured
LOGGED BY M. Hachey **CHECKED BY** SK
AT END OF DRILLING --- Not Measured
NOTES
AFTER DRILLING --- Not Measured

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	ADJUSTED BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	RECOVERY % (RQD)	OTHER LAB TESTS / NOTES
70		SANDY LEAN CLAY (CL) - mottled grayish and orange brown, very stiff, mostly fine sand, low plasticity, moist [ALLUVIUM]*(continued)*	MC	16					
75		brown, hard, lenses of clayey sand, some fine gravel	MC	44					
80		mottled grayish and orange brown, hard, some highly weathered bedrock fragments (shale, chert and claystone)	MC	45					Gravel=10% Sand=32% -#200=58%
85		fine to coarse sand	MC	50					
		CLAYEY SAND WITH GRAVEL (SC) - yellowish brown, very dense, fine to coarse sand, fine to coarse gravel, moist to wet [ALLUVIUM]							
90			MC	32/5.5"					
95			MC	32/5.5"					
100		increase in gravel content and fragments of sandstone [ALLUVIUM]	MC	32/5.5"					Gravel=38% Sand=41% -#200=21%
		SANDY LEAN CLAY (CL) - mottled light gray with orange staining, hard, low plasticity, moist [ALLUVIUM]							
105									

(Continued Next Page)

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1331 Seventh Ave, Suite E
Berkeley, CA 94710
Telephone: 510-705-1664

BORING NUMBER B-2

CLIENT	HSR Berkeley Investments	**PROJECT NAME**	Berkeley Plaza
PROJECT NUMBER	1114-10A	**PROJECT LOCATION**	2211 Harold Way, Berkeley, CA
DATE STARTED	6/10/19 **COMPLETED** 6/12/19	**GROUND ELEVATION**	172 ft **HOLE SIZE** 6
DRILLING CONTRACTOR	Pitcher Drilling Co.	**GROUND WATER LEVELS:**	
DRILLING METHOD	Mud Rotary	**AT TIME OF DRILLING**	--- Not Measured
LOGGED BY	M. Hachey **CHECKED BY** SK	**AT END OF DRILLING**	--- Not Measured
NOTES		**AFTER DRILLING**	--- Not Measured

DEPTH (ft)	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	ADJUSTED BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	RECOVERY % (RQD)	OTHER LAB TESTS / NOTES
105	SANDY LEAN CLAY (CL) - mottled light gray with orange staining, hard, low plasticity, moist [ALLUVIUM]*(continued)*	MC	32		113	19		Gravel=4% Sand=31% -#200=65%
	SANDY LEAN CLAY WITH GRAVEL (CL) - light gray to yellowish brown with iron staining, hard, predominantly fine sand with some medium to coarse sand, subrounded to subangular gravel, moist [ALLUVIUM]							
110		MC	32/5.0"					
115	increase in iron staining, decrease in gravel content	MC	32/4.5"					
	CLAYEY SAND (SC) - yellowish brown, dense, some fine gravel, moist [ALLUVIUM]							
120		MC	45					Gravel=10% Sand=46% -#200=44%
	SANDY LEAN CLAY WITH GRAVEL (CL) - mottled light gray and yellowish brown grading to mottled light gray and reddish brown, hard, predominantly fine sand with some medium to coarse sand, moist [ALLUVIUM]							
125		MC	33					
130	SILTY SAND to SANDY SILT (SM/ML) - light gray and yellowish brown with some iron staining, very dense/hard, fine to coarse sand, some fine to coarse gravel, strong cementation, moist [ALLUVIUM]	MC	32/5.5"					
135	increased clay content below 135 ft trace lithified organics	MC	32/5.5"					
140								

(Continued Next Page)

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BORING NUMBER B-2

CLIENT HSR Berkeley Investments
PROJECT NAME Berkeley Plaza
PROJECT NUMBER 1114-10A
PROJECT LOCATION 2211 Harold Way, Berkeley, CA
DATE STARTED 6/10/19 **COMPLETED** 6/12/19
GROUND ELEVATION 172 ft **HOLE SIZE** 6
DRILLING CONTRACTOR Pitcher Drilling Co.
GROUND WATER LEVELS:
DRILLING METHOD Mud Rotary
AT TIME OF DRILLING --- Not Measured
LOGGED BY M. Hachey **CHECKED BY** SK
AT END OF DRILLING --- Not Measured
NOTES
AFTER DRILLING --- Not Measured

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	ADJUSTED BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	RECOVERY % (RQD)	OTHER LAB TESTS / NOTES
140		SILTY SAND to SANDY SILT (SM/ML) - light gray and yellowish brown with some iron staining, very dense/hard, fine to coarse sand, some fine to coarse gravel, strong cementation, moist [ALLUVIUM]*(continued)* some clay content	MC	32/4.5"					
145		yellowish brown	MC	32/4.0"					
150			MC	32/5.5"					
		SANDY LEAN CLAY WITH GRAVEL (Weathered Conglomerate) - yellowish brown, hard, fine to coarse subangular gravel (sandstone fragments) [WEATHERED BEDROCK]							
155			MC	32/4.5"					
160		visible bedrock structure	MC	32/4.5"					
165		sandstone gravel/cobbles in light gray clayey matrix (weathered Conglomerate)	MC	32/5.5"					
170			MC	32/5.5"					

Bottom of borehole at 170.5 feet.
1. Stratification lines represent the approximate boundaries between material types and the transitions may be gradual.
2. Modified California (MC) blowcounts adjusted by multiplying field blowcounts by a factor 0.63.
3. Borhole was backfilled with cement grout upon completion of the drilling.

UNIFIED SOIL CLASSIFICATION CHART

MAJOR DIVISIONS				TYPICAL NAMES
COARSE GRAINED SOILS: more than 50% retained on No. 200 sieve	COARSE GRAINED SOILS: 50% or more of coarse fraction on No. 4 sieve	CLEAN GRAVELS	GW	Well graded gravels and gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels and gravel-sand mixtures, little or no fines
		GRAVELS WITH SAND	GM	Silty gravels and gravel-sand-silt mixtures
			GC	Clayey gravels and gravel-sand-clay mixtures
	SANDS: more than 50% passing on No. 4 sieve	CLEAN SANDS	SW	Well graded sands and gravelly sand, little or no fines
			SP	Poorly graded sands and gravelly sand, little or no fines
		SANDS WITH FINES	SM	Silty sands, sand-silt mixtures
			SC	Clayey sands, sand-clay mixtures
FINE GRAINED SOILS: 50% or more passing No. 200 sieve	SILTS AND CLAY: Liquid Limit 50% or less		ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands
			CL	Inorganic clays or low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL	Organic silts and organic silty clays of low plasticity
	SILTS AND CLAY: Liquid Limit 50% or greater		MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic clays
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity
HIGHLY ORGANIC SOILS			PT	Peat, muck, and other highly organic soils

BOUNDARY CLASSIFICATION AND GRAIN SIZES

SILT OR CLAY	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		

U.S. Standard Sieve Sizes: No. 200 (0.075 mm); No. 40 (0.425 mm); No. 10 (2 mm); No. 4 (3/16"); 3/4"; 3"; 12"

SYMBOLS

Modified California (MC) Sampler (3" O.D.)	HQ ROCK CORE (RC)	101 Barrel (SS)
Standard Penetration Test: SPT (2" O.D.)	Pitcher Tube (ST)	Water Levels At time of drilling At end of drilling After drilling

ABBREVIATIONS

Item	Meaning
LL	Liquid Limit (%) (ASTM D 4318)
PI	Plasticity Index (%) (ASTM D 4318)
-200	Passing No. 200 (%) (ASTM D 1140)
TXCU	Laboratory consolidated undrained triaxial test of undrained shear strength (psf) (ASTM D 4767)
TXUU	Laboratory unconsolidated, undrained triaxial test of undrained shear strength (psf) (ASTM D 2850)
psf/tsf	pounds per square foot / tons per square foot
psi	pounds per square inch
OD	Outside Diameter
ID	Inside Diameter

NOTES

1. Stratification lines represent the approximate boundaries between material types and the transitions may be gradual.
2. Modified California (MC) blow counts were adjusted by multiplying field blow counts by a factor of 0.63.
3. Recorded blow counts have not been adjusted for hammer energy.

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KEY TO EXPLORATORY BORING LOGS

A3GEO

BEDDING OF SEDIMENTARY ROCK

SPLITTING PROPERTY	THICKNESS	STRATIFICATION
Massive	Greater than 4.0 feet	Very Thick-Bedded
Blocky	2.0 to 4.0 feet	Thick-Bedded
Slabby	0.2 to 2.0 feet	Thin-Bedded
Flaggy	0.05 to 0.2 feet	Very Thin-Bedded
Shaly or Platy	0.01 to 0.05 feet	Laminated
Papery	Less than 0.01 feet	Thinly Laminated

FRACTURING

INTENSITY	SIZE OF PIECES IN FEET
Very Little Fractured	Greater than 4.0 feet
Occasionally Fractured	1.0 to 4.0 feet
Moderately Fractured	0.5 to 1.0 feet
Closely Fractured	0.1 to 0.5 feet
Intensely Fractured	0.05 to 0.1 feet
Crushed	Less than 0.05 feet

HARDNESS

Soft	Reserved for plastic material alone
Low Hardness	Can be gouged deeply or carved easily by a knife blade
Moderately Hard	Can be readily scratched by a knife blade; scratch leaves a heavy trace of dust and is readily visible after the powder has been blown away
Hard	Can be scratched by a knife blade with difficulty; scratch produces little powder and is often faintly visible
Very Hard	Cannot be scratched by a knife blade; leaves a metallic streak

STRENGTH

Plastic	Very low strength
Friable	Crumbles easily by rubbing with fingers
Weak	An unfractured specimen of such material will crumble under light hammer blows
Moderately Strong	Specimen will withstand a few heavy hammer blows before breaking
Strong	Specimen will withstand a few heavy ringing hammer blows and will yield with difficulty only dust and small flying fragments
Very Strong	Specimen will resist heavy ringing hammer blows and will yield with difficulty only dust and small flying fragments

WEATHERING:

— the physical and chemical disintegration and decomposition of rocks and minerals by natural processes such as oxidation, reduction, hydration, solution, carbonation, and freezing and thawing

Deep	Moderate to complete mineral decomposition; extensive disintegration; deep and thorough discoloration; many fractures, all extensively coated or filled with oxides, carbonates and/or clay or silt.
Moderate	Slight change or partial decomposition of minerals; little disintegration; cementation little to unaffected. Moderate to occasionally intense discoloration. Moderately coated fractures.
Little	No megascopic decomposition of minerals; little or no effect on normal cementation. Slight and intermittent, or localized discoloration. Few stains on fracture surfaces.
Fresh	Unaffected by weathering agents. No discoloration or disintegration. Fractures usually less numerous than joints.

KEY TO ROCK DESCRIPTIONS

APPENDIX B

CPT Logs
(this study)

BERKELEY PLAZA
BERKELEY, CALIFORNIA

GREGG DRILLING, INC.
www.greggdrilling.com

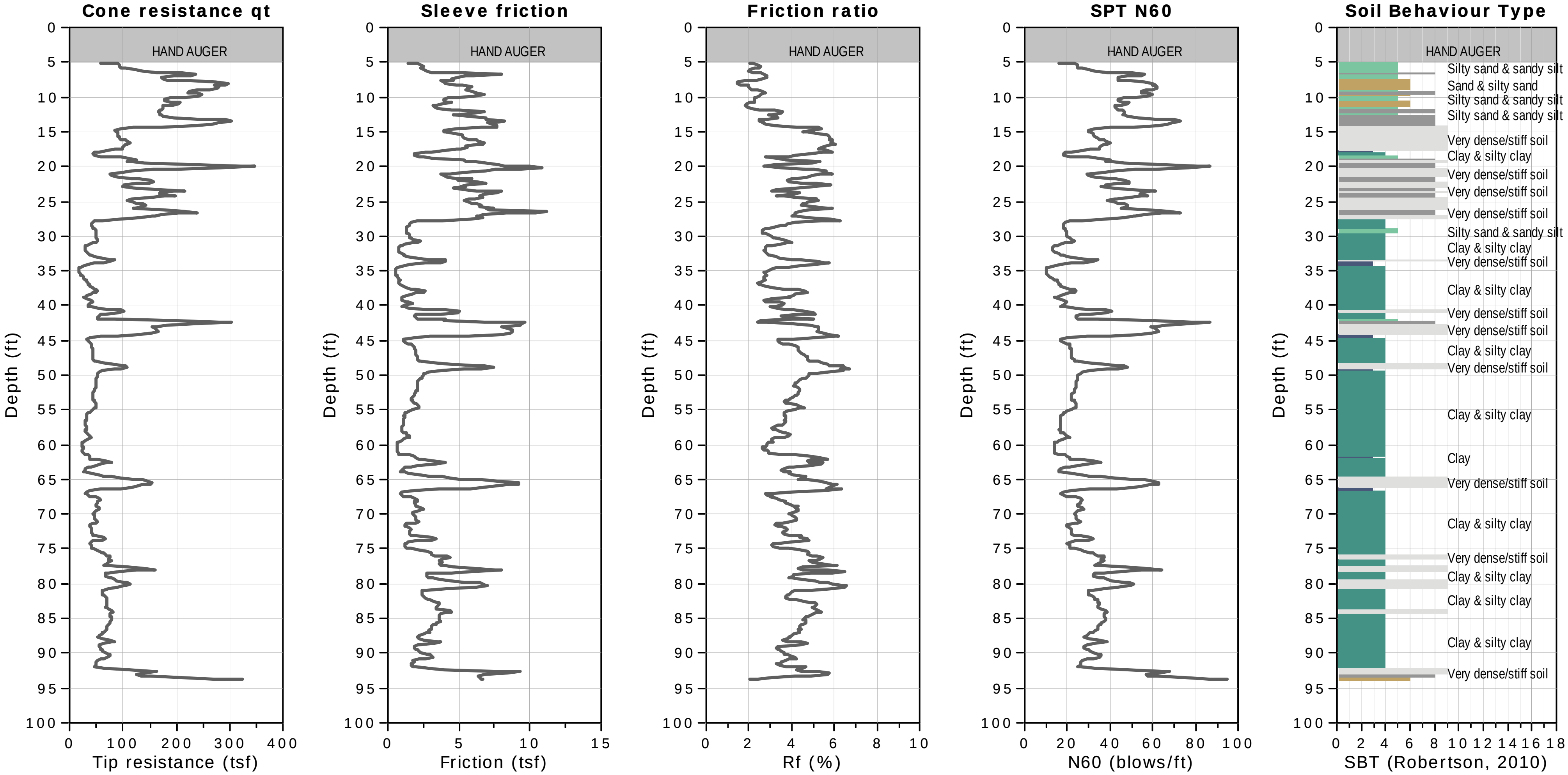
CPT: A3CPT2

CLIENT: A3GEO

SITE: BERKELEY PLAZA - 2211 HAROLD WAY, BERKELY, CA

FIELD REP: LAURA BUCHANAN

Total depth: 93.83 ft, Date: 6/12/2019



SBTn legend

1. Sensitive fine grained	4. Clayey silt to silty clay	7. Gravely sand to sand
2. Organic material	5. Silty sand to sandy silt	8. Very stiff sand to clayey sand
3. Clay to silty clay	6. Clean sand to silty sand	9. Very stiff fine grained

GREGG DRILLING, INC.
www.greggdrilling.com

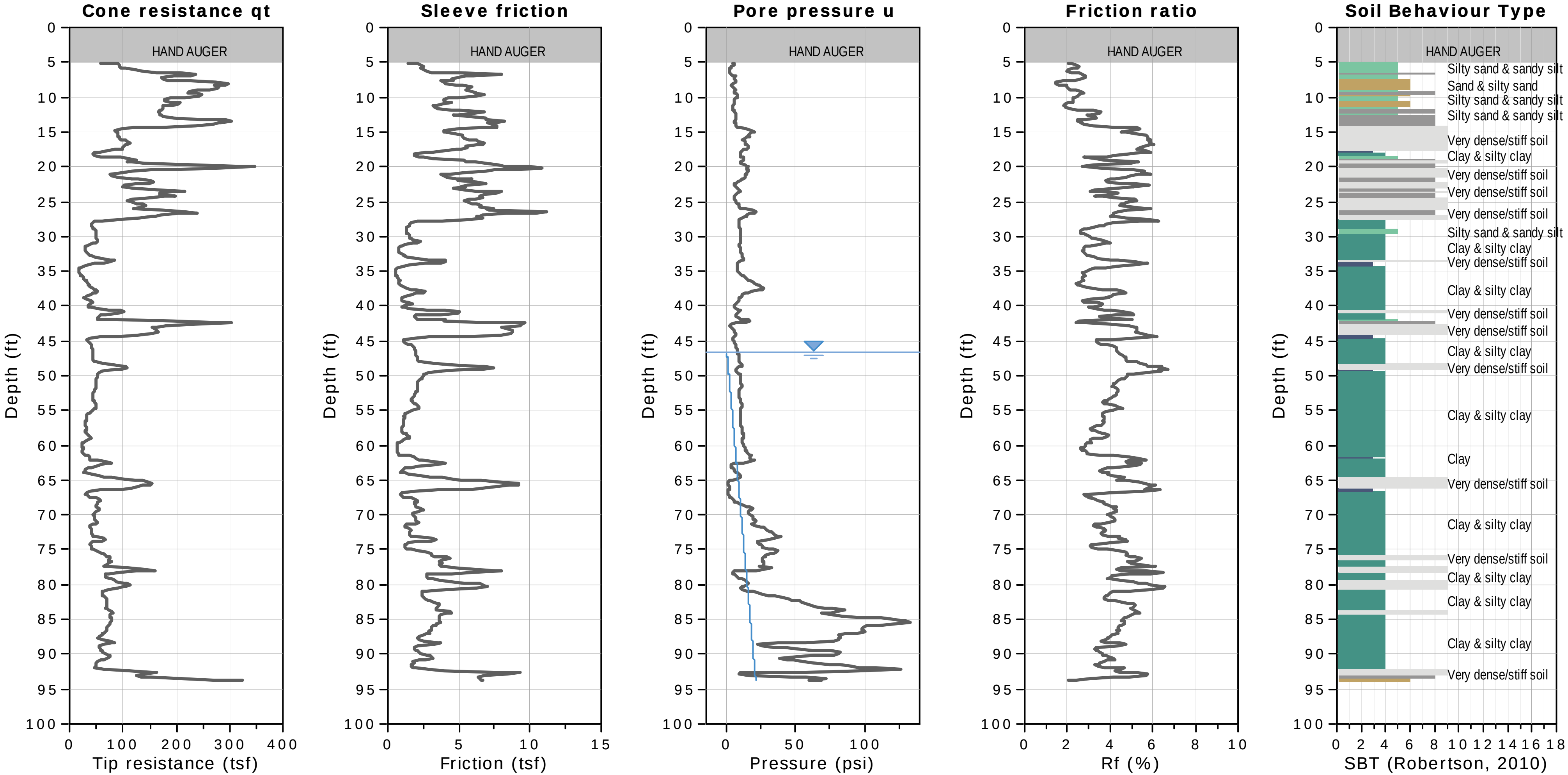
CPT: A3CPT2

CLIENT: A3GEO

SITE: BERKELEY PLAZA - 2211 HAROLD WAY, BERKELY, CA

Field Rep: LAURA BUCHANAN

Total depth: 93.83 ft, Date: 6/12/2019



SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty clay
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to clayey sand
9. Very stiff fine grained

WATER TABLE FOR ESTIMATING PURPOSES ONLY

GREGG DRILLING, INC.
www.greggdrilling.com

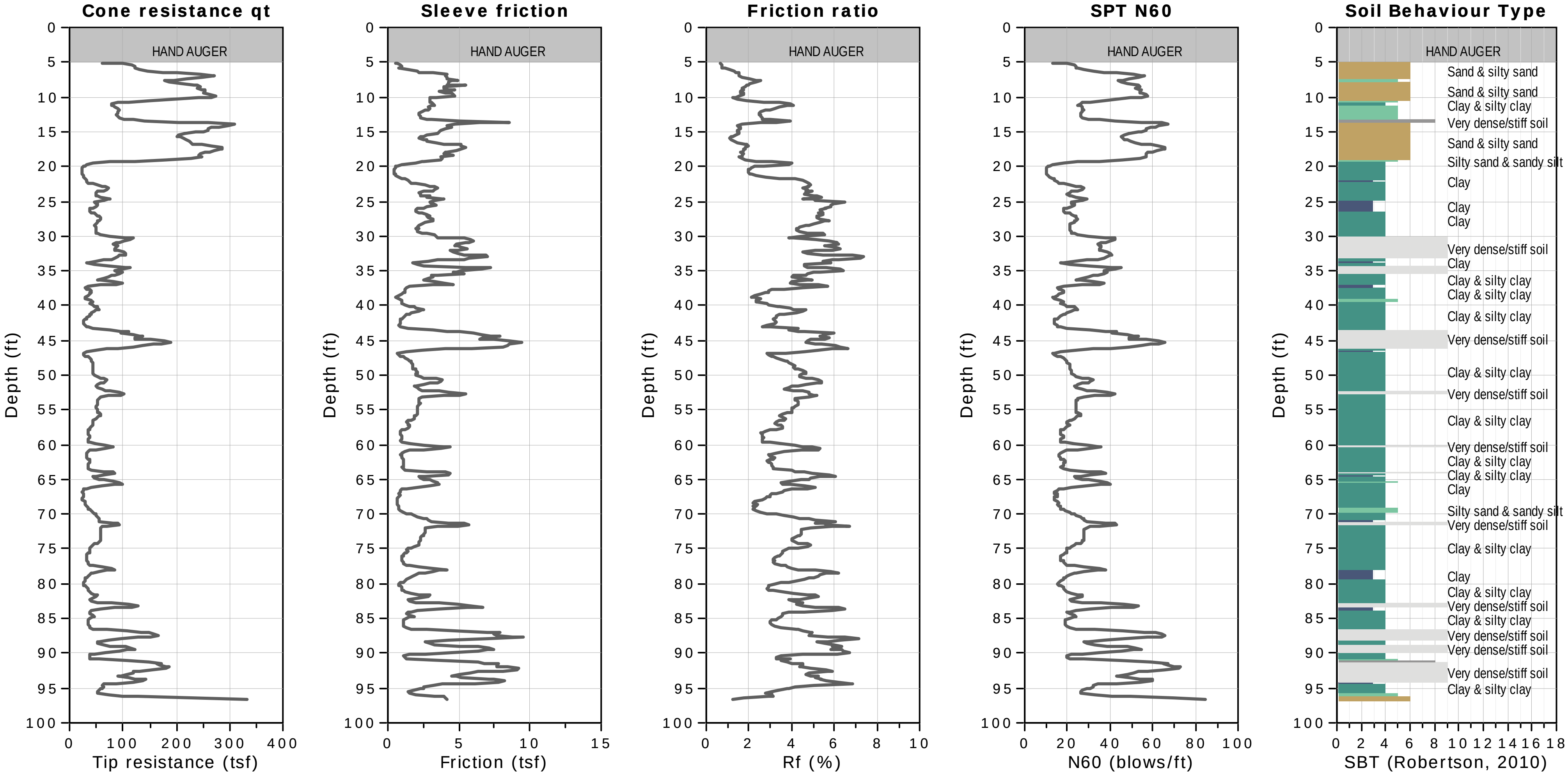
CPT: A3CPT3

CLIENT: A3GEO

SITE: BERKELEY PLAZA - 2211 HAROLD WAY, BERKELY, CA

FIELD REP: LAURA BUCHANAN

Total depth: 96.62 ft, Date: 6/12/2019



SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty clay
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to clayey sand
9. Very stiff fine grained

GREGG DRILLING, INC.
www.greggdrilling.com

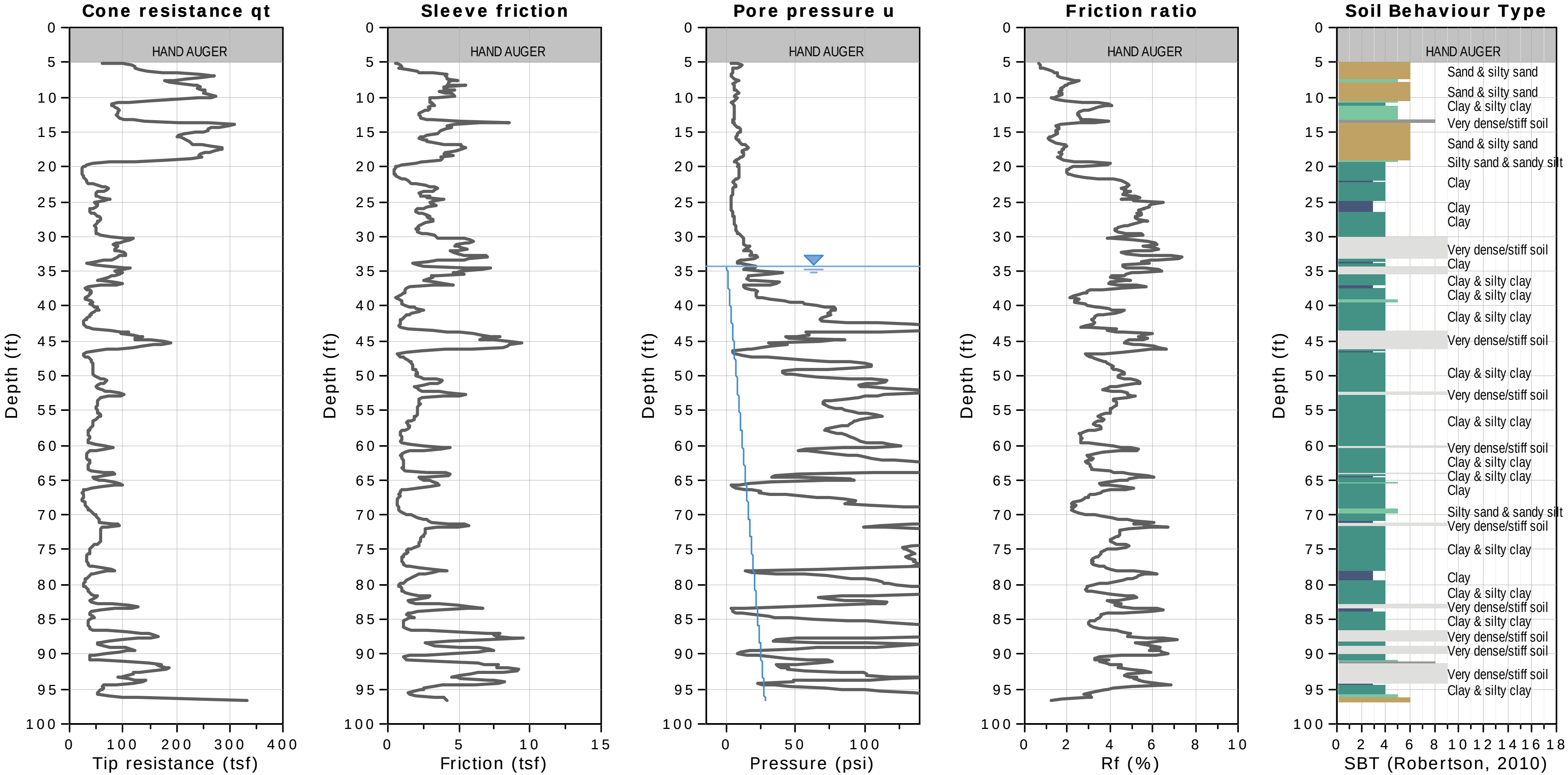
CPT: A3CPT3

CLIENT: A3GEO

SITE: BERKELEY PLAZA - 2211 HAROLD WAY, BERKELY, CA

Field Rep: LAURA BUCHANAN

Total depth: 96.62 ft, Date: 6/12/2019



SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty clay
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to clayey sand
9. Very stiff fine grained

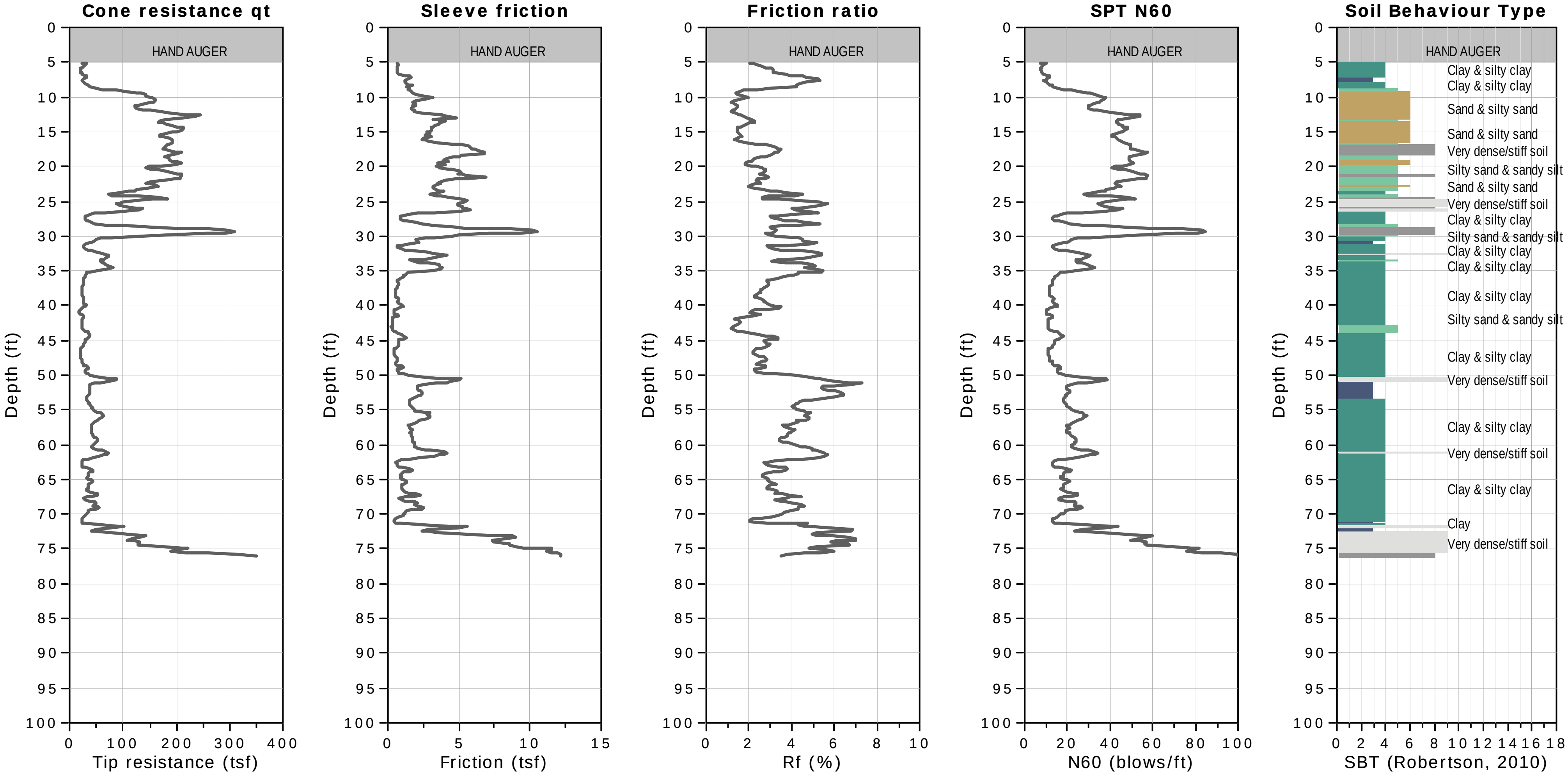
WATER TABLE FOR ESTIMATING PURPOSES ONLY

GREGG DRILLING, INC.
www.greggdrilling.com

CPT: A3CPT4

CLIENT: A3GEO
SITE: BERKELEY PLAZA - 2211 HAROLD WAY, BERKELY, CA

FIELD REP: LAURA BUCHANAN
Total depth: 75.95 ft, Date: 6/12/2019



SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty clay
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to clayey sand
9. Very stiff fine grained

GREGG DRILLING, INC.
www.greggdrilling.com

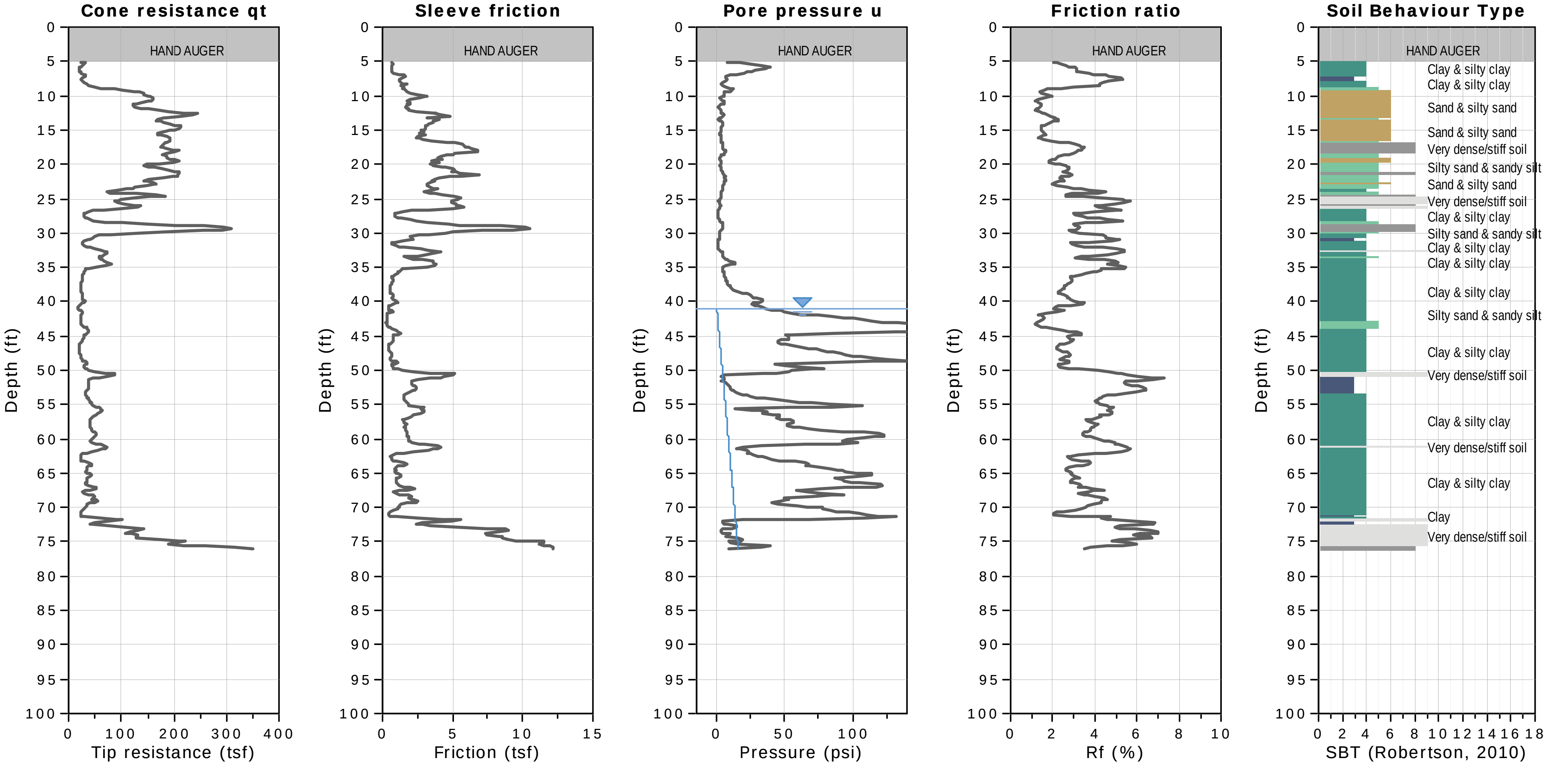
CPT: A3CPT4

CLIENT: A3GEO

SITE: BERKELEY PLAZA - 2211 HAROLD WAY, BERKELY, CA

Field Rep: LAURA BUCHANAN

Total depth: 75.95 ft, Date: 6/12/2019



SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty clay
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to clayey sand
9. Very stiff fine grained

WATER TABLE FOR ESTIMATING PURPOSES ONLY

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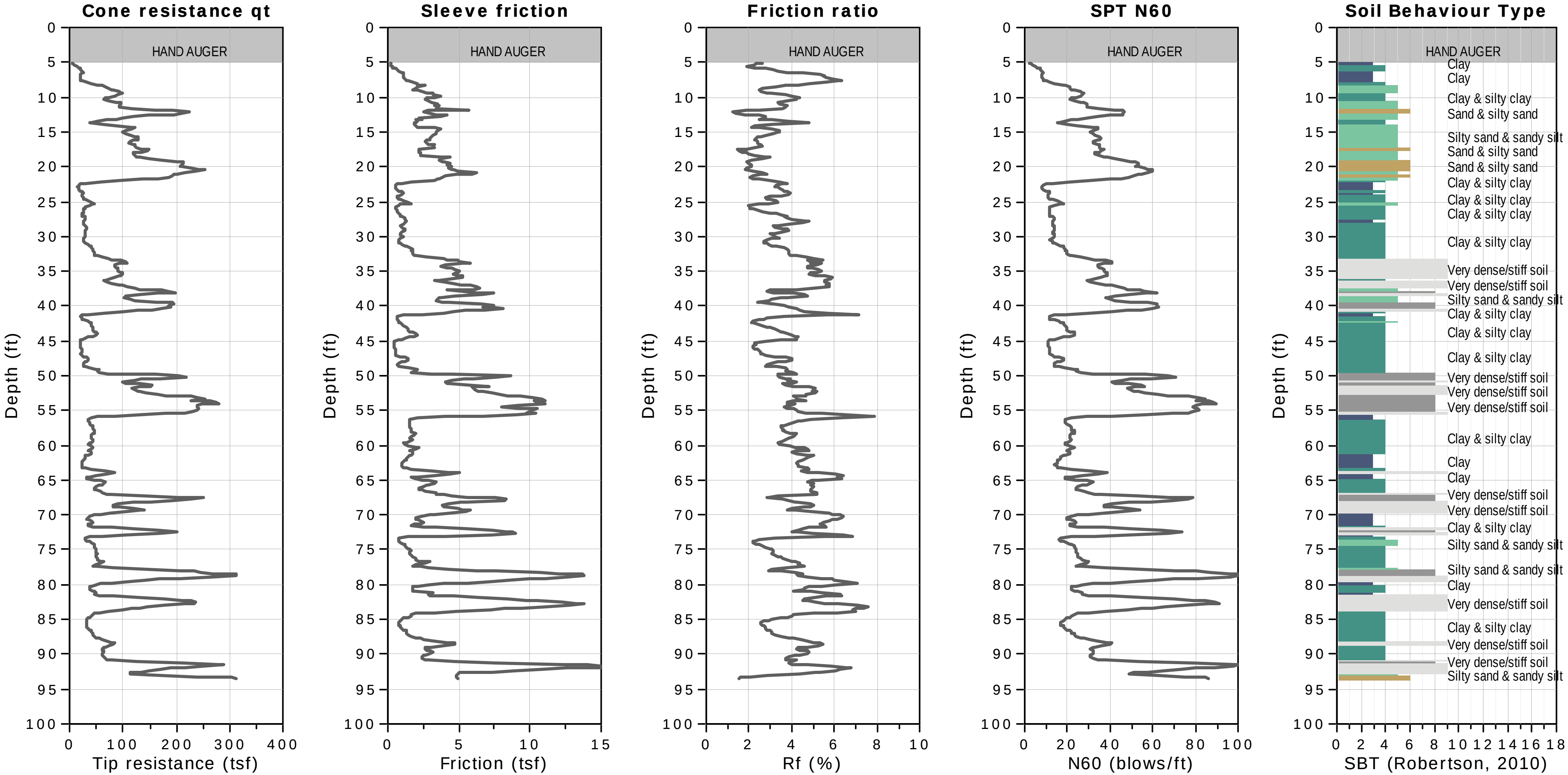
CPT: A3CPT5

CLIENT: A3GEO

SITE: BERKELEY PLAZA - 2211 HAROLD WAY, BERKELY, CA

FIELD REP: LAURA BUCHANAN

Total depth: 93.50 ft, Date: 6/12/2019



SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty clay
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to clayey sand
9. Very stiff fine grained

GREGG DRILLING, INC.
www.greggdrilling.com

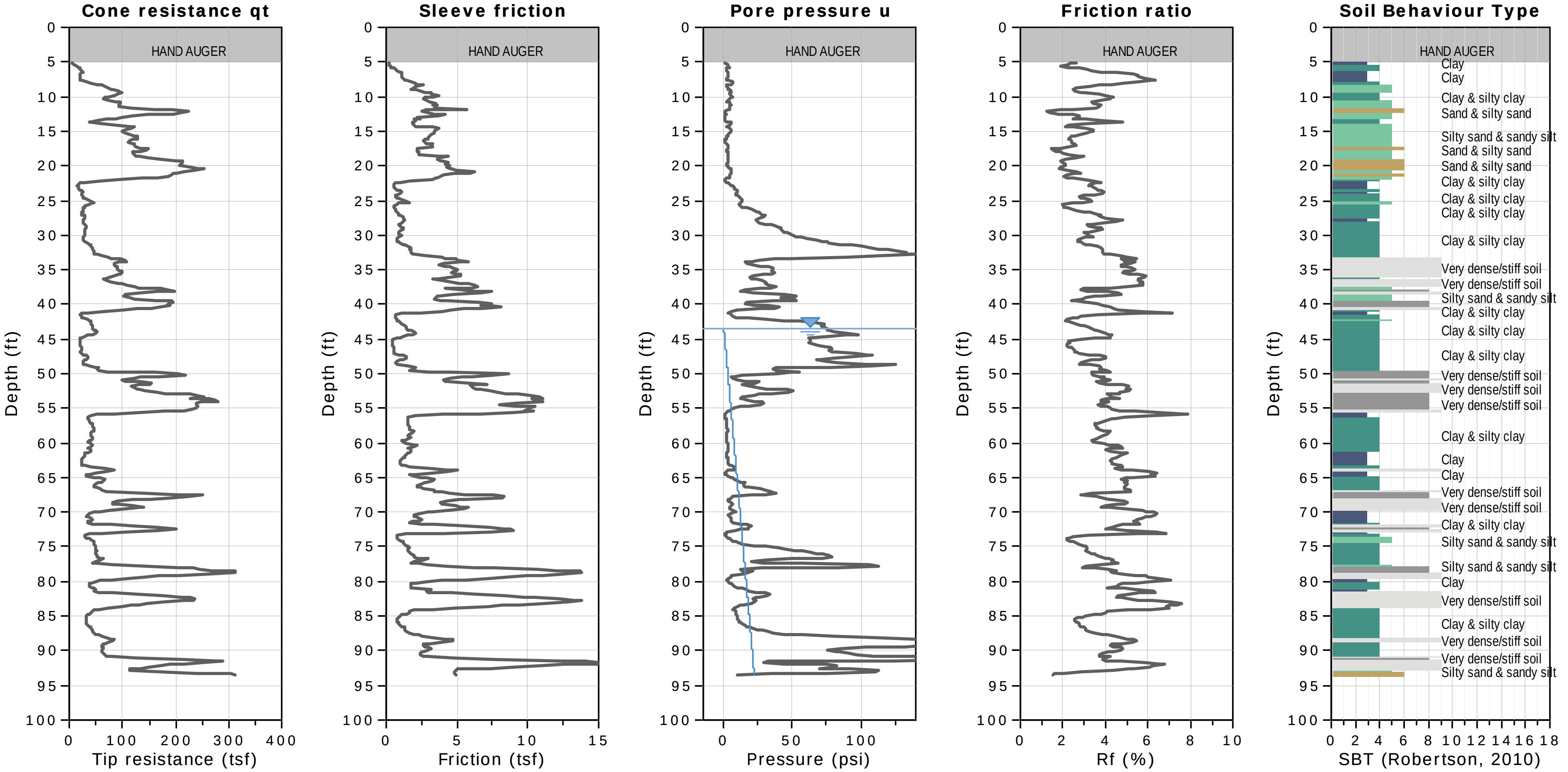
CPT: A3CPT5

CLIENT: A3GEO

SITE: BERKELEY PLAZA - 2211 HAROLD WAY, BERKELY, CA

Field Rep: LAURA BUCHANAN

Total depth: 93.50 ft, Date: 6/12/2019



SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty clay
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to clayey sand
9. Very stiff fine grained

WATER TABLE FOR ESTIMATING PURPOSES ONLY

PORE PRESSURE DISSIPATION

Pore Pressure Dissipation Tests (PPDT

Pore Pressure Dissipation Tests (PPDT's) conducted at various intervals can be used to measure equilibrium water pressure (at the time of the CPT). If conditions are hydrostatic, the equilibrium water pressure can be used to determine the approximate depth of the ground water table. A PPDT is conducted when penetration is halted at specific intervals determined by the field representative. The variation of the penetration pore pressure (*u)* with time is measured behind the tip of the cone and recorded.

Pore pressure dissipation data can be interpreted to provide estimates of:

- Equilibrium piezometric pressure
- Phreatic Surface
- In-situ horizontal coefficient of consolidation (c_h)
- In-situ horizontal coefficient of permeability (k_h)

In order to correctly interpret the equilibrium piezometric pressure and/or the phreatic surface, the pore pressure must be monitored until it reaches equilibrium, *Figure PPDT*. This time is commonly referred to as t_{100}, the point at which 100% of the excess pore pressure has dissipated.

A complete reference on pore pressure dissipation tests is presented by Robertson et al. 1992 and Lunne et al. 1997.

A summary of the pore pressure dissipation tests is summarized in Table 1.

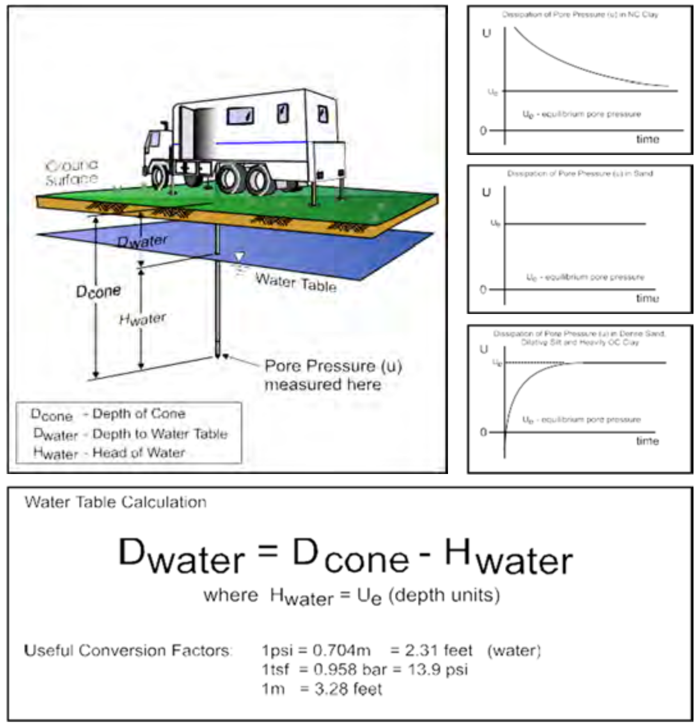
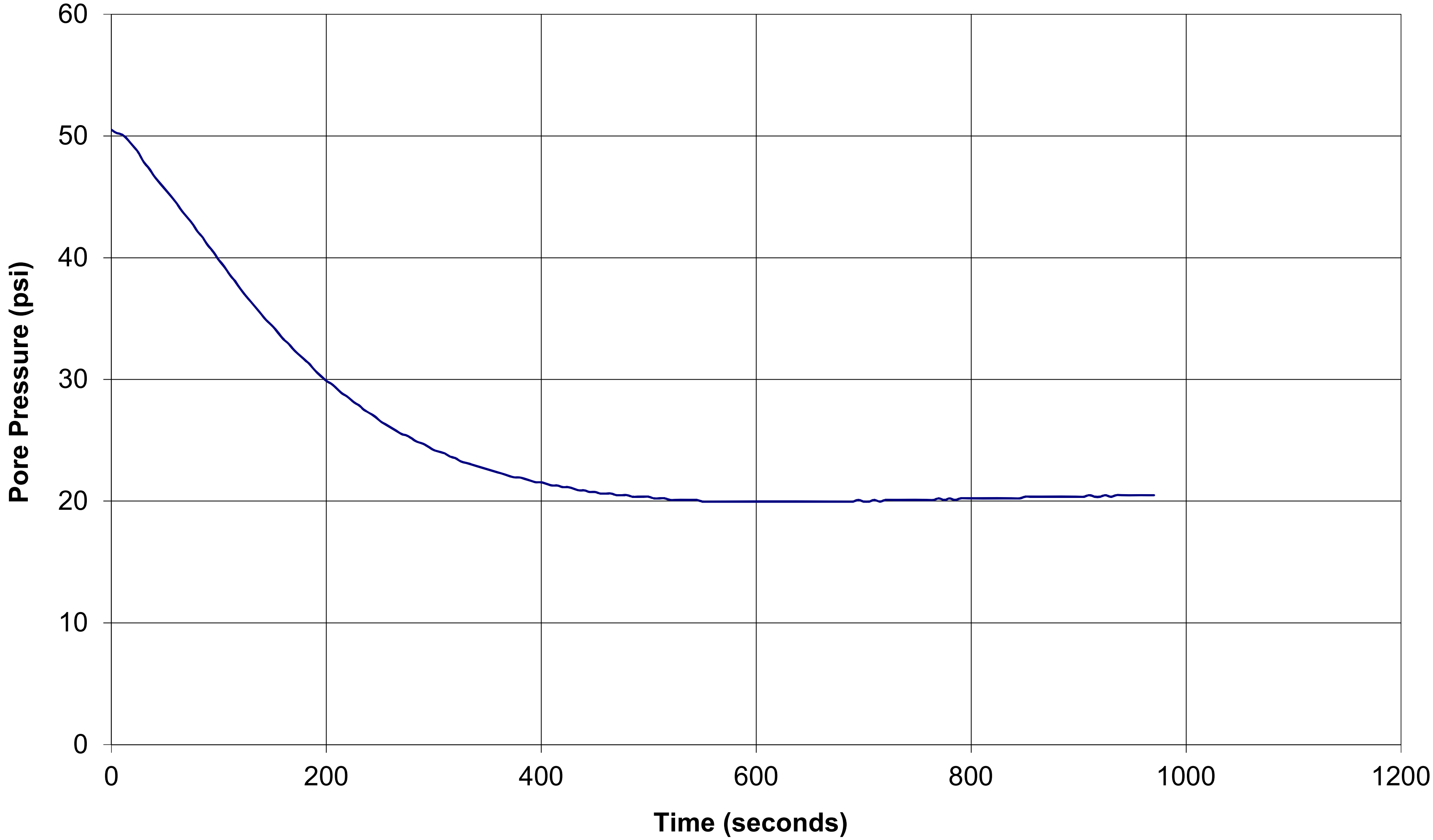


Figure PPDT

GREGG DRILLING & TESTING

Pore Pressure Dissipation Test

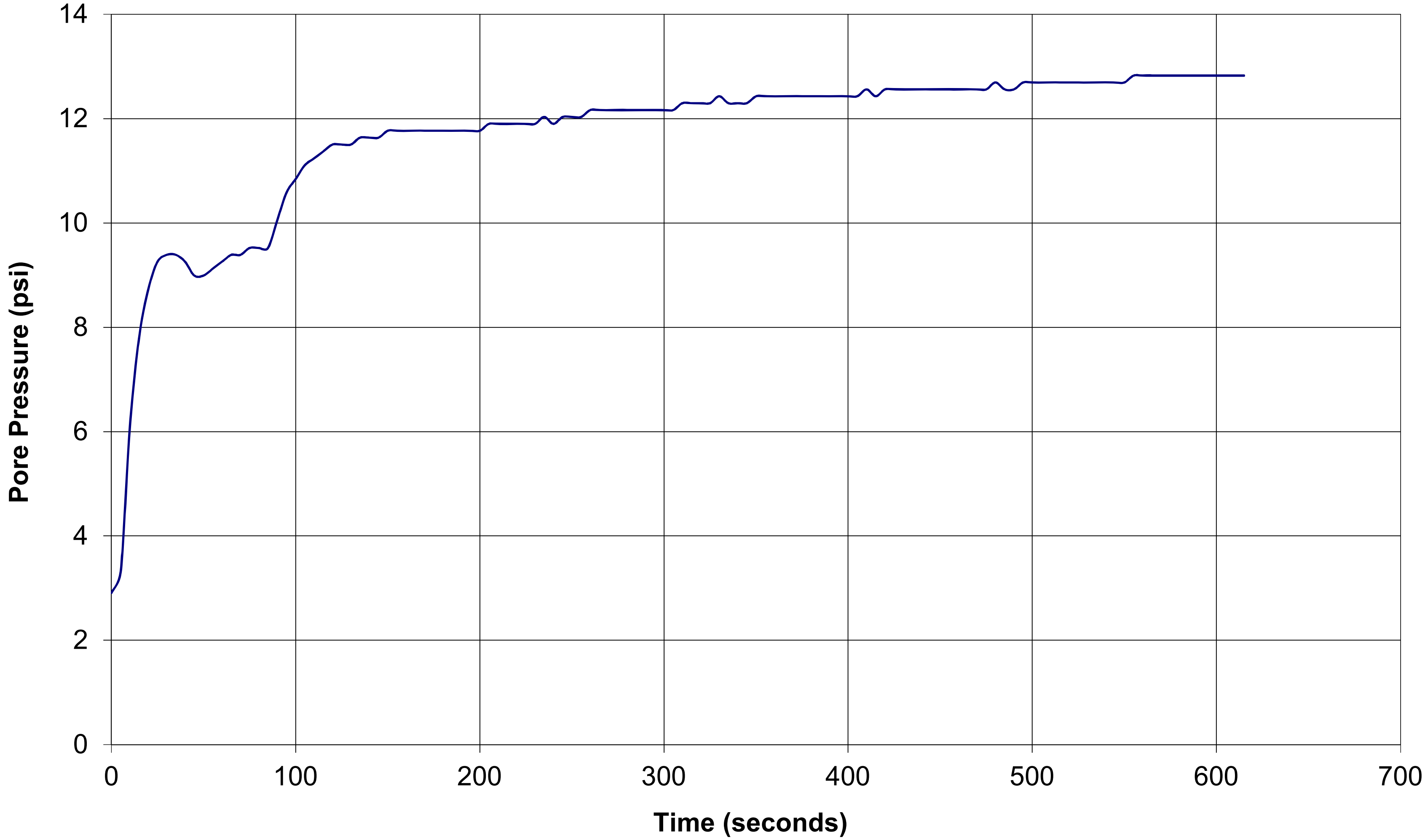
Sounding: A3CPT2
Depth: 93.831738
Site: BERKELEY PLZA
Engineer: LAURA



GREGG DRILLING & TESTING

Pore Pressure Dissipation Test

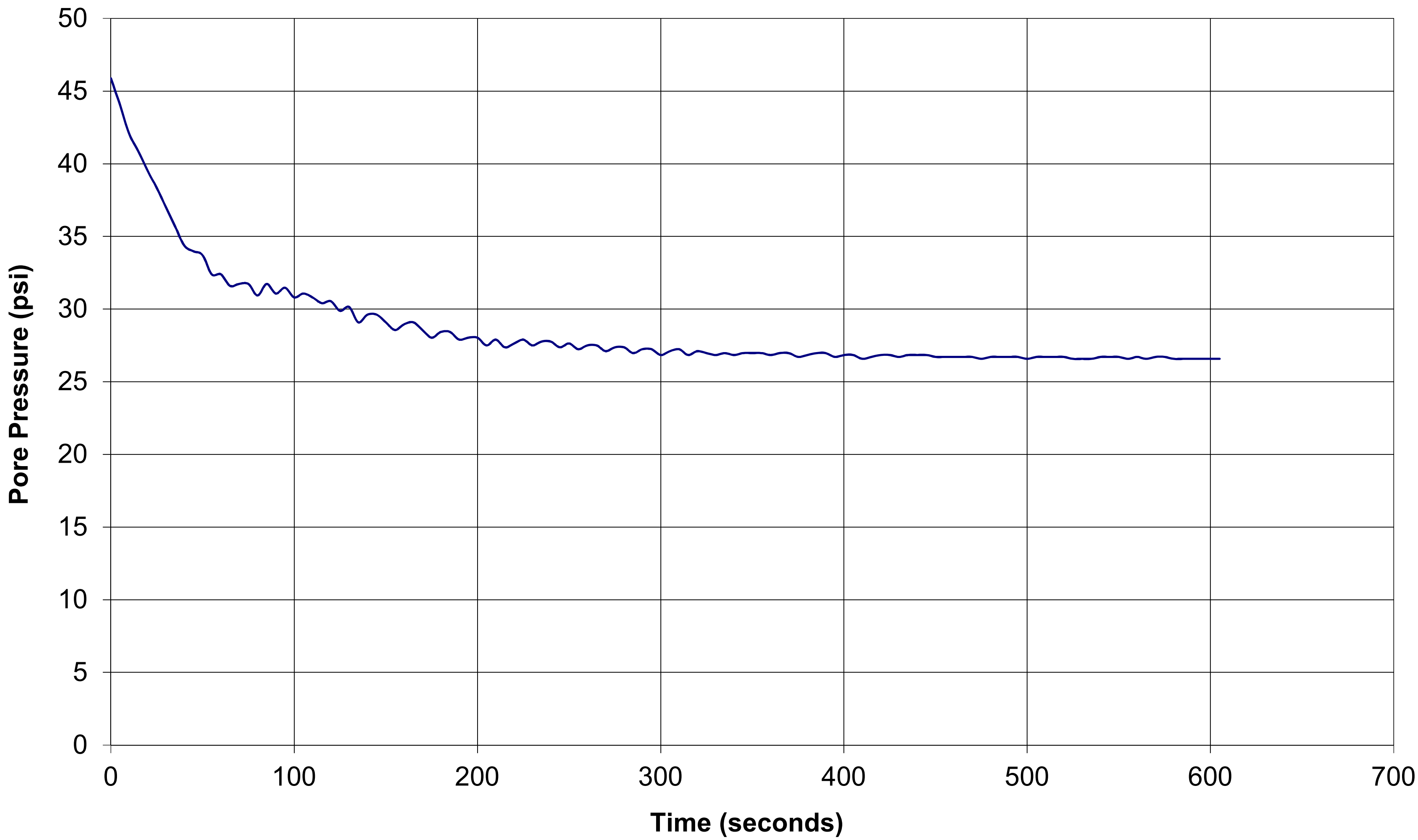
Sounding: A3CPT3
Depth: 64.1402265
Site: BERKELEY PLZA
Engineer: LAURA



GREGG DRILLING & TESTING

Pore Pressure Dissipation Test

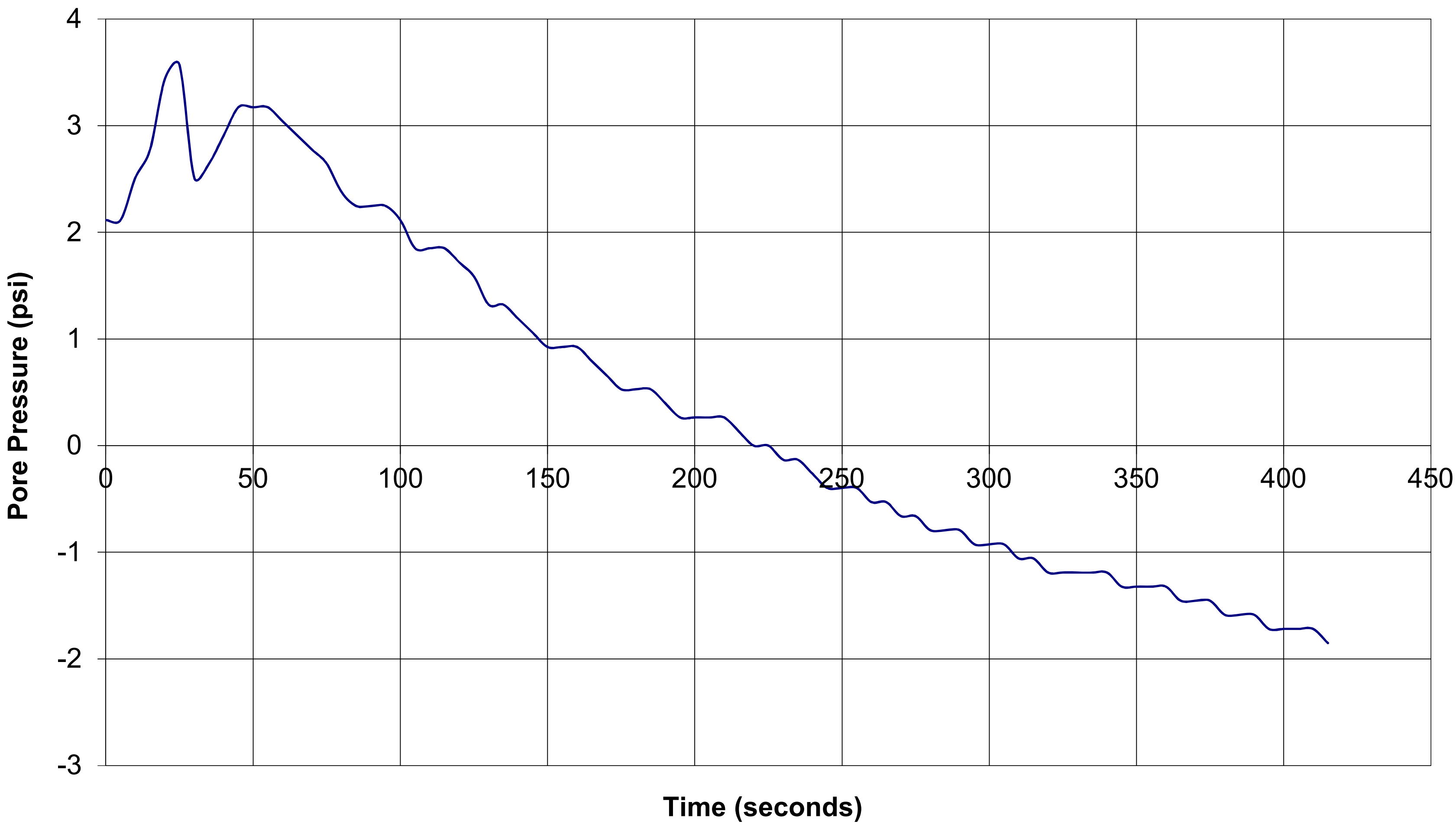
Sounding: A3CPT3
Depth: 96.6204435
Site: BERKELEY PLZA
Engineer: LAURA



GREGG DRILLING & TESTING

Pore Pressure Dissipation Test

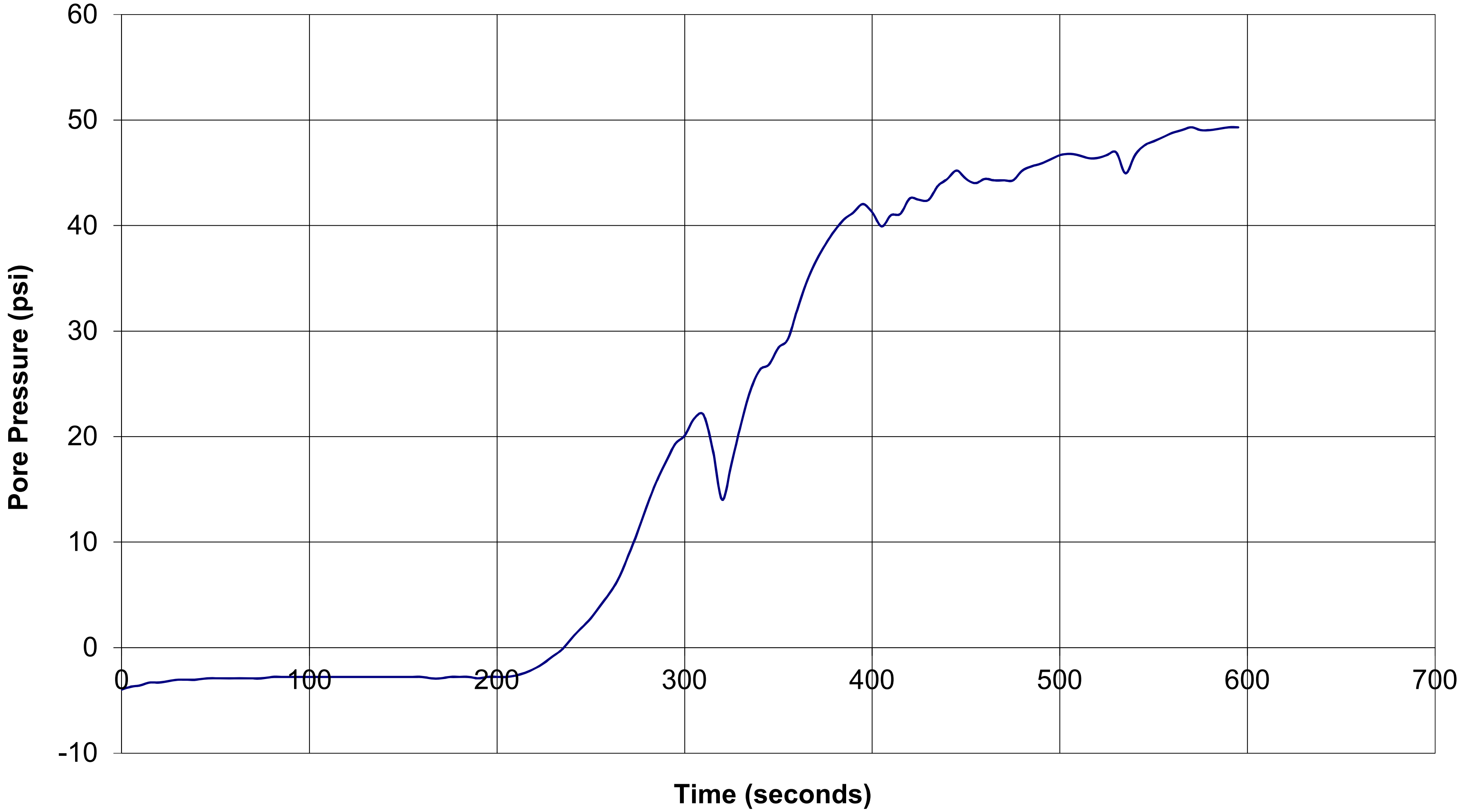
Sounding: A3CPT4
Depth: 23.293893
Site: BERKELEY PLZA
Engineer: LAURA



GREGG DRILLING & TESTING

Pore Pressure Dissipation Test

Sounding: A3CPT4
Depth: 50.852865
Site: BERKELEY PLZA
Engineer: LAURA

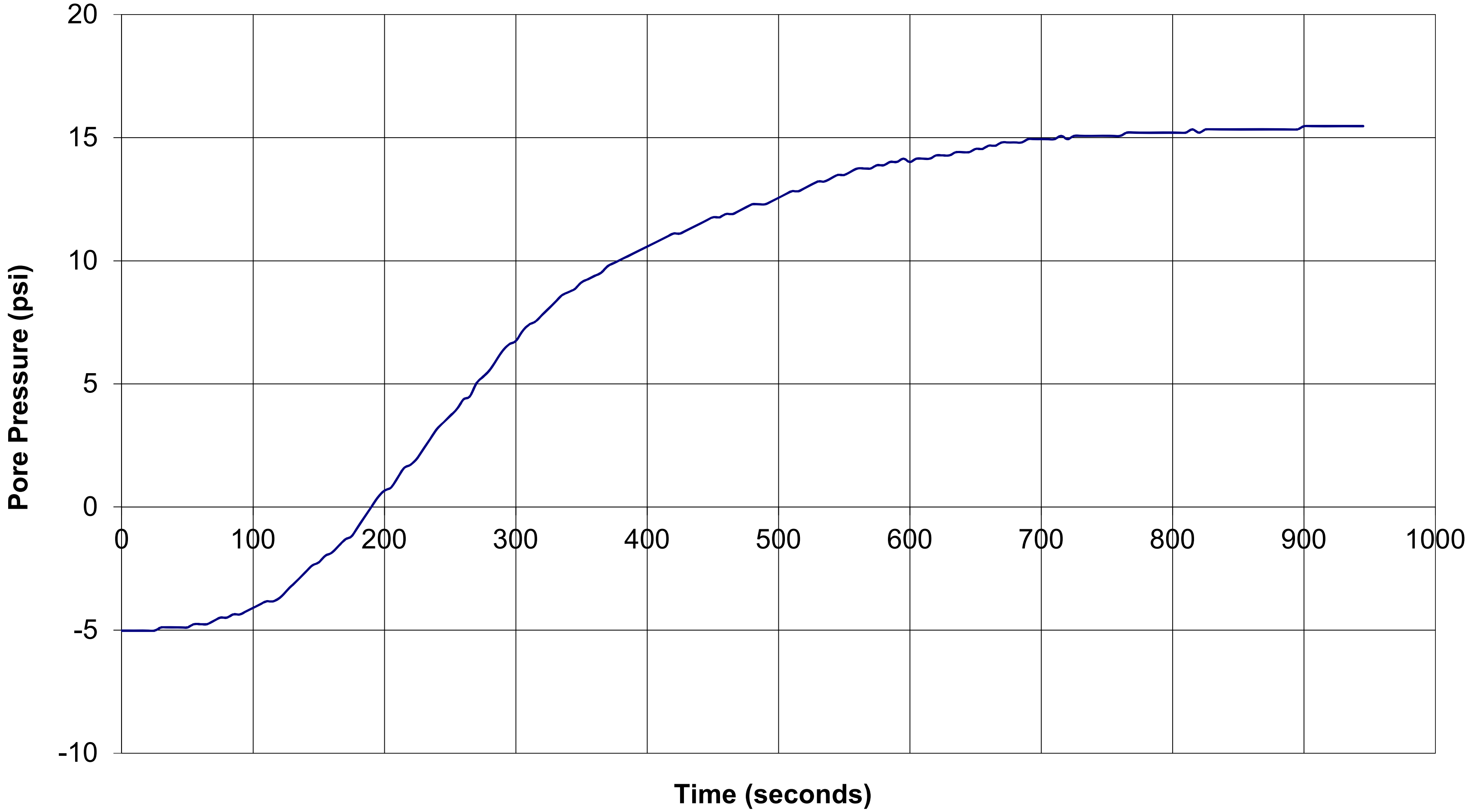


GREGG

GREGG DRILLING & TESTING

Pore Pressure Dissipation Test

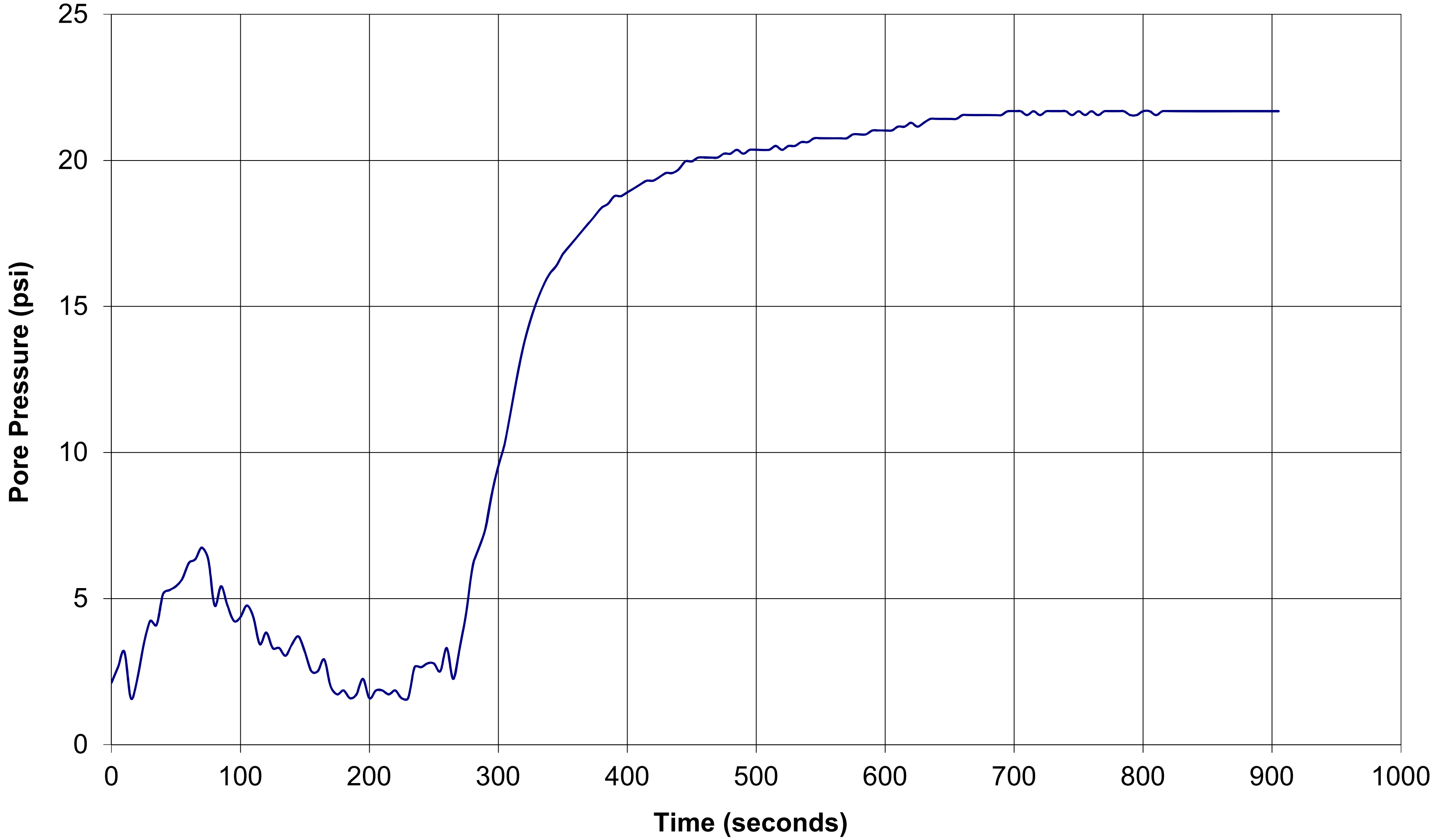
Sounding: A3CPT4
Depth: 75.9512145
Site: BERKELEY PLZA
Engineer: LAURA



GREGG DRILLING & TESTING

Pore Pressure Dissipation Test

Sounding: A3CPT5
Depth: 93.503655
Site: BERKELEY PLZA
Engineer: LAURA



GREGG DRILLING, LLC.

GEOTECHNICAL AND ENVIRONMENTAL INVESTIGATION SERVICES

6/13/19

A3Geo
Attn: Laura Buchanan

Subject: CPT Site Investigation
Berkeley Plaza – 2211 Harold Way
Berkeley, California
GREGG Project Number: D2190248MA

Dear Ms. Buchanan:

The following report presents the results of GREGG Drilling Cone Penetration Test investigation for the above referenced site. The following testing services were performed:

1	Cone Penetration Tests	(CPTU)	☒
2	Pore Pressure Dissipation Tests	(PPD)	☒
3	Seismic Cone Penetration Tests	(SCPTU)	☐
4	UVOST Laser Induced Fluorescence	(UVOST)	☐
5	Groundwater Sampling	(GWS)	☐
6	Soil Sampling	(SS)	☐
7	Vapor Sampling	(VS)	☐
8	Pressuremeter Testing	(PMT)	☐
9	Vane Shear Testing	(VST)	☐
10	Dilatometer Testing	(DMT)	☐

A list of reference papers providing additional background on the specific tests conducted is provided in the bibliography following the text of the report. If you would like a copy of any of these publications or should you have any questions or comments regarding the contents of this report, please do not hesitate to contact me at 714-863-0988.

Sincerely,
GREGG Drilling, LLC.

Frank Stolfi
HRSC Division Manager, Gregg Drilling, LLC.

2726 Walnut Ave. • Signal Hill, California 90755 • (562) 427-6899 • FAX (562) 427-3314
950 Howe Road. • Martinez, California 94553 • (925) 313-5800 • FAX (925) 313-0302
www.greggdrilling.com

Cone Penetration Test Sounding Summary

-Table 1-

CPT Sounding Identification	Date	Termination Depth (feet)	Depth of Groundwater Samples (feet)	Depth of Soil Samples (feet)	Depth of Pore Pressure Dissipation Tests (feet)
A3CPT2	6/12/2019	93.83	-	-	93.8
A3CPT3	6/12/2019	96.62	-	-	64.1, 96.6
A3CPT4	6/12/2019	75.95	-	-	23.2, 50.8, 75.9
A3CPT5	6/12/2019	93.5	-	-	93.5

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Mayne, P.W., “NHI (2002) Manual on Subsurface Investigations: Geotechnical Site Characterization”, available through www.ce.gatech.edu/~geosys/Faculty/Mayne/papers/index.html, Section 5.3, pp. 107-112.

Robertson, P.K., R.G. Campanella, D. Gillespie and A. Rice, “Seismic CPT to Measure In-Situ Shear Wave Velocity”, Journal of Geotechnical Engineering ASCE, Vol. 112, No. 8, 1986 pp. 791-803.

Robertson, P.K., Sully, J., Woeller, D.J., Lunne, T., Powell, J.J.M., and Gillespie, D.J., "Guidelines for Estimating Consolidation Parameters in Soils from Piezocone Tests", Canadian Geotechnical Journal, Vol. 29, No. 4, August 1992, pp. 539-550.

Robertson, P.K., T. Lunne and J.J.M. Powell, “Geo-Environmental Application of Penetration Testing”, Geotechnical Site Characterization, Robertson & Mayne (editors), 1998 Balkema, Rotterdam, ISBN 90 5410 939 4 pp 35-47.

Campanella, R.G. and I. Weemees, “Development and Use of An Electrical Resistivity Cone for Groundwater Contamination Studies”, Canadian Geotechnical Journal, Vol. 27 No. 5, 1990 pp. 557-567.

DeGroot, D.J. and A.J. Lutenegger, “Reliability of Soil Gas Sampling and Characterization Techniques”, International Site Characterization Conference - Atlanta, 1998.

Woeller, D.J., P.K. Robertson, T.J. Boyd and Dave Thomas, “Detection of Polyaromatic Hydrocarbon Contaminants Using the UVIF-CPT”, 53rd Canadian Geotechnical Conference Montreal, QC October pp. 733-739, 2000.

Zemo, D.A., T.A. Delfino, J.D. Gallinatti, V.A. Baker and L.R. Hilpert, “Field Comparison of Analytical Results from Discrete-Depth Groundwater Samplers” BAT EnviroProbe and QED HydroPunch, Sixth national Outdoor Action Conference, Las Vegas, Nevada Proceedings, 1992, pp 299-312.

Copies of ASTM Standards are available through www.astm.org

Cone Penetration Testing Procedure (CPT)

Gregg Drilling carries out all Cone Penetration Tests (CPT) using an integrated electronic cone system, *Figure CPT*.

The cone takes measurements of tip resistance (q_c), sleeve resistance (f_s), and penetration pore water pressure (u_2). Measurements are taken at either 2.5 or 5 cm intervals during penetration to provide a nearly continuous profile. CPT data reduction and basic interpretation is performed in real time facilitating on-site decision making. The CPT parameters are stored electronically for further analysis and reference. All CPT soundings are performed in accordance with revised ASTM standards (D 5778-12).

The 5mm thick porous plastic filter element is located directly behind the cone tip in the u_2 location. A new saturated filter element is used on each sounding to measure both penetration pore pressures as well as measurements during a dissipation test (*PPDT*). Prior to each test, the filter element is fully saturated with oil under vacuum pressure to improve accuracy.

When the sounding is completed, the test hole is backfilled according to client specifications. If grouting is used, the procedure generally consists of pushing a hollow tremie pipe with a "knock out" plug to the termination depth of the CPT hole. Grout is then pumped under pressure as the tremie pipe is pulled from the hole. Disruption or further contamination to the site is therefore minimized.

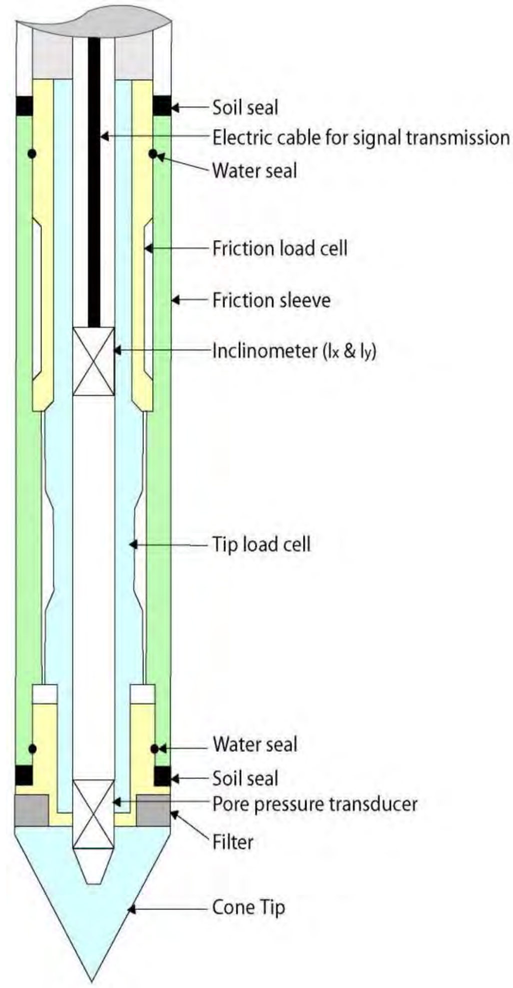

Figure CPT

Gregg 15cm^2 Standard Cone Specifications

Dimensions	
Cone base area	15 cm^2
Sleeve surface area	225 cm^2
Cone net area ratio	0.85
Specifications	
Cone load cell	
Full scale range	180 kN (20 tons)
Overload capacity	150%
Full scale tip stress	120 MPa (1,200 tsf)
Repeatability	120 kPa (1.2 tsf)
Sleeve load cell	
Full scale range	31 kN (3.5 tons)
Overload capacity	150%
Full scale sleeve stress	1,400 kPa (15 tsf)
Repeatability	1.4 kPa (0.015 tsf)
Pore pressure transducer	
Full scale range	7,000 kPa (1,000 psi)
Overload capacity	150%
Repeatability	7 kPa (1 psi)

Note: The repeatability on site will depend somewhat on ground conditions, abrasion, maintenance and zero load stability.

Cone Penetration Test Data & Interpretation

The Cone Penetration Test (CPT) data collected are presented in graphical and electronic form in the report. The plots include interpreted Soil Behavior Type (SBT) based on the charts described by Robertson (2009 & 2010). Typical plots display SBT based on the non-normalized charts of Robertson (2010). For CPT soundings deeper than 30m, we recommend the use of the normalized charts of Robertson (2009) which can be displayed as SBTn, upon request. The report can also include spreadsheet output of computer calculations of basic interpretation in terms of SBT and SBTn and various geotechnical parameters using current published correlations based on the comprehensive review by Lunne, Robertson and Powell (1997), as well as recent updates by Robertson and Cabal (Guide to Cone Penetration Testing, 2015). The interpretations are presented only as a guide for geotechnical use and should be carefully reviewed. Gregg Drilling does not warranty the correctness or the applicability of any of the geotechnical parameters interpreted by the software and does not assume any liability for use of the results in any design or review. The user should be fully aware of the techniques and limitations of any method used in the software. Some interpretation methods require input of the groundwater level to calculate vertical effective stress. An estimate of the in-situ groundwater level has been made based on field observations and/or CPT results, but should be verified by the user.

A summary of locations and depths is available in Table 1. Note that all penetration depths referenced in the data are with respect to the existing ground surface. Note that it is not always possible to clearly identify a soil type based solely on q_t, f_s, and u_2. In these situations, experience, judgment, and an assessment of the pore pressure dissipation data should be used to infer the correct soil behavior type.

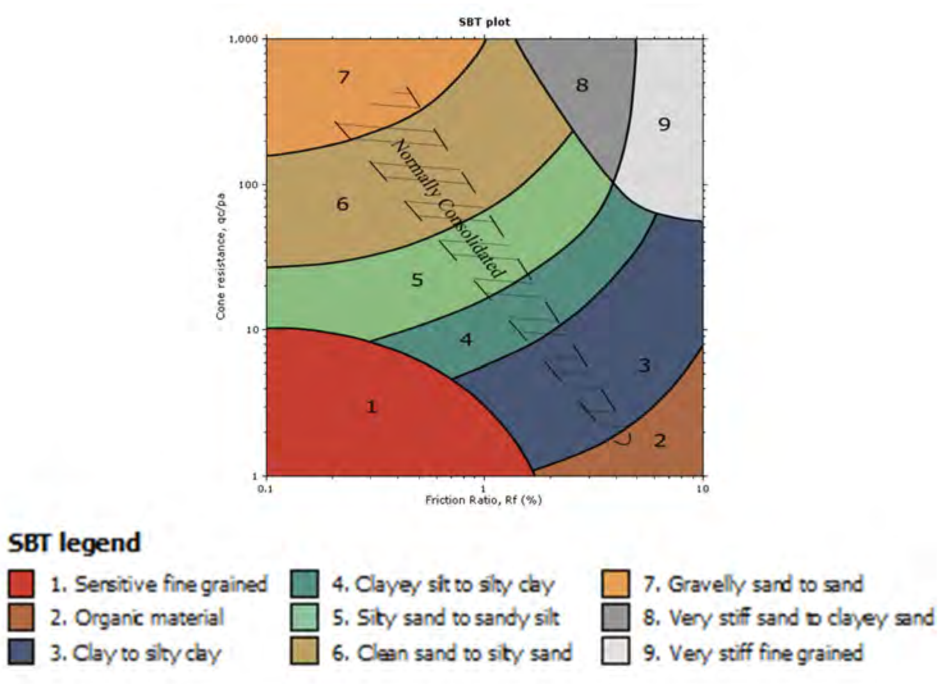

Figure SBT (After Robertson, 2010) – Note: Colors may vary slightly compared to plots

Cone Penetration Test (CPT) Interpretation

Gregg uses a commercial CPT interpretation and plotting software (CPeT-IT https://geologismiki.gr/products/cpet-it/). The software takes the CPT data and performs basic interpretation in terms of soil behavior type (SBT) and various geotechnical parameters using current published empirical correlations based on the comprehensive review by Lunne, Robertson and Powell (1997) and updated by Robertson and Cabal (2015). The interpretation is presented in tabular format. The interpretations are presented only as a guide for geotechnical use and should be carefully reviewed. Gregg does not warranty the correctness or the applicability of any of the geotechnical parameters interpreted by the software and does not assume any liability for any use of the results in any design or review. The user should be fully aware of the techniques and limitations of any method used in the software.

The following provides a summary of the methods used for the interpretation. Many of the empirical correlations to estimate geotechnical parameters have constants that have a range of values depending on soil type, geologic origin and other factors. The software uses 'default' values that have been selected to provide, in general, conservatively low estimates of the various geotechnical parameter.

Presented below is a list of formulas used for the estimation of various soil properties. The formulas are presented in SI unit system and assume that all components are expressed in the same units.

:: Unit Weight, g (kN/m³) ::

$$g = g_w \cdot \left(0.27 \cdot \log(R_f) + 0.36 \cdot \log\left(\frac{q_t}{p_a}\right) + 1.236\right)$$

where g_w = water unit weight

:: Permeability, k (m/s) ::

$I_c < 3.27$ and $I_c > 1.00$ then $k = 10^{0.952-3.04 I_c}$

$I_c \leq 4.00$ and $I_c > 3.27$ then $k = 10^{-4.52-1.37 I_c}$

:: N_{SPT} (blows per 30 cm) ::

$$N_{60} = \left(\frac{q_c}{P_a}\right) \cdot \frac{1}{10^{1.1268-0.2817 I_c}}$$

$$N_{1(60)} = Q_{tn} \cdot \frac{1}{10^{1.1268-0.2817 I_c}}$$

:: Young's Modulus, Es (MPa) ::

$$(q_t - \sigma_v) \cdot 0.015 \cdot 10^{0.55 I_c + 1.68}$$

(applicable only to $I_c < I_{c\_cutoff}$)

:: Relative Density, Dr (%) ::

$$100 \cdot \sqrt{\frac{Q_{tn}}{k_{DR}}}$$

(applicable only to SBT_n: 5, 6, 7 and 8 or $I_c < I_{c\_cutoff}$)

:: State Parameter, ψ ::

$$\psi = 0.56 - 0.33 \cdot \log(Q_{tn,cs})$$

:: Drained Friction Angle, φ (°) ::

$$\varphi = \varphi'_{cv} + 15.94 \cdot \log(Q_{tn,cs}) - 26.88$$

(applicable only to SBT_n: 5, 6, 7 and 8 or $I_c < I_{c\_cutoff}$)

:: 1-D constrained modulus, M (MPa) ::

If $I_c > 2.20$
$\alpha = 14$ for $Q_{tn} > 14$
$\alpha = Q_{tn}$ for $Q_{tn} \leq 14$
$M_{CPT} = \alpha \cdot (q_t - \sigma_v)$

If $I_c \geq 2.20$

$$M_{CPT} = 0.03 \cdot (q_t - \sigma_v) \cdot 10^{0.55 I_c + 1.68}$$

:: Small strain shear Modulus, Go (MPa) ::

$$G_0 = (q_t - \sigma_v) \cdot 0.0188 \cdot 10^{0.55 I_c + 1.68}$$

:: Shear Wave Velocity, Vs (m/s) ::

$$V_s = \left(\frac{G_0}{\rho}\right)^{0.50}$$

:: Undrained peak shear strength, Su (kPa) ::

$N_{kt} = 10.50 + 7 \cdot \log(F_r)$ or user defined

$$S_u = \frac{(q_t - \sigma_v)}{N_{kt}}$$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c\_cutoff}$)

:: Remolded undrained shear strength, Su(rem) (kPa) ::

$S_{u(rem)} = f_s$ (applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c\_cutoff}$)

:: Overconsolidation Ratio, OCR ::

$$k_{OCR} = \left[\frac{Q_{tn}^{0.20}}{0.25 \cdot (10.50 + 7 \cdot \log(F_r))}\right]^{1.25}$$ or user defined

$$OCR = k_{OCR} \cdot Q_{tn}$$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c\_cutoff}$)

:: In situ Stress Ratio, Ko ::

$$K_O = (1 - \sin\varphi') \cdot OCR^{\sin\varphi'}$$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c\_cutoff}$)

:: Soil Sensitivity, S_t ::

$$S_t = \frac{N_S}{F_r}$$

(applicable only to SBT_n: 1, 2, 3, 4 and 9 or $I_c > I_{c\_cutoff}$)

:: Peak Friction Angle, φ' (°) ::

$$\varphi' = 29.5° \cdot B_q^{0.121} \cdot (0.256 + 0.336 \cdot B_q + \log Q_t)$$

(applicable for $0.10 < B_q < 1.00$)

References

ASTM D5778-12, 2012, Standard Test Method for Performing Electronic Friction Cone and Piezocone Penetration Testing of Soils. ASTM West Conshohocken, USA

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APPENDIX C

Geotechnical Laboratory Test Data
(A3GEO, 2019)

BERKELEY PLAZA
BERKELEY, CALIFORNIA

B. HILLEBRANDT SOILS TESTING, INC.

29 Sugarloaf Terrace, Alamo, CA 94507 - Tel: (510) 409-2916 - Fax: (925) 891-9267 - Email: soiltesting@aol.com

LAB RESULTS SUMMARY FORM

Project Number: 1114-10A **Project Name:** Berkeley Plaza **Results Due By:**
Requested By: DB **Request Date:** 6/20/19 **Throw Samples Out On:**

					Atterberg			-200			Compaction				
Boring #	Sample Depth (feet)	Dry Density (pcf)	Moisture Content (%)	TxUU Shear Strength (psi)	Liquid Limit	Plastic Limit	Plasicity Index	Passing #4 Sieve (%)	Passing #40 sieve (%)	Passing #200 sieve (%)	Maximum Dry Density (pcf)	Optimum Moisture (%)	Pocket Penetrometer (tsf)	Torvane (tsf)	Remarks
B-1	11.0	127	13.1					64	22	19					
B-1	21.0							99	91	79					
B-1	31.0	100	23.9		38	22	16	99	91	71					
B-1	41.0							85	58	36					
B-1	50.5	102	21.4		47	18	29	100	92	80					
B-1	56.0	100	26.3	17.25											
B-1	61.0							83	55	32					
B-1	76.0							89	67	45					
B-1	85.5	112	19.3	34.06	33	18	15	94	78	56					
B-1	111.0							86	49	25					
B-2	6.0	108	17.6					82	50	31					
B-2	16.0							79	38	18					
B-2	26.0				27	18	9	95	88	76					
B-2	35.5	99	26.5	19.17	40	23	17	99	93	82					
B-2	50.5	118	15.6					70	43	23					
B-2	66.0							97	84	45					
B-2	81.0							90	76	58					
B-2	100.0							62	34	21					
B-2	106.0	113	18.5	17.36				96	85	65					
B-2	121.0							90	67	44					

B. HILLEBRANDT SOILS TESTING, INC.

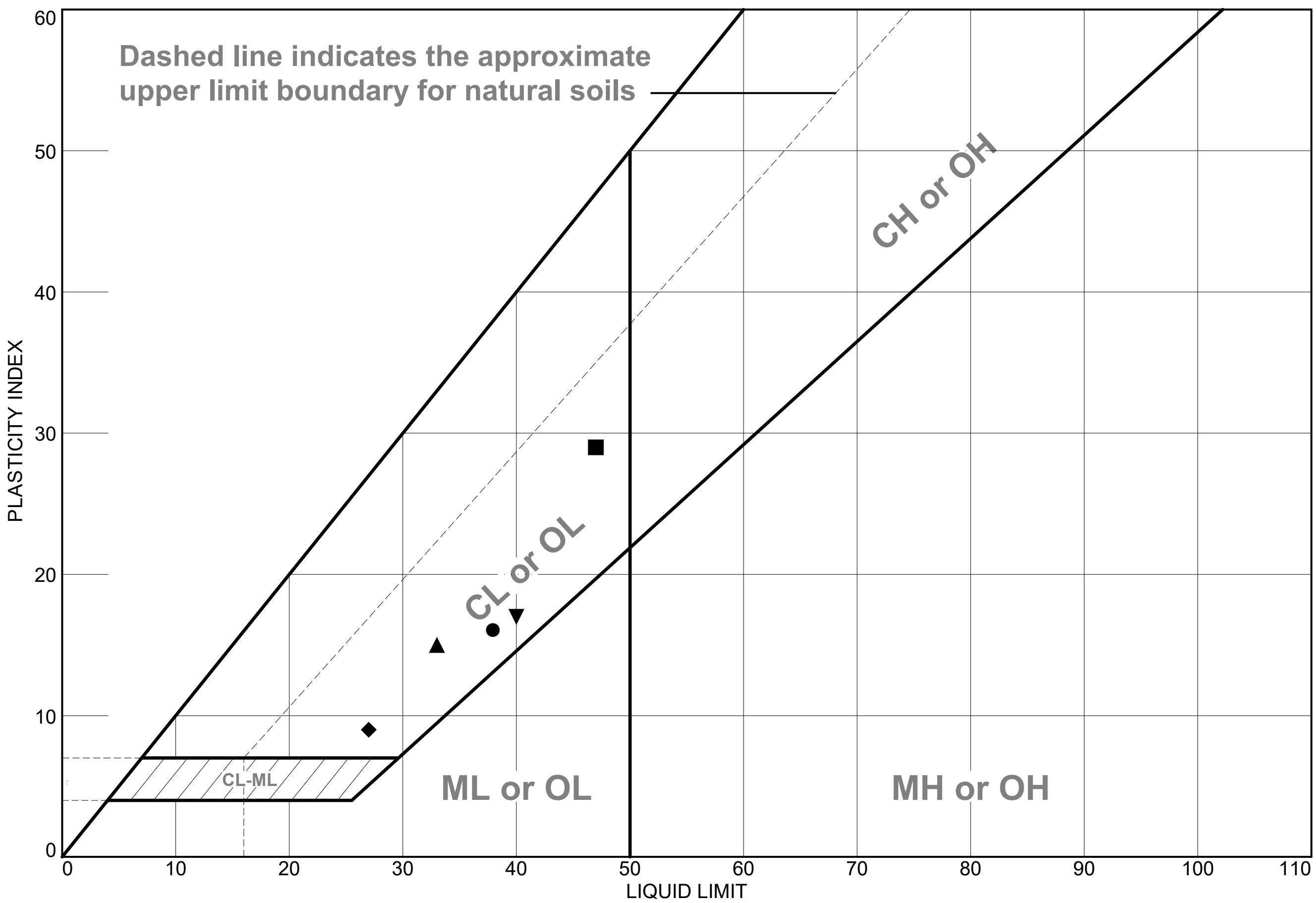
29 Sugarloaf Terrace, Alamo, CA 94507 - Tel: (510) 409-2916 - Fax: (925) 891-9267 - Email: soiltesting@aol.com

MOISTURE CONTENT/DRY DENSITY

Job #: 1114-10A
Job Name: Berkeley Plaza
Date: 6/20/19
Tested by: Brad Hillebrandt

Additional Tests:	FS	FS	FS			
Boring #:	B-1	B-2	B-2			
Depth:	11.0	6.0	50.5			
Sample Description:	Brown clayey SAND with gravel	Brown clayey SAND with gravel	Yellowish brown clayey SAND with gravel			
Can #:	B-36	202	B-8			
Wet Sample + can	906.7	806.9	843.5			
Dry Sample + can	834.0	726.7	766.5			
Weight can	279.4	270.7	274.3			
Weight water	72.7	80.2	77			
Weight Dry Sample	554.6	456	492.2			
WATER CONTENT (%)	**13.1%**	**17.6%**	**15.6%**			
Weight Sample + Liner	1064.5	1109.7	1198.2			
Weight Liner	254.4	273.7	251.5			
Sample Length	4.8	5.6	5.9			
Sample Diameter	2.39	2.39	2.39			
DRY DENSITY (pcf)	**126.7**	**107.8**	**117.8**			

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Yellowish brown lean CLAY with sand	38	22	16	91.0	71.0	CL
■	Brown lean CLAY with sand	47	18	29	92.0	80.0	CL
▲	Brownish yellow sandy lean CLAY	33	18	15	77.8	56.2	CL
◆	Yellowish brown lean CLAY with sand	27	18	9	88.2	75.9	CL
▼	Yellowish brown lean CLAY with sand	40	23	17	92.5	81.5	CL

Project No. 1114-10A **Client:** A3Geo

Project: Berkeley Plaza

●**Source of Sample:** B-1 **Depth:** 31.0 - 31.5'
■**Source of Sample:** B-1 **Depth:** 50.5 - 51.0'
▲**Source of Sample:** B-1 **Depth:** 85.5 - 86.0'
◆**Source of Sample:** B-2 **Depth:** 26.0 - 26.5'
▼**Source of Sample:** B-2 **Depth:** 35.5 - 36.0'

Remarks:

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Figure

Tested By: BH

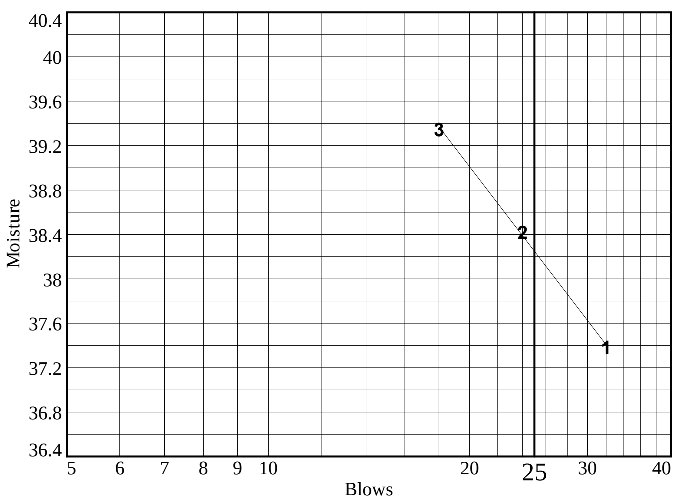
LIQUID AND PLASTIC LIMIT TEST DATA

7/4/2019

Client: A3Geo
Project: Berkeley Plaza
Project Number: 1114-10A
Location: B-1
Depth: 31.0 - 31.5'
Material Description: Yellowish brown lean CLAY with sand
%<#40: 91.0 **%<#200:** 71.0 **USCS:** CL **AASHTO:** A-6(10)
Tested by: BH

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	29.83	28.74	32.45			
Dry+Tare	24.79	23.91	26.50			
Tare	11.31	11.34	11.38			
# Blows	32	24	18			
Moisture	37.4	38.4	39.4			



Liquid Limit= 38
Plastic Limit= 22
Plasticity Index= 16

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	18.44	17.56		
Dry+Tare	17.12	16.45		
Tare	11.22	11.17		
Moisture	22.4	21.0		

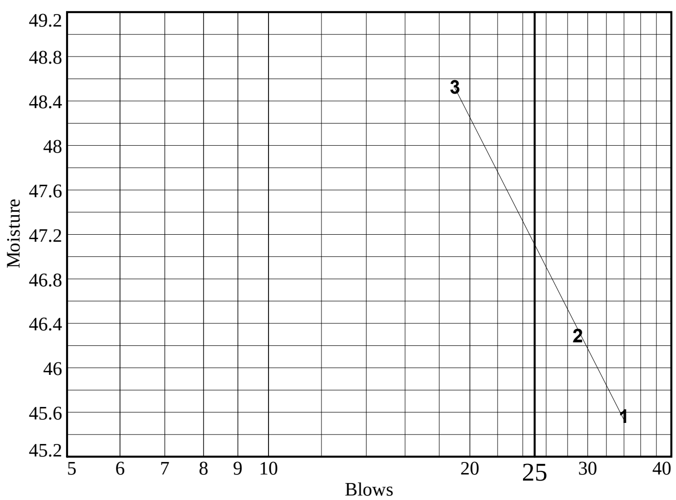
LIQUID AND PLASTIC LIMIT TEST DATA

7/4/2019

Client: A3Geo
Project: Berkeley Plaza
Project Number: 1114-10A
Location: B-1
Depth: 50.5 - 51.0'
Material Description: Brown lean CLAY with sand
%<#40: 92.0 **%<#200:** 80.0 **USCS:** CL **AASHTO:** A-7-6(23)
Tested by: BH

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	30.71	28.62	28.77			
Dry+Tare	24.59	23.12	22.99			
Tare	11.16	11.24	11.08			
# Blows	34	29	19			
Moisture	45.6	46.3	48.5			



Liquid Limit= 47
Plastic Limit= 18
Plasticity Index= 29

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	17.33	16.94		
Dry+Tare	16.44	16.07		
Tare	11.38	11.32		
Moisture	17.6	18.3		

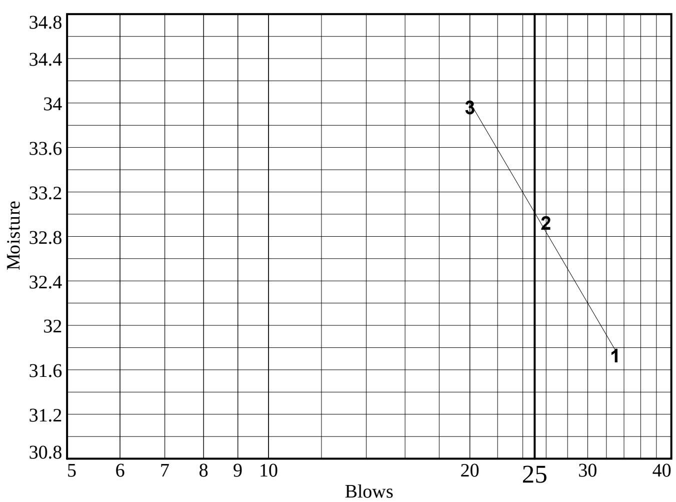
LIQUID AND PLASTIC LIMIT TEST DATA

7/4/2019

Client: A3Geo
Project: Berkeley Plaza
Project Number: 1114-10A
Location: B-1
Depth: 85.5 - 86.0'
Material Description: Brownish yellow sandy lean CLAY
%<#40: 77.8 **%<#200:** 56.2 **USCS:** CL **AASHTO:** A-6(6)
Tested by: BH

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	28.88	31.99	33.06			
Dry+Tare	24.59	26.85	27.51			
Tare	11.07	11.24	11.17			
# Blows	33	26	20			
Moisture	31.7	32.9	34.0			



Liquid Limit= 33
Plastic Limit= 18
Plasticity Index= 15
Natural Moisture= 19.3
Liquidity Index= 0.1

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	17.94	17.10		
Dry+Tare	16.88	16.18		
Tare	11.29	11.05		
Moisture	19.0	17.9		

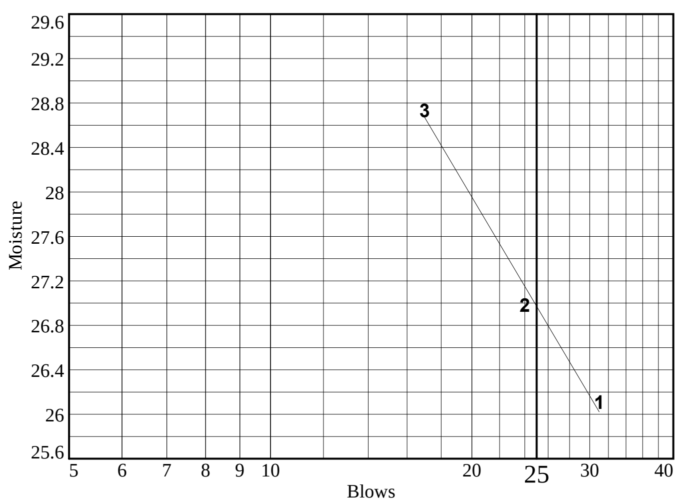
LIQUID AND PLASTIC LIMIT TEST DATA

7/4/2019

Client: A3Geo
Project: Berkeley Plaza
Project Number: 1114-10A
Location: B-2
Depth: 26.0 - 26.5'
Material Description: Yellowish brown lean CLAY with sand
%<#40: 88.2 **%<#200:** 75.9 **USCS:** CL **AASHTO:** A-4(5)
Tested by: BH

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	28.40	31.06	26.63			
Dry+Tare	24.83	26.85	23.21			
Tare	11.16	11.25	11.31			
# Blows	31	24	17			
Moisture	26.1	27.0	28.7			



Liquid Limit= 27
Plastic Limit= 18
Plasticity Index= 9
Natural Moisture= 18.6
Liquidity Index= 0.1

Plastic Limit Data

Run No.	1	2	3	4
Wet+Tare	19.56	17.93		
Dry+Tare	18.33	16.89		
Tare	11.13	11.10		
Moisture	17.1	18.0		

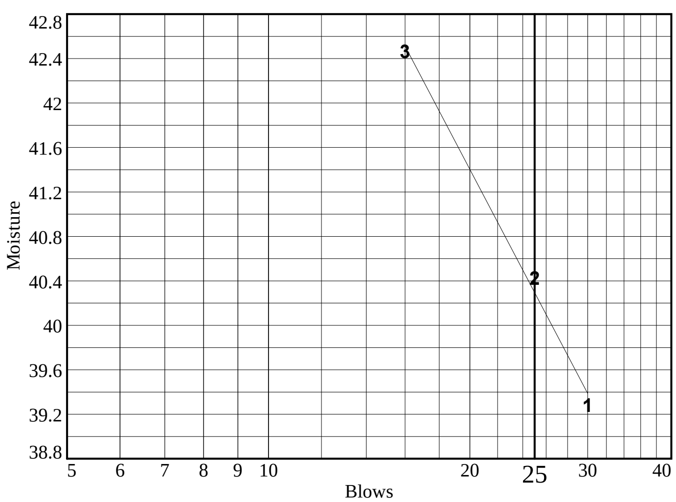
LIQUID AND PLASTIC LIMIT TEST DATA

7/4/2019

Client: A3Geo
Project: Berkeley Plaza
Project Number: 1114-10A
Location: B-2
Depth: 35.5 - 36.0'
Material Description: Yellowish brown lean CLAY with sand
%<#40: 92.5 **%<#200:** 81.5 **USCS:** CL **AASHTO:** A-6(14)
Tested by: BH

Liquid Limit Data

Run No.	1	2	3	4	5	6
Wet+Tare	26.06	28.72	30.08			
Dry+Tare	21.86	23.65	24.41			
Tare	11.17	11.11	11.06			
# Blows	30	25	16			
Moisture	39.3	40.4	42.5			

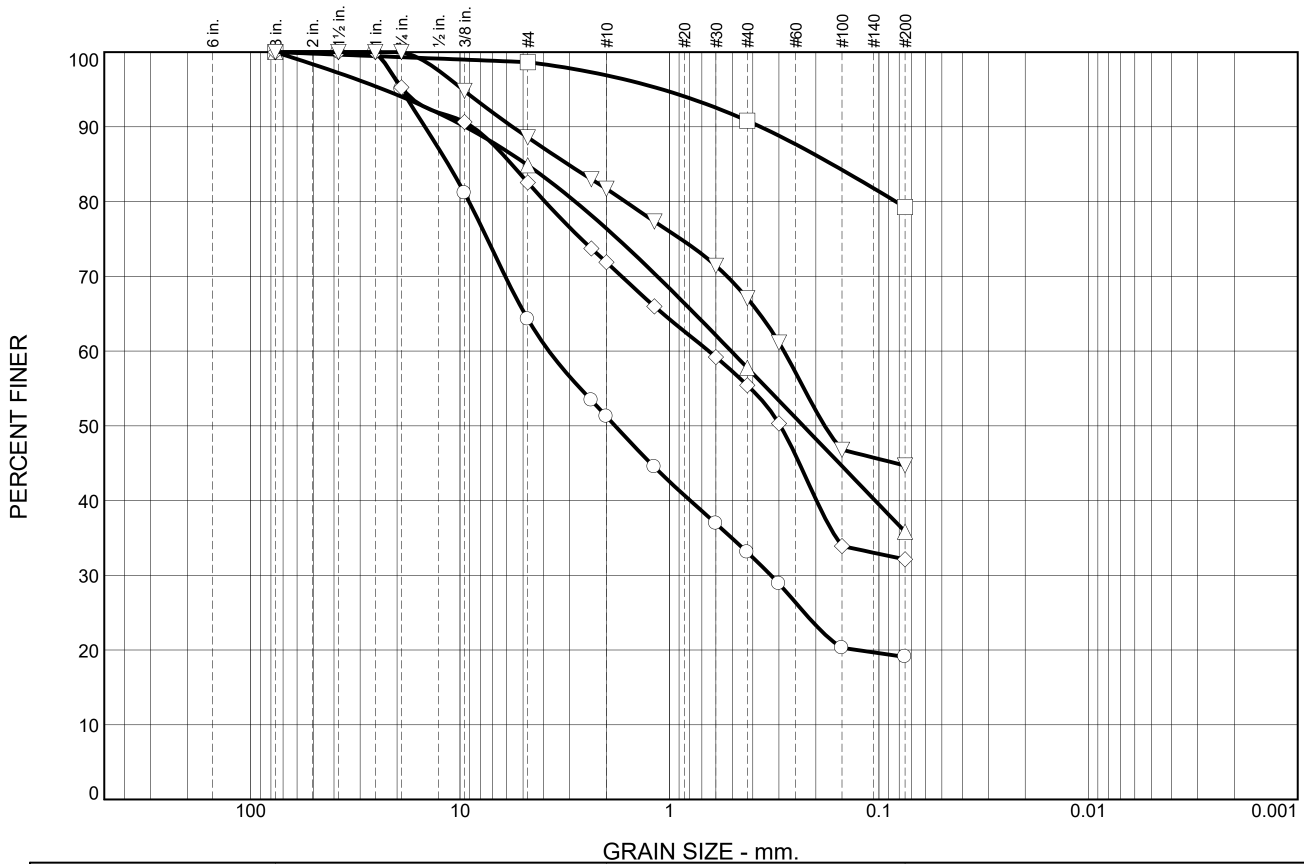


Liquid Limit= 40
Plastic Limit= 23
Plasticity Index= 17
Natural Moisture= 26.5
Liquidity Index= 0.2

Plastic Limit Data

Run No.	1	2	3	4	
Wet+Tare	17.57	17.65			
Dry+Tare	16.39	16.48			
Tare	11.18	11.25			
Moisture	22.6	22.4			

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	48.7	18.2	14.0	19.1	
□	0.0	3.1	6.1	11.5	79.3	
△	0.0	23.6	18.6	22.0	35.8	
◇	0.0	28.1	16.5	23.3	32.1	
▽	0.0	18.3	14.6	22.4	44.7	

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-1		11.0 - 11.5'	Brown clayey SAND with gravel	SC
□	B-1		21.0 - 21.5'	Reddish brown CLAY with sand	CL
△	B-1		41.0 - 41.5'	Dark yellowish brown clayey SAND with gravel	SC
◇	B-1		61.0 - 61.5'	Yellowish brown clayey SAND with gravel	SC
▽	B-1		76.0 - 76.5'	Yellowish brown clayey SAND	SC

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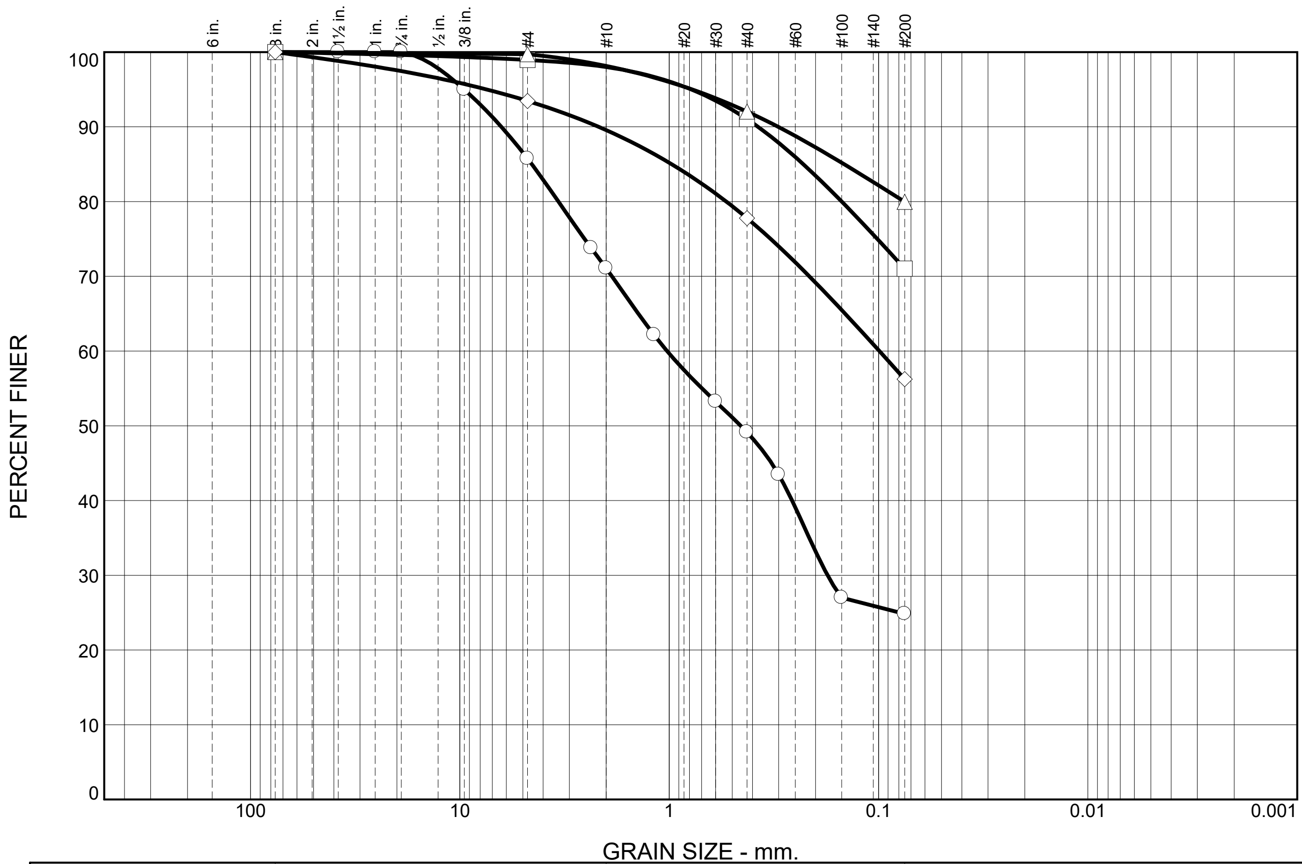
Client: A3Geo
Project: Berkeley Plaza
Project No.: 1114-10A **Figure**

Tested By: BH

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	28.9	22.0	24.3	24.8	
□	0.0	2.0	7.0	20.0	71.0	
△	0.0	1.9	6.1	12.0	80.0	
◇	0.0	6.5	3.9	21.6	68.0	

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-1		111.0 -	Olive brown clayey SAND	SC
			111.5'		
□	B-1		31.0 - 31.5'	Yellowish brown lean CLAY with sand	CL
△	B-1		50.5 - 51.0'	Brown lean CLAY with sand	CL
◇	B-1		85.5 - 86.0'	Brownish yellow sandy lean CLAY	CL

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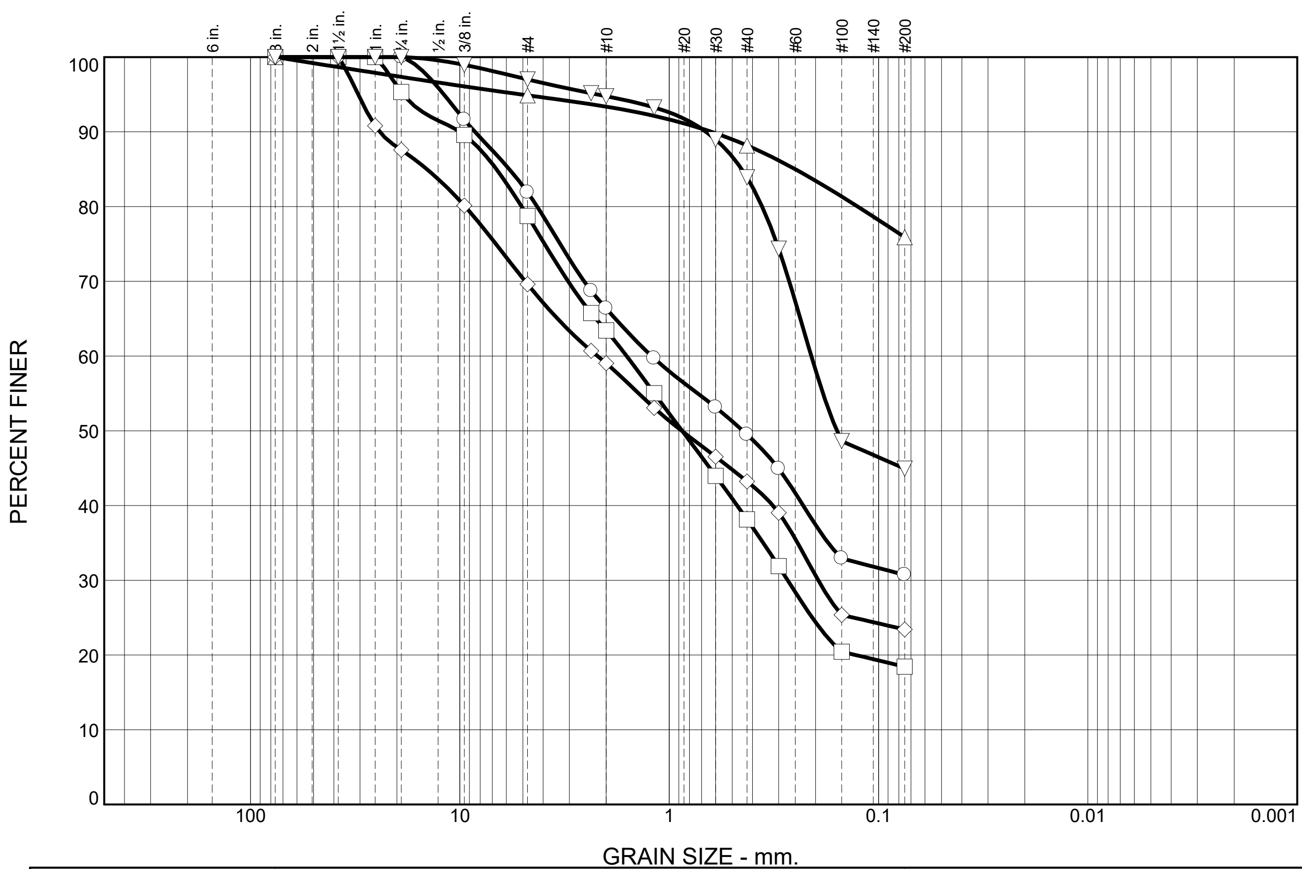
Client: A3Geo
Project: Berkeley Plaza
Project No.: 1114-10A **Figure**

Tested By: BH

Particle Size Distribution Report



	% +3"	% Gravel	% Sand Coarse	% Sand Fine	% Fines Silt	% Fines Clay
○	0.0	33.6	16.9	18.8	30.7	
□	0.0	36.6	25.3	19.7	18.4	
△	0.0	6.6	5.2	12.3	75.9	
◇	0.0	41.0	15.8	19.8	23.4	
▽	0.0	5.2	10.9	39.0	44.9	

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-2		6.0 - 6.5'	Brown clayey SAND with gravel	SC
□	B-2		16.0 - 16.5'	Brown clayey SAND with gravel	SC
△	B-2		26.0 - 26.5'	Yellowish brown lean CLAY with sand	CL
◇	B-2		50.5 - 51.0'	Yellowish brown clayey SAND with gravel	SC
▽	B-2		66.0 - 66.5'	Yellowish brown clayey SAND	SC

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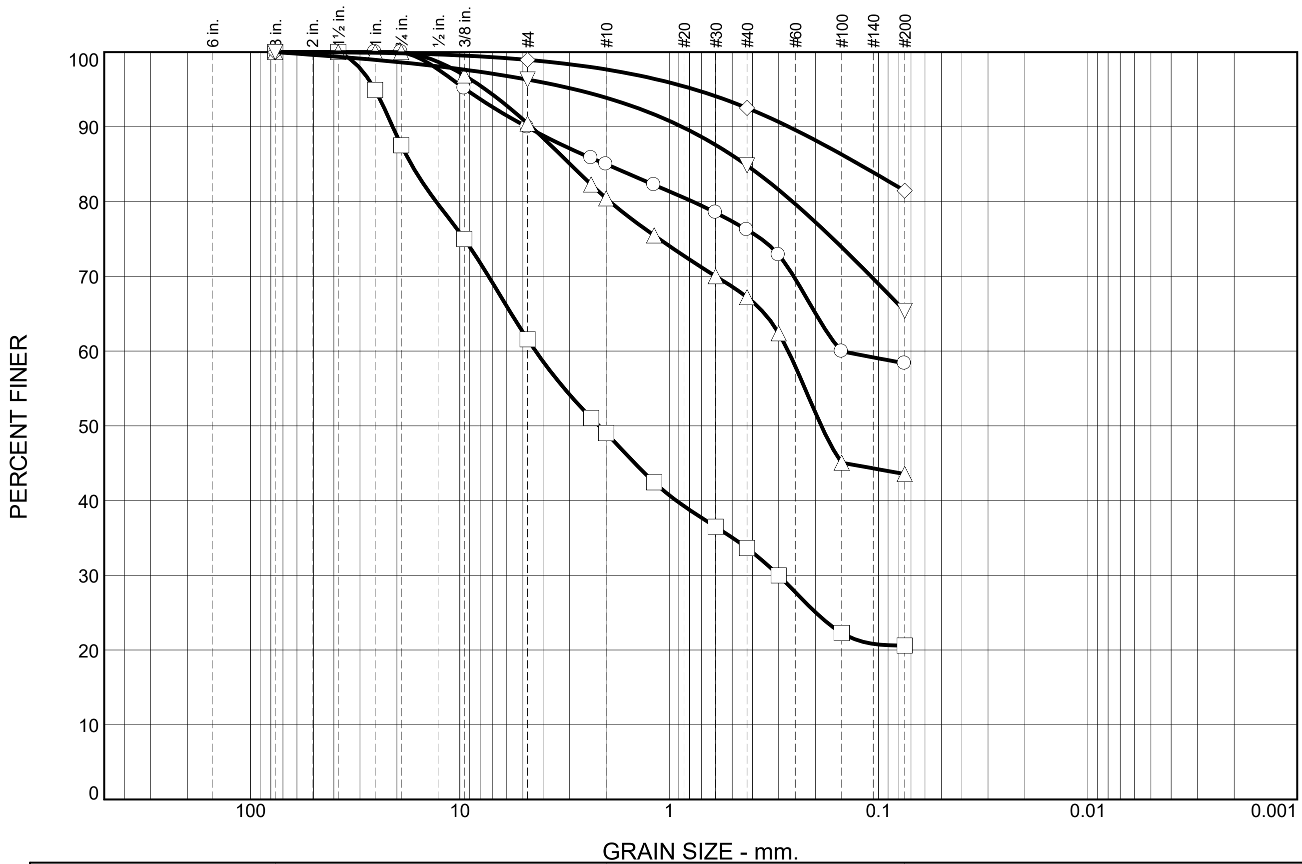
Client: A3Geo
Project: Berkeley Plaza
Project No.: 1114-10A **Figure**

Tested By: BH

Particle Size Distribution Report



	% +3"	% Gravel	% Sand		% Fines	
			Coarse	Fine	Silt	Clay
○	0.0	15.0	8.8	17.8	58.4	
□	0.0	51.0	15.4	13.0	20.6	
△	0.0	19.6	13.2	23.6	43.6	
◇	0.0	1.0	1.3	11.0	86.7	
▽	0.0	3.7	2.4	19.4	74.5	

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-2		81.0 - 81.5'	Yellowish brown sandy CLAY	CL
□	B-2		100.0 -	Yellowish brown clayey SAND with gravel	SC
			100.5'		
△	B-2		121.0 -	Yellowish brown clayey SAND	SC
			121.5'		

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Client: A3Geo
Project: Berkeley Plaza
Project No.: 1114-10A **Figure**

Tested By: BH

GRAIN SIZE DISTRIBUTION TEST DATA

7/4/2019

Client: A3Geo
Project: Berkeley Plaza
Project Number: 1114-10A
Location: B-1
Depth: 11.0 - 11.5'
Material Description: Brown clayey SAND with gravel
USCS: SC
Tested by: BH

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
834.00	279.40	0.00	3"	0.00	100.0
			1.5"	0.00	100.0
			1"	0.00	100.0
			3/4"	27.57	95.0
			3/8"	104.58	81.1
			#4	198.11	64.3
			#8	258.33	53.4
			#10	270.35	51.3
			#16	307.89	44.5
			#30	349.81	36.9
			#40	371.19	33.1
			#50	394.53	28.9
			#100	442.10	20.3
			#200	448.79	19.1

Fractional Components

Cobbles	Gravel	Sand			Fines		
		Coarse	Fine	Total	Silt	Clay	Total
0.0	48.7	18.2	14.0	32.2			19.1

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
			0.1273	0.3278	0.7958	1.8183	3.7670	9.0694	11.3886	14.7083	19.0229

Fineness Modulus
3.76

GRAIN SIZE DISTRIBUTION TEST DATA

7/4/2019

Client: A3Geo
Project: Berkeley Plaza
Project Number: 1114-10A
Location: B-1
Depth: 21.0 - 21.5'
Material Description: Reddish brown CLAY with sand
USCS: CL
Tested by: BH

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
212.50	33.20	0.00	3"	0.00	100.0
			#4	2.42	98.7
			#40	16.47	90.8
			#200	37.17	79.3

Fractional Components

Cobbles	Gravel	Sand			Fines		
		Coarse	Fine	Total	Silt	Clay	Total
0.0	3.1	6.1	11.5	17.6			79.3

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
								0.0829	0.1673	0.3672	1.0832

Fineness Modulus
0.45

GRAIN SIZE DISTRIBUTION TEST DATA

7/4/2019

Client: A3Geo
Project: Berkeley Plaza
Project Number: 1114-10A
Location: B-1
Depth: 41.0 - 41.5'
Material Description: Dark yellowish brown clayey SAND with gravel
USCS: SC
Tested by: BH

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
199.10	35.70	0.00	3"	0.00	100.0
			#4	24.73	84.9
			#40	69.01	57.8
			#200	104.84	35.8

Fractional Components

Cobbles	Gravel	Sand			Fines		
		Coarse	Fine	Total	Silt	Clay	Total
0.0	23.6	18.6	22.0	40.6			35.8

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.1042	0.2297	0.5075	2.8205	4.8258	9.4345	23.1628

Fineness Modulus
2.25

GRAIN SIZE DISTRIBUTION TEST DATA

7/4/2019

Client: A3Geo
Project: Berkeley Plaza
Project Number: 1114-10A
Location: B-1
Depth: 61.0 - 61.5'
Material Description: Yellowish brown clayey SAND with gravel
USCS: SC
Tested by: BH

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
697.30	277.40	0.00	3"	0.00	100.0
			1.5"	0.00	100.0
			1"	0.00	100.0
			3/4"	19.83	95.3
			3/8"	39.28	90.6
			#4	73.26	82.6
			#8	110.34	73.7
			#10	118.06	71.9
			#16	142.87	66.0
			#30	171.35	59.2
			#40	187.18	55.4
			#50	208.64	50.3
			#100	277.52	33.9
			#200	284.97	32.1

Fractional Components

Cobbles	Gravel	Sand			Fines		
		Coarse	Fine	Total	Silt	Clay	Total
0.0	28.1	16.5	23.3	39.8			32.1

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.1986	0.2954	0.6496	3.9319	5.6697	8.7264	18.7056

Fineness Modulus
2.48

GRAIN SIZE DISTRIBUTION TEST DATA

7/4/2019

Client: A3Geo
Project: Berkeley Plaza
Project Number: 1114-10A
Location: B-1
Depth: 76.0 - 76.5'
Material Description: Yellowish brown clayey SAND
USCS: SC
Tested by: BH

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
891.20	445.80	0.00	3"	0.00	100.0
			1.5"	0.00	100.0
			1"	0.00	100.0
			3/4"	0.00	100.0
			3/8"	23.11	94.8
			#4	50.83	88.6
			#8	75.75	83.0
			#10	81.46	81.7
			#16	100.96	77.3
			#30	127.32	71.4
			#40	146.70	67.1
			#50	173.11	61.1
			#100	236.97	46.8
			#200	246.38	44.7

Fractional Components

Cobbles	Gravel	Sand			Fines		
		Coarse	Fine	Total	Silt	Clay	Total
0.0	18.3	14.6	22.4	37.0			44.7

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
						0.1815	0.2842	1.6231	3.0534	5.6122	9.7114

Fineness Modulus
1.77

GRAIN SIZE DISTRIBUTION TEST DATA

7/4/2019

Client: A3Geo
Project: Berkeley Plaza
Project Number: 1114-10A
Location: B-1
Depth: 111.0 - 111.5'
Material Description: Olive brown clayey SAND
USCS: SC
Tested by: BH

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
694.00	274.20	0.00	3"	0.00	100.0
			1.5"	0.00	100.0
			1"	0.00	100.0
			3/4"	0.00	100.0
			3/8"	21.00	95.0
			#4	59.82	85.8
			#8	110.05	73.8
			#10	121.46	71.1
			#16	158.92	62.1
			#30	196.32	53.2
			#40	213.58	49.1
			#50	237.31	43.5
			#100	306.47	27.0
			#200	315.49	24.8

Fractional Components

Cobbles	Gravel	Sand			Fines		
		Coarse	Fine	Total	Silt	Clay	Total
0.0	28.9	22.0	24.3	46.3			24.8

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.1752	0.2589	0.4556	1.0229	3.3813	4.5336	6.3355	9.5271

Fineness Modulus
2.60

GRAIN SIZE DISTRIBUTION TEST DATA

7/4/2019

Client: A3Geo
Project: Berkeley Plaza
Project Number: 1114-10A
Location: B-1
Depth: 31.0 - 31.5'
Material Description: Yellowish brown lean CLAY with sand
USCS: CL
Tested by: BH

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
161.18	33.07	0.00	3"	0.00	100.0
			#4	1.35	98.9
			#40	11.49	91.0
			#200	37.12	71.0

Fractional Components

Cobbles	Gravel	Sand			Fines		
		Coarse	Fine	Total	Silt	Clay	Total
0.0	2.0	7.0	20.0	27.0			71.0

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
								0.1499	0.2288	0.3764	0.7843

Fineness Modulus
0.46

GRAIN SIZE DISTRIBUTION TEST DATA

7/4/2019

Client: A3Geo
Project: Berkeley Plaza
Project Number: 1114-10A
Location: B-1
Depth: 50.5 - 51.0'
Material Description: Brown lean CLAY with sand
USCS: CL
Tested by: BH

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
72.31	32.71	0.00	3"	0.00	100.0
			#4	0.11	99.7
			#40	3.15	92.0
			#200	7.93	80.0

Fractional Components

Cobbles	Gravel	Sand			Fines		
		Coarse	Fine	Total	Silt	Clay	Total
0.0	1.9	6.1	12.0	18.1			80.0

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
								0.0752	0.1460	0.3016	0.7769

Fineness Modulus
0.37

GRAIN SIZE DISTRIBUTION TEST DATA

7/4/2019

Client: A3Geo
Project: Berkeley Plaza
Project Number: 1114-10A
Location: B-1
Depth: 85.5 - 86.0'
Material Description: Brownish yellow sandy lean CLAY
USCS: CL
Tested by: BH

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
258.95	32.24	0.00	3"	0.00	100.0
			#4	14.82	93.5
			#40	50.38	77.8
			#200	99.21	56.2

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	2.5	4.0	6.5	3.9	11.8	21.6	37.3			56.2

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
							0.0991	0.5336	0.9736	2.1736	7.4398

Fineness Modulus
1.17

GRAIN SIZE DISTRIBUTION TEST DATA

7/4/2019

Client: A3Geo
Project: Berkeley Plaza
Project Number: 1114-10A
Location: B-2
Depth: 6.0 - 6.5'
Material Description: Brown clayey SAND with gravel
USCS: SC
Tested by: BH

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
726.70	270.70	0.00	3"	0.00	100.0
			1.5"	0.00	100.0
			1"	0.00	100.0
			3/4"	0.00	100.0
			3/8"	38.17	91.6
			#4	82.56	81.9
			#8	142.59	68.7
			#10	153.38	66.4
			#16	183.81	59.7
			#30	213.69	53.1
			#40	230.29	49.5
			#50	251.18	44.9
			#100	305.86	32.9
			#200	315.89	30.7

Fractional Components

Cobbles	Gravel	Sand			Fines		
		Coarse	Fine	Total	Silt	Clay	Total
0.0	33.6	16.9	18.8	35.7			30.7

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.2290	0.4445	1.2131	4.2752	5.8045	8.4656	11.9280

Fineness Modulus
2.67

GRAIN SIZE DISTRIBUTION TEST DATA

7/4/2019

Client: A3Geo
Project: Berkeley Plaza
Project Number: 1114-10A
Location: B-2
Depth: 16.0 - 16.5'
Material Description: Brown clayey SAND with gravel
USCS: SC
Tested by: BH

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
776.70	226.90	0.00	3"	0.00	100.0
			1.5"	0.00	100.0
			1"	0.00	100.0
			3/4"	25.65	95.3
			3/8"	57.24	89.6
			#4	116.90	78.7
			#8	188.28	65.8
			#10	201.08	63.4
			#16	247.23	55.0
			#30	308.05	44.0
			#40	340.07	38.1
			#50	374.48	31.9
			#100	437.38	20.4
			#200	448.40	18.4

Fractional Components

Cobbles	Gravel	Sand			Fines		
		Coarse	Fine	Total	Silt	Clay	Total
0.0	36.6	25.3	19.7	45.0			18.4

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
			0.1285	0.2716	0.4735	0.8677	1.5958	5.0677	6.6898	10.0010	18.6397

Fineness Modulus
3.19

GRAIN SIZE DISTRIBUTION TEST DATA

7/4/2019

Client: A3Geo
Project: Berkeley Plaza
Project Number: 1114-10A
Location: B-2
Depth: 50.5 - 51.0'
Material Description: Yellowish brown clayey SAND with gravel
USCS: SC
Tested by: BH

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
766.50	274.30	0.00	3"	0.00	100.0
			1.5"	0.00	100.0
			1"	45.23	90.8
			3/4"	61.11	87.6
			3/8"	97.76	80.1
			#4	149.56	69.6
			#8	193.43	60.7
			#10	201.61	59.0
			#16	230.97	53.1
			#30	263.15	46.5
			#40	279.43	43.2
			#50	300.06	39.0
			#100	367.34	25.4
			#200	376.92	23.4

Fractional Components

Cobbles	Gravel	Sand			Fines		
		Coarse	Fine	Total	Silt	Clay	Total
0.0	41.0	15.8	19.8	35.6			23.4

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.1940	0.3195	0.8713	2.2009	9.4290	14.3807	24.1607	30.5800

Fineness Modulus
3.38

GRAIN SIZE DISTRIBUTION TEST DATA

7/4/2019

Client: A3Geo
Project: Berkeley Plaza
Project Number: 1114-10A
Location: B-2
Depth: 66.0 - 66.5'
Material Description: Yellowish brown clayey SAND
USCS: SC
Tested by: BH

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
662.90	261.60	0.00	3"	0.00	100.0
			1.5"	0.00	100.0
			1"	0.00	100.0
			3/4"	0.00	100.0
			3/8"	4.18	99.0
			#4	11.98	97.0
			#8	19.41	95.2
			#10	21.01	94.8
			#16	27.04	93.3
			#30	44.25	89.0
			#40	64.59	83.9
			#50	102.85	74.4
			#100	206.18	48.6
			#200	220.97	44.9

Fractional Components

Cobbles	Gravel	Sand			Fines		
		Coarse	Fine	Total	Silt	Clay	Total
0.0	5.2	10.9	39.0	49.9			44.9

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
						0.1581	0.2094	0.3597	0.4502	0.6669	2.2057

Fineness Modulus
1.04

GRAIN SIZE DISTRIBUTION TEST DATA

7/4/2019

Client: A3Geo
Project: Berkeley Plaza
Project Number: 1114-10A
Location: B-2
Depth: 81.0 - 81.5'
Material Description: Yellowish brown sandy CLAY
USCS: CL
Tested by: BH

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
655.20	293.80	0.00	3"	0.00	100.0
			1.5"	0.00	100.0
			1"	0.00	100.0
			3/4"	0.00	100.0
			3/8"	17.48	95.2
			#4	36.34	89.9
			#8	51.21	85.8
			#10	54.22	85.0
			#16	64.23	82.2
			#30	77.61	78.5
			#40	85.98	76.2
			#50	98.10	72.9
			#100	144.71	60.0
			#200	150.50	58.4

Fractional Components

Cobbles	Gravel	Sand			Fines		
		Coarse	Fine	Total	Silt	Clay	Total
0.0	15.0	8.8	17.8	26.6			58.4

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
							0.1505	0.7732	2.0011	4.7901	9.3473

Fineness Modulus
1.35

GRAIN SIZE DISTRIBUTION TEST DATA

7/4/2019

Client: A3Geo
Project: Berkeley Plaza
Project Number: 1114-10A
Location: B-2
Depth: 100.0 - 100.5'
Material Description: Yellowish brown clayey SAND with gravel
USCS: SC
Tested by: BH

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
822.70	261.80	0.00	3"	0.00	100.0
			1.5"	0.00	100.0
			1"	28.36	94.9
			3/4"	69.89	87.5
			3/8"	140.25	75.0
			#4	215.52	61.6
			#8	274.53	51.1
			#10	285.90	49.0
			#16	322.90	42.4
			#30	356.25	36.5
			#40	372.24	33.6
			#50	392.72	30.0
			#100	435.92	22.3
			#200	445.34	20.6

Fractional Components

Cobbles	Gravel	Sand			Fines		
		Coarse	Fine	Total	Silt	Clay	Total
0.0	51.0	15.4	13.0	28.4			20.6

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.3004	0.9250	2.1650	4.3488	12.9916	17.0654	20.9234	25.4654

Fineness Modulus
3.94

GRAIN SIZE DISTRIBUTION TEST DATA

7/4/2019

Client: A3Geo
Project: Berkeley Plaza
Project Number: 1114-10A
Location: B-2
Depth: 121.0 - 121.5'
Material Description: Yellowish brown clayey SAND
USCS: SC
Tested by: BH

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
647.80	264.90	0.00	3"	0.00	100.0
			1.5"	0.00	100.0
			1"	0.00	100.0
			3/4"	0.00	100.0
			3/8"	11.93	96.9
			#4	36.57	90.4
			#8	67.81	82.3
			#10	74.90	80.4
			#16	93.91	75.5
			#30	114.83	70.0
			#40	125.55	67.2
			#50	144.03	62.4
			#100	210.39	45.1
			#200	216.12	43.6

Fractional Components

Cobbles	Gravel	Sand			Fines		
		Coarse	Fine	Total	Silt	Clay	Total
0.0	19.6	13.2	23.6	36.8			43.6

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
						0.1876	0.2702	1.9189	2.9718	4.5609	7.5288

Fineness Modulus
1.77

GRAIN SIZE DISTRIBUTION TEST DATA

7/4/2019

Client: A3Geo
Project: Berkeley Plaza
Project Number: 1114-10A
Location: B-2
Depth: 35.5 - 36.0'
Material Description: Yellowish brown lean CLAY with sand
USCS: CL
Tested by: BH

Sieve Test Data

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
120.39	37.94	0.00	3"	0.00	100.0
			#4	0.86	99.0
			#40	6.16	92.5
			#200	15.29	81.5

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	0.2	0.8	1.0	1.3	5.2	11.0	17.5			81.5

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
									0.1241	0.2678	0.7572

Fineness Modulus
0.36

GRAIN SIZE DISTRIBUTION TEST DATA

7/4/2019

Client: A3Geo
Project: Berkeley Plaza
Project Number: 1114-10A
Location: B-2
Depth: 106.0 - 106.5'
Material Description: Yellowish brown sandy CLAY
USCS: CL
Tested by: BH

Sieve Test Data

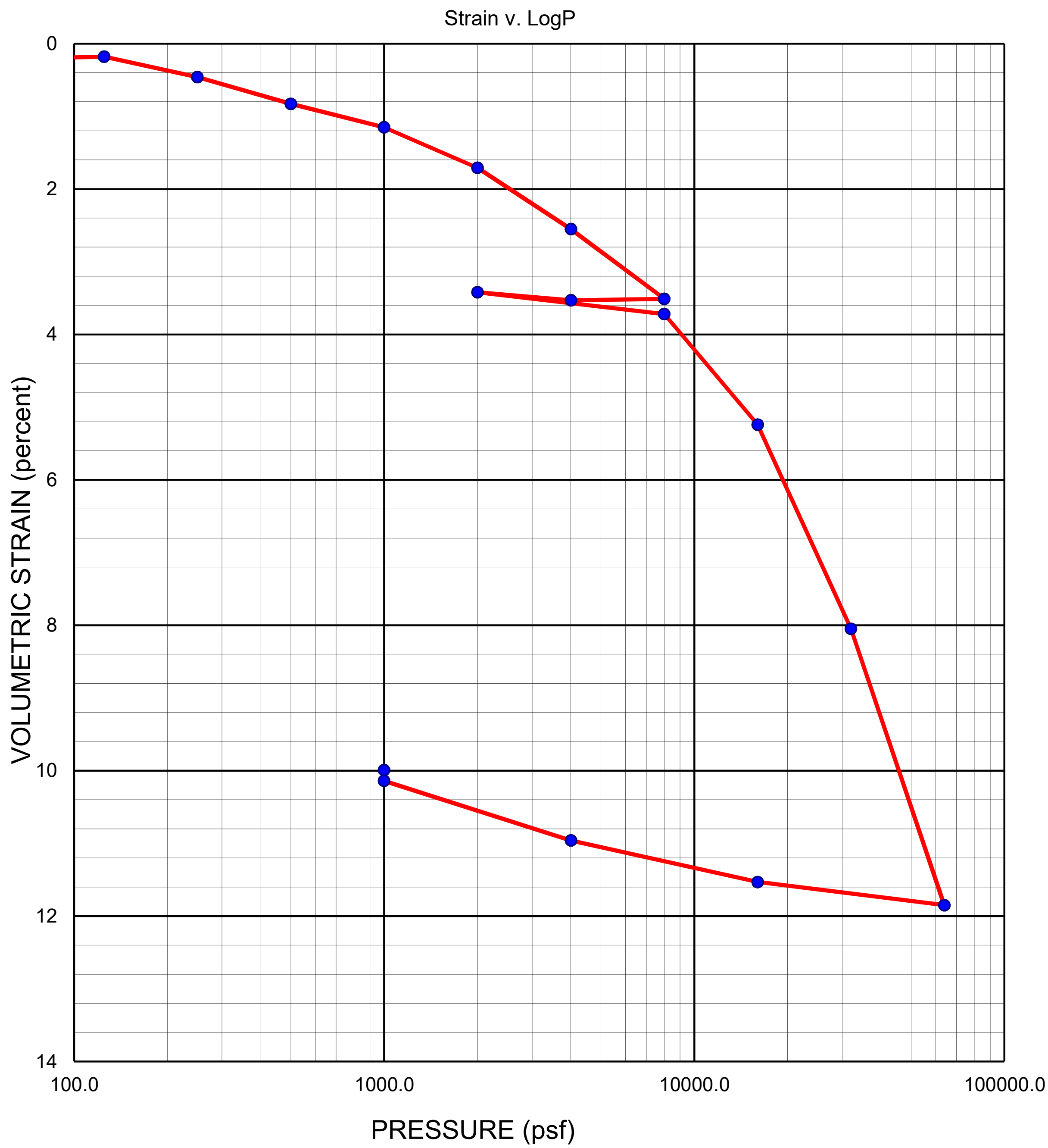
Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer
230.90	38.88	0.00	3"	0.00	100.0
			#4	7.06	96.3
			#40	29.12	84.8
			#200	66.47	65.4

Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	1.4	2.3	3.7	2.4	9.1	19.4	30.9			65.4

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
								0.2578	0.4332	0.8682	2.8179

Fineness Modulus
0.79



Sampler Type: Shelby			Condition	Before Test			After Test	
Diameter (in) 2.00	Height (in)	0.75	Water Content	w_o	23.9 %	w_f	20.0 %	
Overburden Pressure, p_o		psf	Void Ratio	e_o	0.72	e_f	0.55	
Preconsol. Pressure, p_c		psf	Saturation	S_o	91.1 %	S_f	100 %	
Compression Ratio, $C_{\varepsilon c}$			Dry Density	γ_d	100 pcf	γ_d	111 pcf	
Recompression Ratio, $C_{\varepsilon r}$	LL	PL	PI		G_s	2.75	(assumed)	

Source: B-1 at 31.0 feet

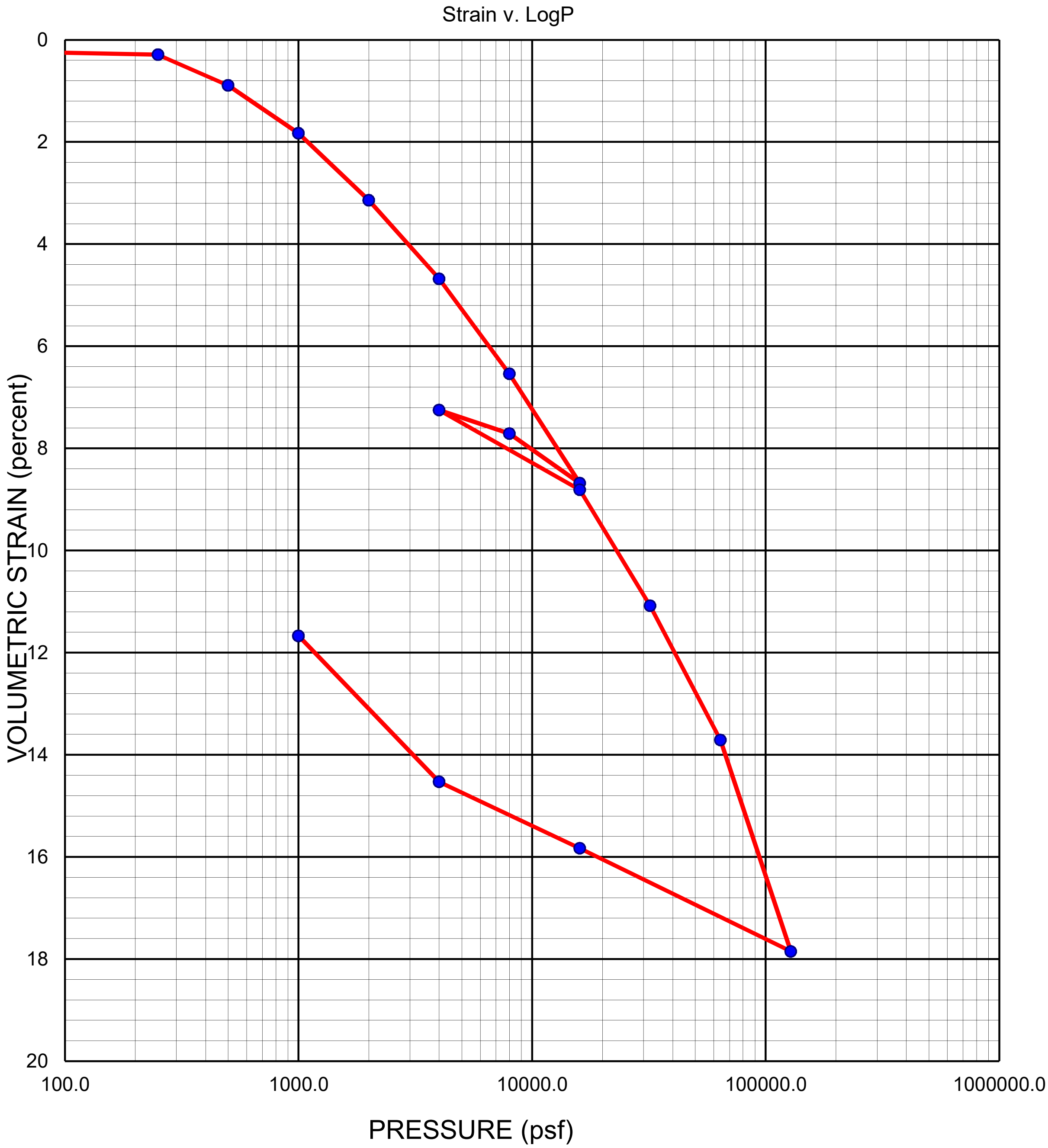
Description: Yellowish brown clayey SAND

BERKELEY PLAZA

CONSOLIDATION TEST REPORT

B. HILLEBRANDT SOILS TESTING, INC

Date 06/30/19 | Project No. 1114-10A | Figure



Sampler Type: Shelby				Condition	Before Test			After Test		
Diameter (in)	2.00	Height (in)	0.75	Water Content	w_o	21.4	%	w_f	17.8	%
Overburden Pressure, p_o			psf	Void Ratio	e_o	0.69		e_f	0.49	
Preconsol. Pressure, p_c			psf	Saturation	S_o	85.3	%	S_f	100	%
Compression Ratio, $C_{\varepsilon c}$				Dry Density	γ_d	102	pcf	γ_d	115	pcf
Recompression Ratio, $C_{\varepsilon r}$	LL		PL		PI		G_s	2.75	(assumed)	

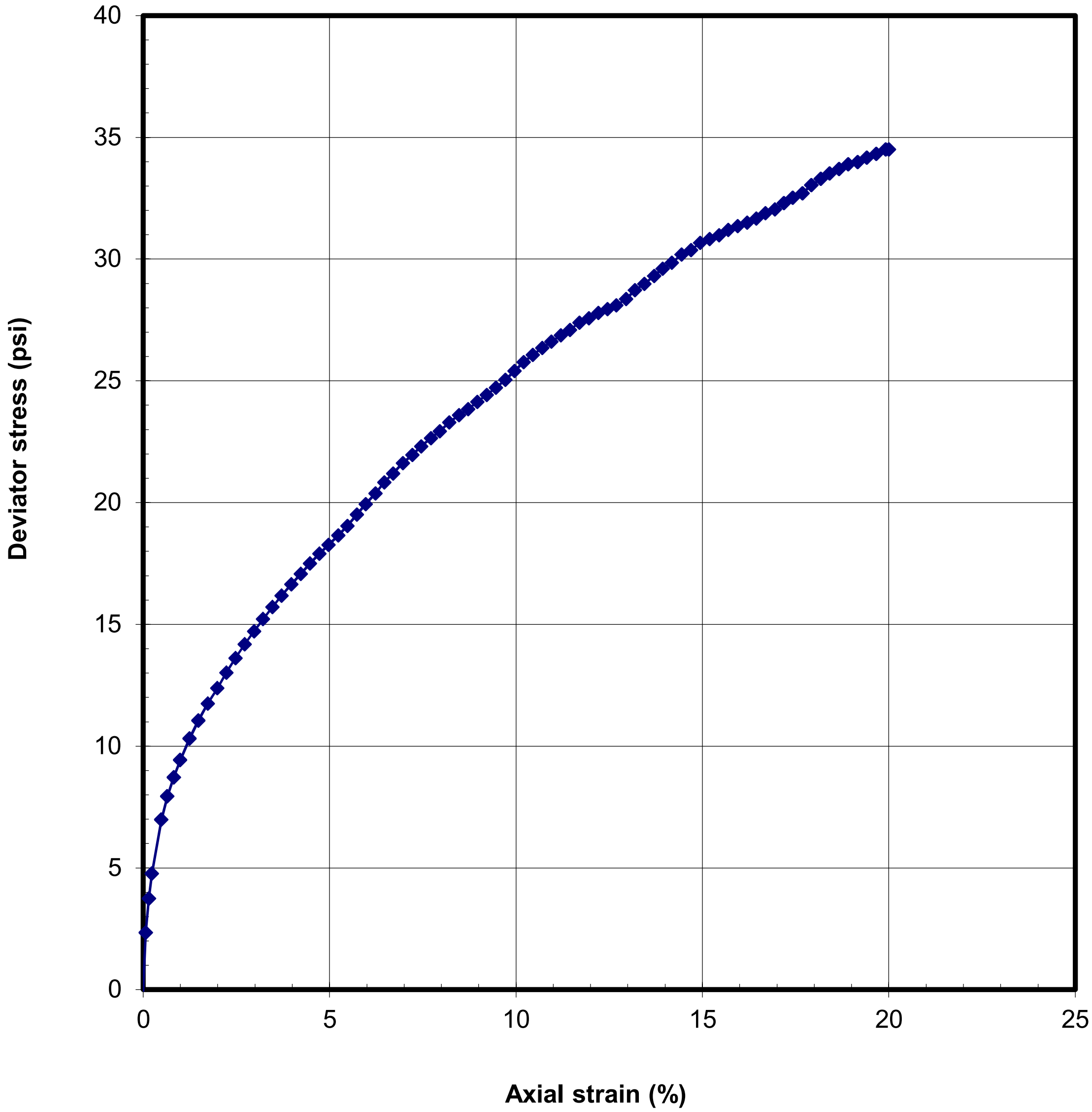
Source:	B-1 at 51.0 feet
Description:	Brown lean CLAY with sand

BERKELEY PLAZA

CONSOLIDATION TEST REPORT

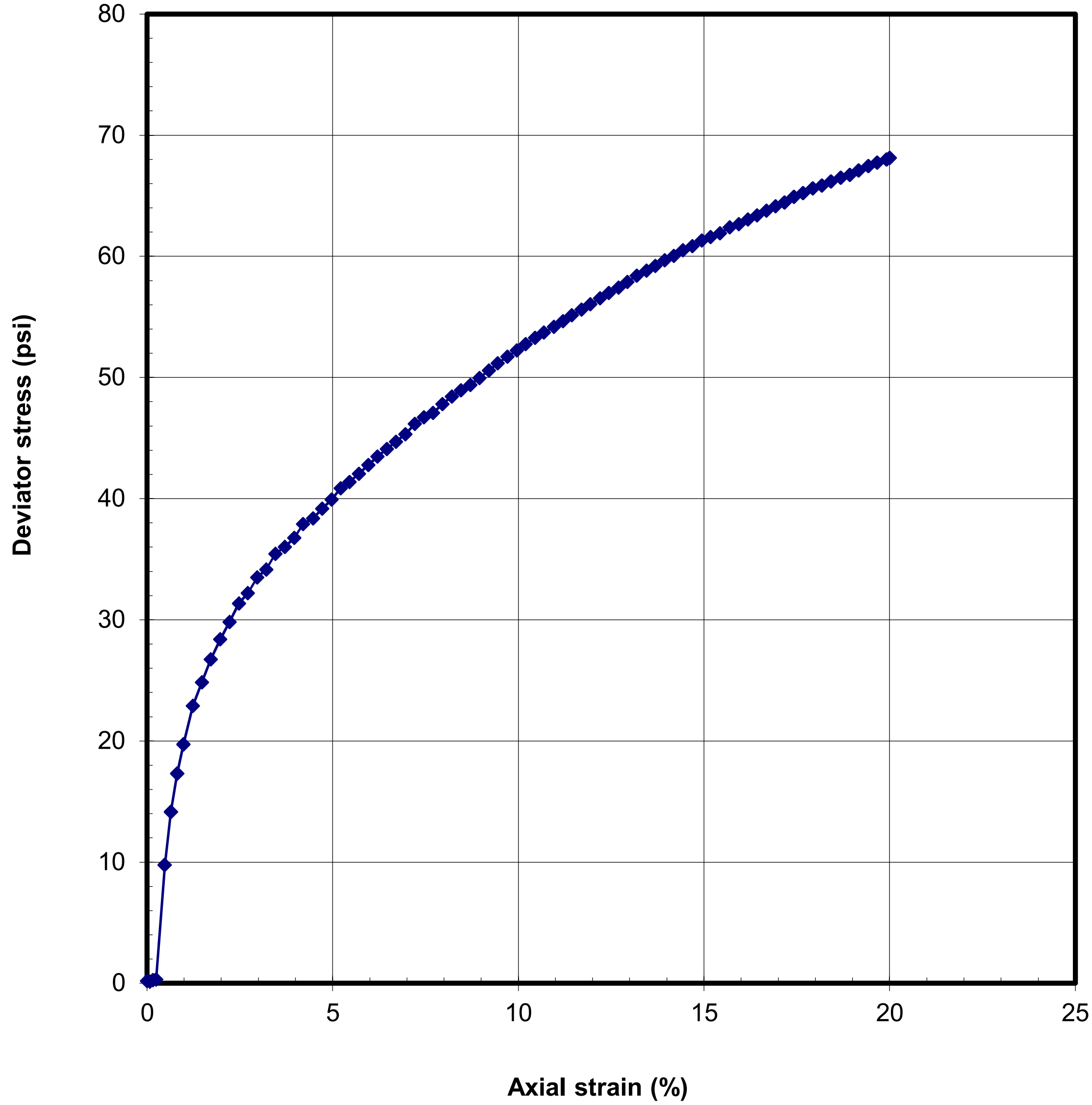
B. HILLEBRANDT SOILS TESTING, INC

Date	06/30/19	Project No.	1114-10A	Figure



Sampler Type Mod Cal		Shear Strength:	17.25 psi
Diameter (in): 2.39	Height (in): 5.3	Strain at Failure:	20.0%
Moisture Content: 26.3 %		Confining Pressure:	49 psi
Dry Density: 100 pcf		Strain Rate:	1%/min
Source: B-1 at 56.0 feet			
Description: Brownish yellow sandy CLAY			

BERKELEY PLAZA	**UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST**		
B. HILLEBRANDT SOILS TESTING, INC	Date: 06/30/19	Project #: 1114-10A	Figure



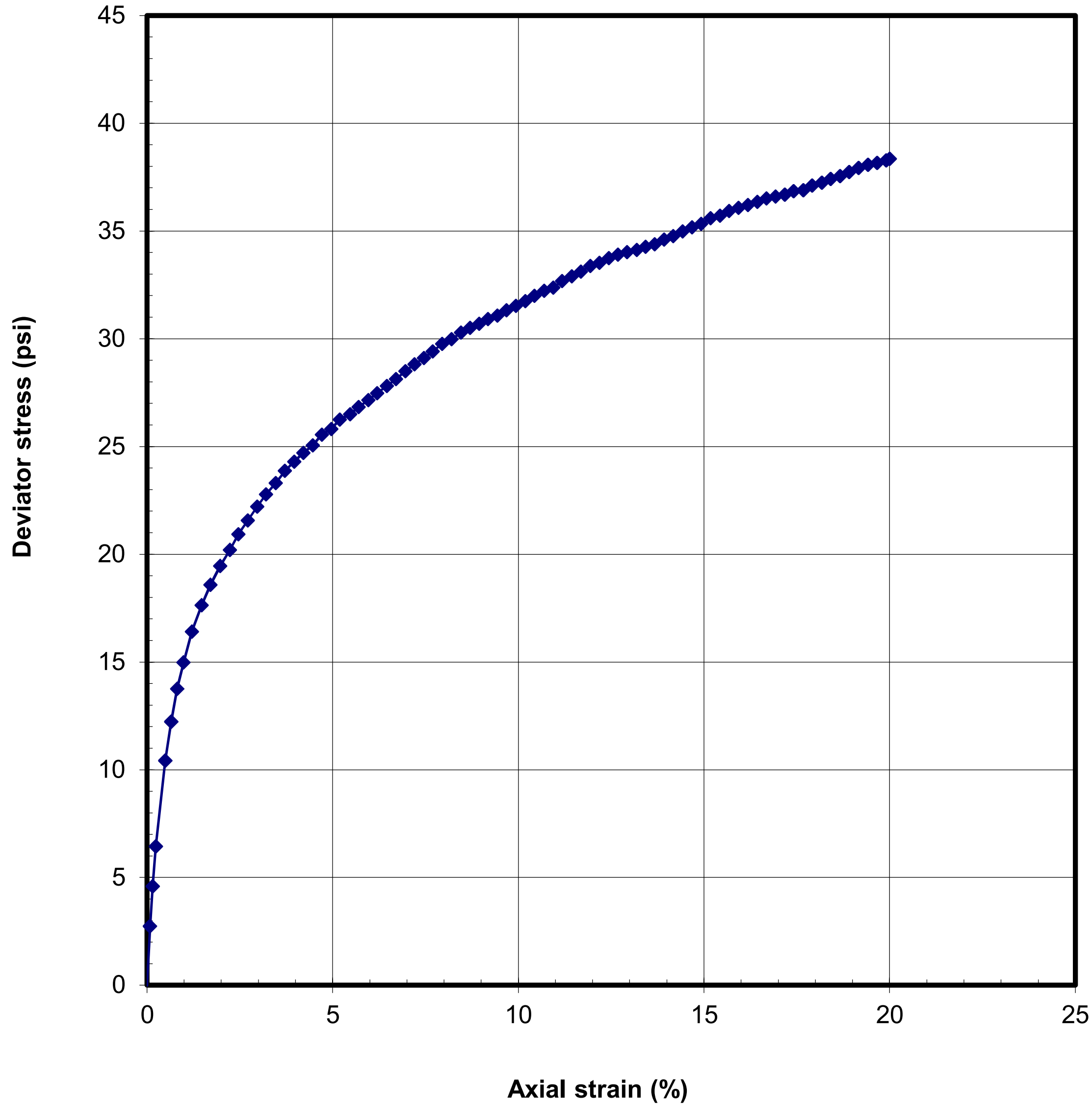
Sampler Type Mod Cal		Shear Strength:	34.06 psi
Diameter (in): 2.39	Height (in): 5.75	Strain at Failure:	20.0%
Moisture Content:	19.3 %	Confining Pressure:	75 psi
Dry Density:	112 pcf	Strain Rate:	1%/min
Source:	B-1 at 85.5 feet		
Description:	Brownish yellow sandy lean CLAY		

BERKELEY PLAZA

UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST

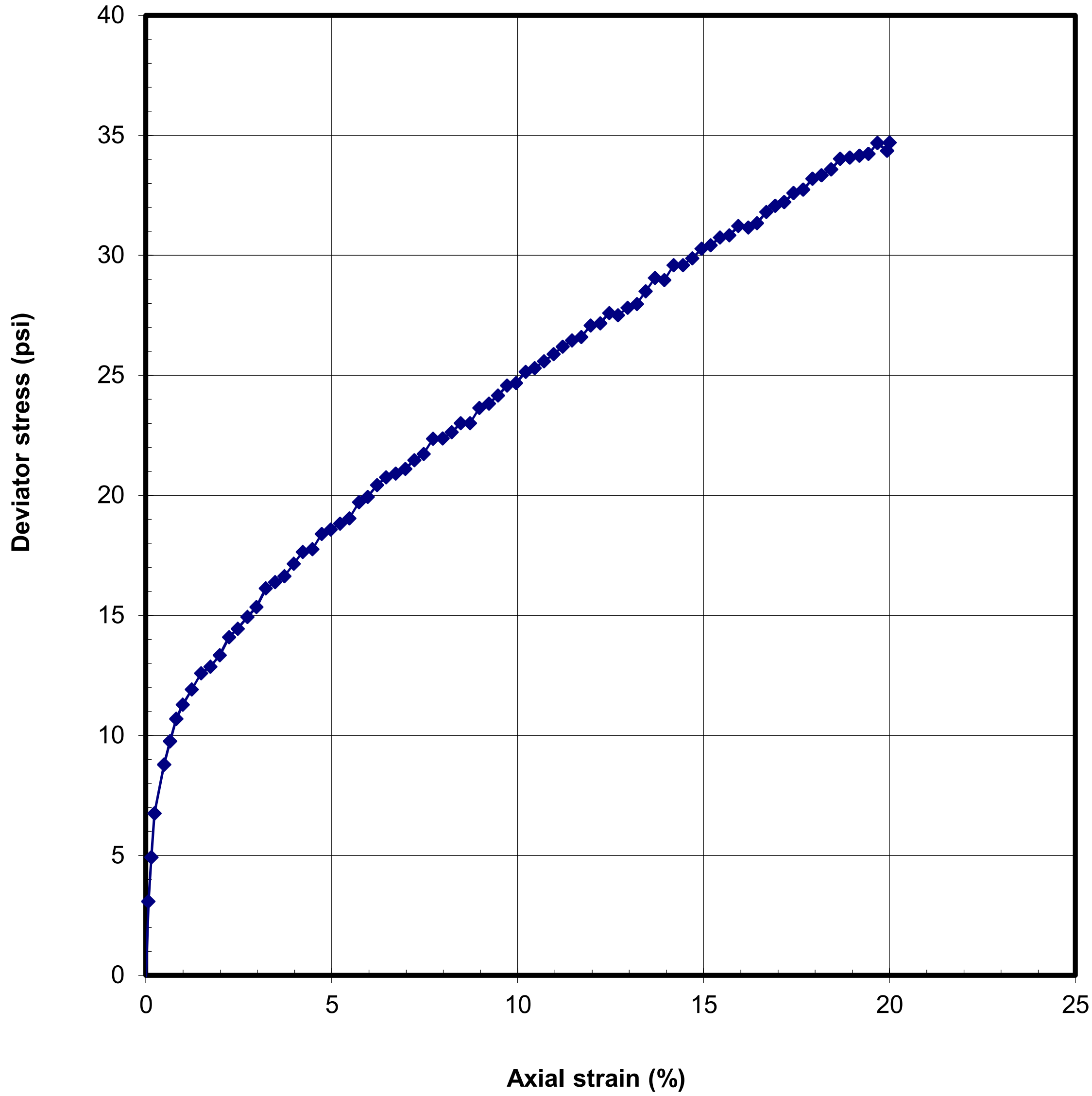
B. HILLEBRANDT SOILS TESTING, INC

Date: 06/30/19 | Project #: 1114-10A | Figure



Sampler Type Mod Cal		Shear Strength:	19.17 psi
Diameter (in): 2.40	Height (in): 5.16	Strain at Failure:	20.0%
Moisture Content:	26.5 %	Confining Pressure:	31 psi
Dry Density:	99.1 pcf	Strain Rate:	1%/min
Source: B-2 at 35.5 feet			
Description: Yellowish brown lean CLAY with sand			

BERKELEY PLAZA	**UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST**		
B. HILLEBRANDT SOILS TESTING, INC	Date: 06/30/19	Project #: 1114-10A	Figure



Sampler Type: Mod Cal				Shear Strength:	17.35 psi
Diameter (in): 2.39	Height (in): 5.8			Strain at Failure:	20.0%
Moisture Content:		18.5	%	Confining Pressure:	92 psi
Dry Density:		113	pcf	Strain Rate:	1%/min
Source:	B-2 at 106.0 feet				
Description:	Yellowish brown sandy CLAY				

BERKELEY PLAZA

UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST

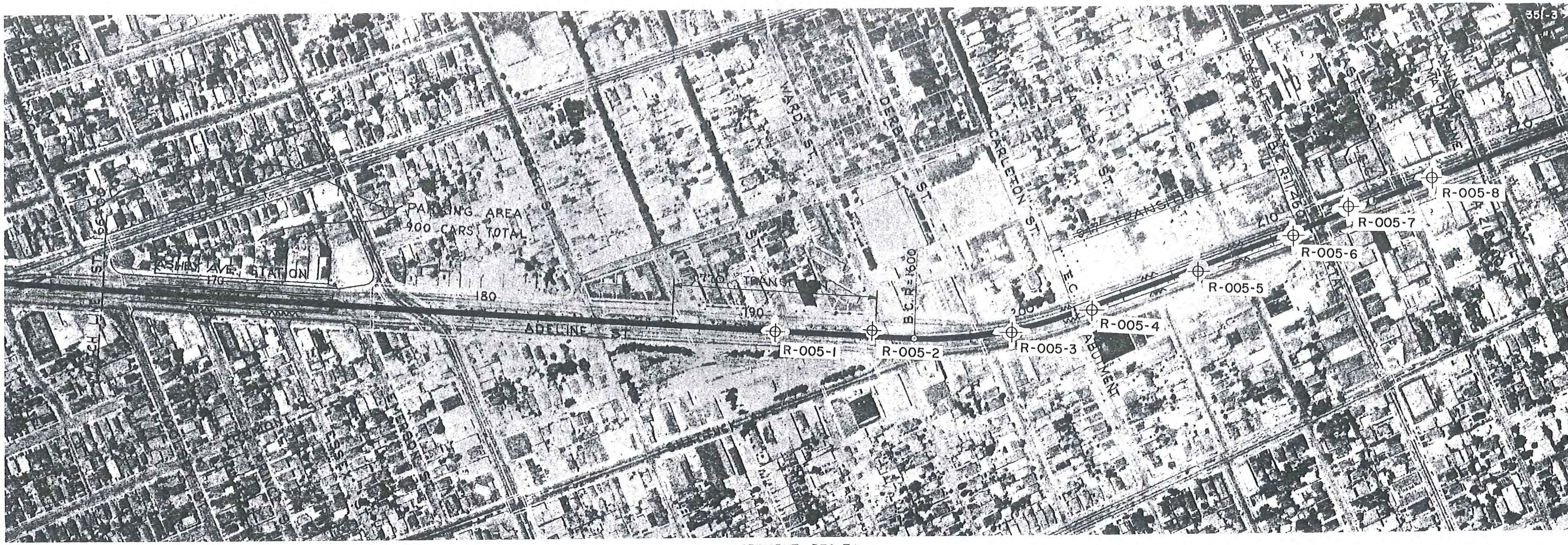
B. HILLEBRANDT SOILS TESTING, INC

Date: 06/30/19 | Project #: 1114-10A | Figure

APPENDIX D

BART Boring Data

BERKELEY PLAZA
BERKELEY, CALIFORNIA



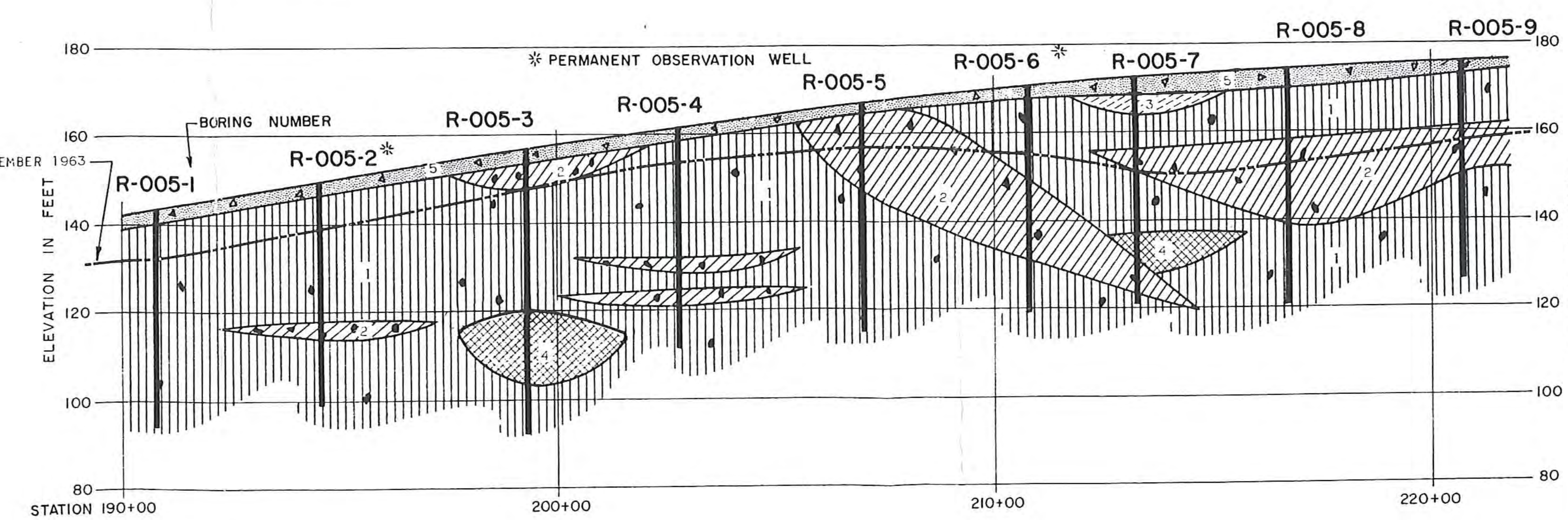
SEGMENT RFS-3A

PLOT PLAN

FEET
100 0 100 200 300 400 500

KEY

1	CL-SC	MIXED BROWN SANDY AND SILTY CLAY AND CLAYEY SAND WITH VARIED AMOUNTS OF SMALL ROCK FRAGMENTS AND GRAVEL
2	SC-GC	MIXED BROWN SAND AND GRAVEL WITH VARYING AMOUNTS OF CLAY
3	CL-GC	GREENISH-GRAY OR DARK GRAY SILTY CLAY WITH VARYING AMOUNTS OF FINE GRAVEL
4	SP-GP	MIXED BROWN SAND AND GRAVEL WITH VARYING AMOUNTS OF CLAY BINDER
5	FILL	CLAYEY SAND OR CLAYEY GRAVEL WITH VARYING AMOUNTS OF ROCK FRAGMENTS



SUBSURFACE SECTION

FEET
100 0 100 200 300 400 500

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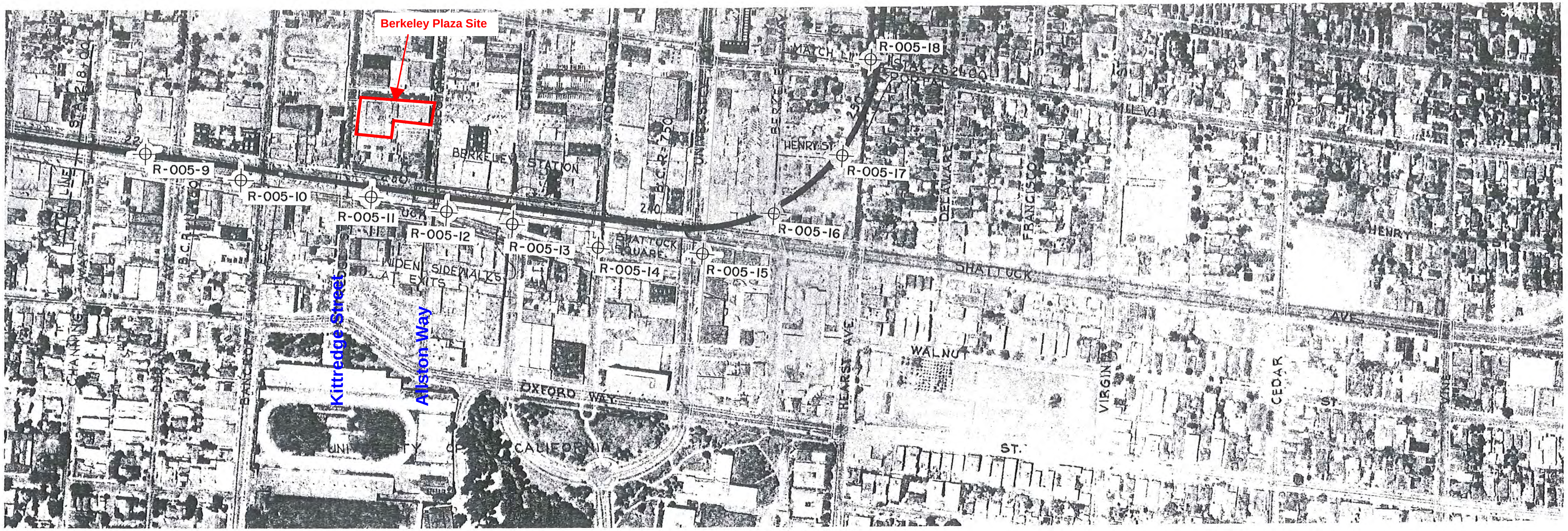
CONSULTANTS IN APPLIED EARTH SCIENCES
SOIL MECHANICS · ENGINEERING GEOLOGY · GEOPHYSICS

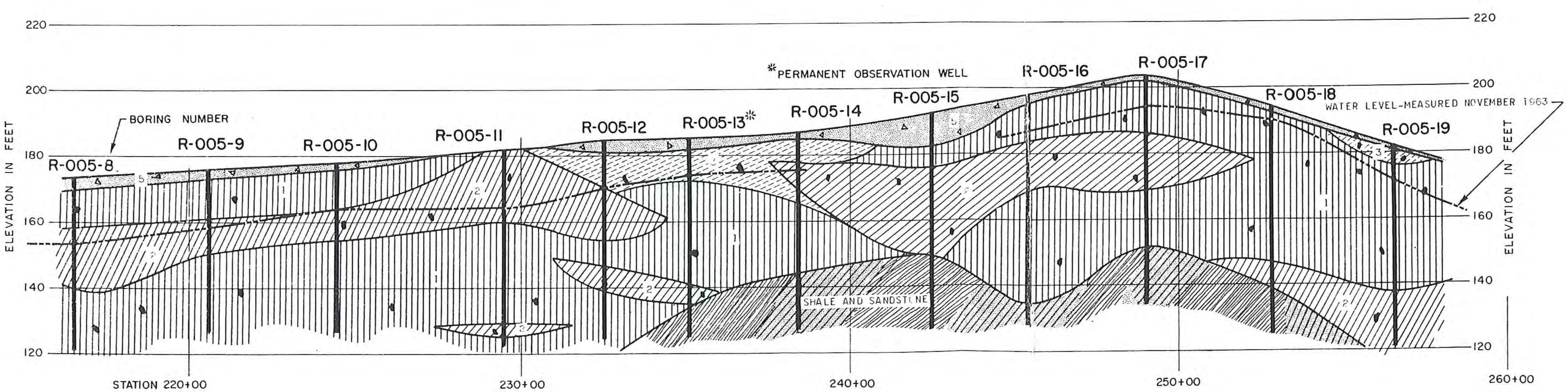
PLATE 1A



SEGMENT RFS 3A

PLOT PLAN

FEET
100 0 100 200 300 400 500



KEY

1	CL-SC	MIXED BROWN SANDY AND SILTY CLAY AND CLAYEY SAND WITH VARIED AMOUNTS OF SMALL ROCK FRAGMENTS AND GRAVEL
2	SC-GC	MIXED BROWN SAND AND GRAVEL WITH VARYING AMOUNTS OF CLAY
3	CL-GC	GREENISH-GRAY OR DARK GRAY SILTY CLAY WITH VARYING AMOUNTS OF FINE GRAVEL
4	SP-GP	MIXED BROWN SAND AND GRAVEL WITH VARYING AMOUNTS OF CLAY BINDER
5	FILL	CLAYEY SAND OR CLAYEY GRAVEL WITH VARYING AMOUNTS OF ROCK FRAGMENTS

SUBSURFACE SECTION

FEET
100 0 100 200 300 400 500

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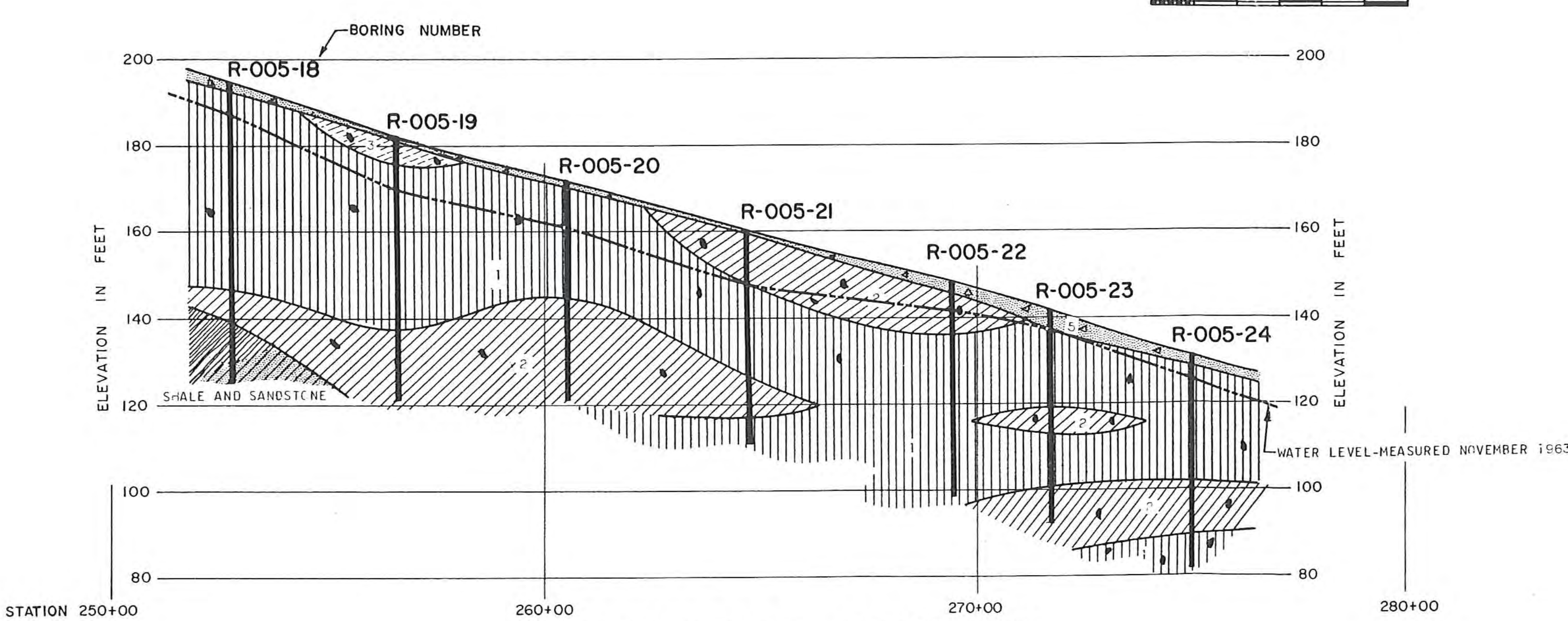
PLATE 1B

SEGMENT RFS-3A

PLOT PLAN

FEET
100 0 100 200 300 400 500



SUBSURFACE SECTION

FEET
100 0 100 200 300 400 500

KEY

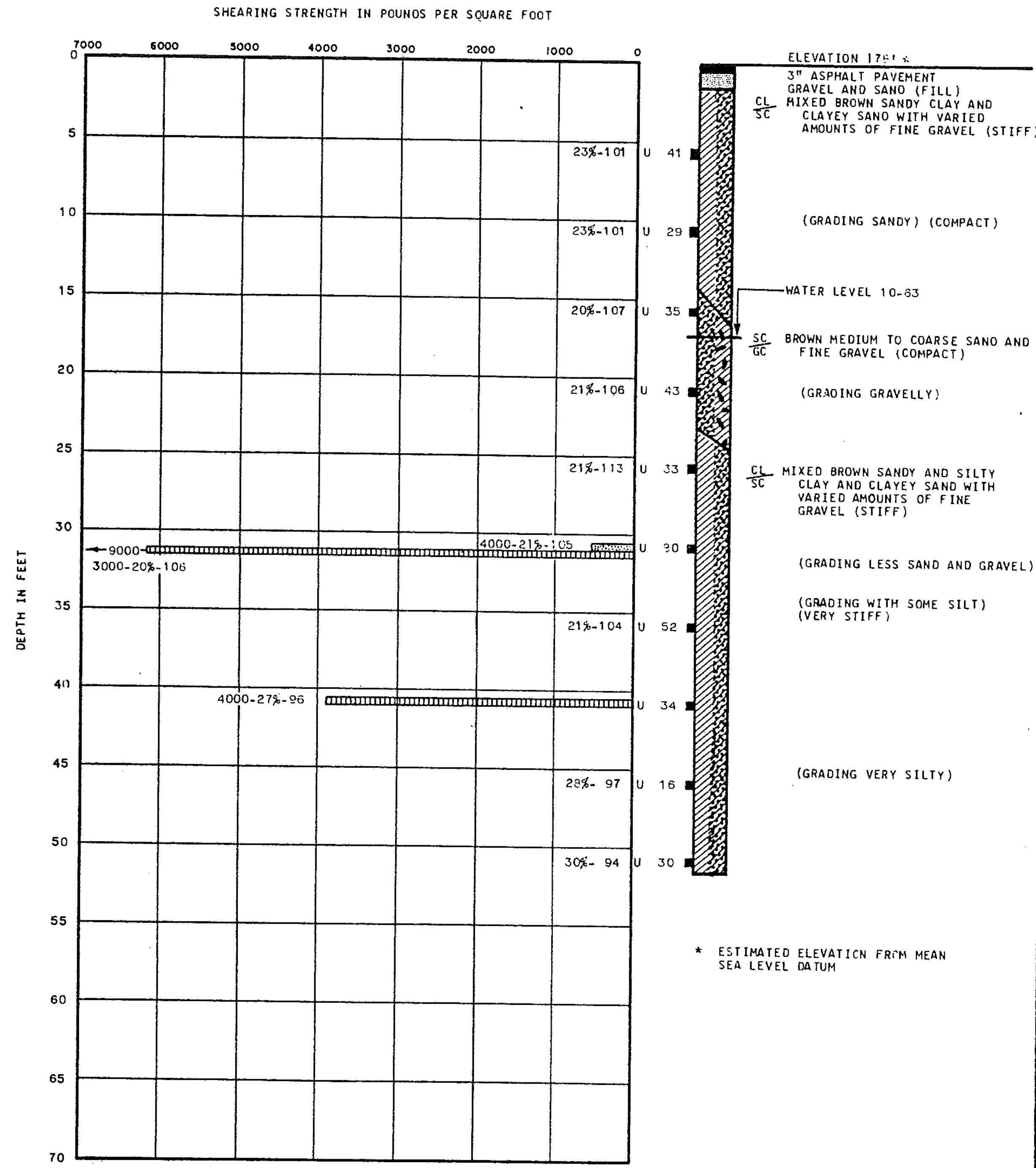
1	CL-SC	MIXED BROWN SANDY AND SILTY CLAY AND CLAYEY SAND WITH VARIED AMOUNTS OF SMALL ROCK FRAGMENTS AND GRAVEL
2	SC-GC	MIXED BROWN SAND AND GRAVEL WITH VARYING AMOUNTS OF CLAY
3	CL-GC	GREENISH-GRAY OR DARK GRAY SILTY CLAY WITH VARYING AMOUNTS OF FINE GRAVEL
4	SP-GP	MIXED BROWN SAND AND GRAVEL WITH VARYING AMOUNTS OF CLAY BINDER
5	FILL	CLAYEY SAND OR CLAYEY GRAVEL WITH VARYING AMOUNTS OF ROCK FRAGMENTS

DAMES & MOORE
CONSULTANTS IN APPLIED EARTH SCIENCES
SOIL MECHANICS · ENGINEERING GEOLOGY · GEOPHYSICS

PLATE 1C

BORING R-005-10

DRILLED 10-18-63



* ESTIMATED ELEVATION FROM MEAN SEA LEVEL DATUM

LOG OF BORINGS

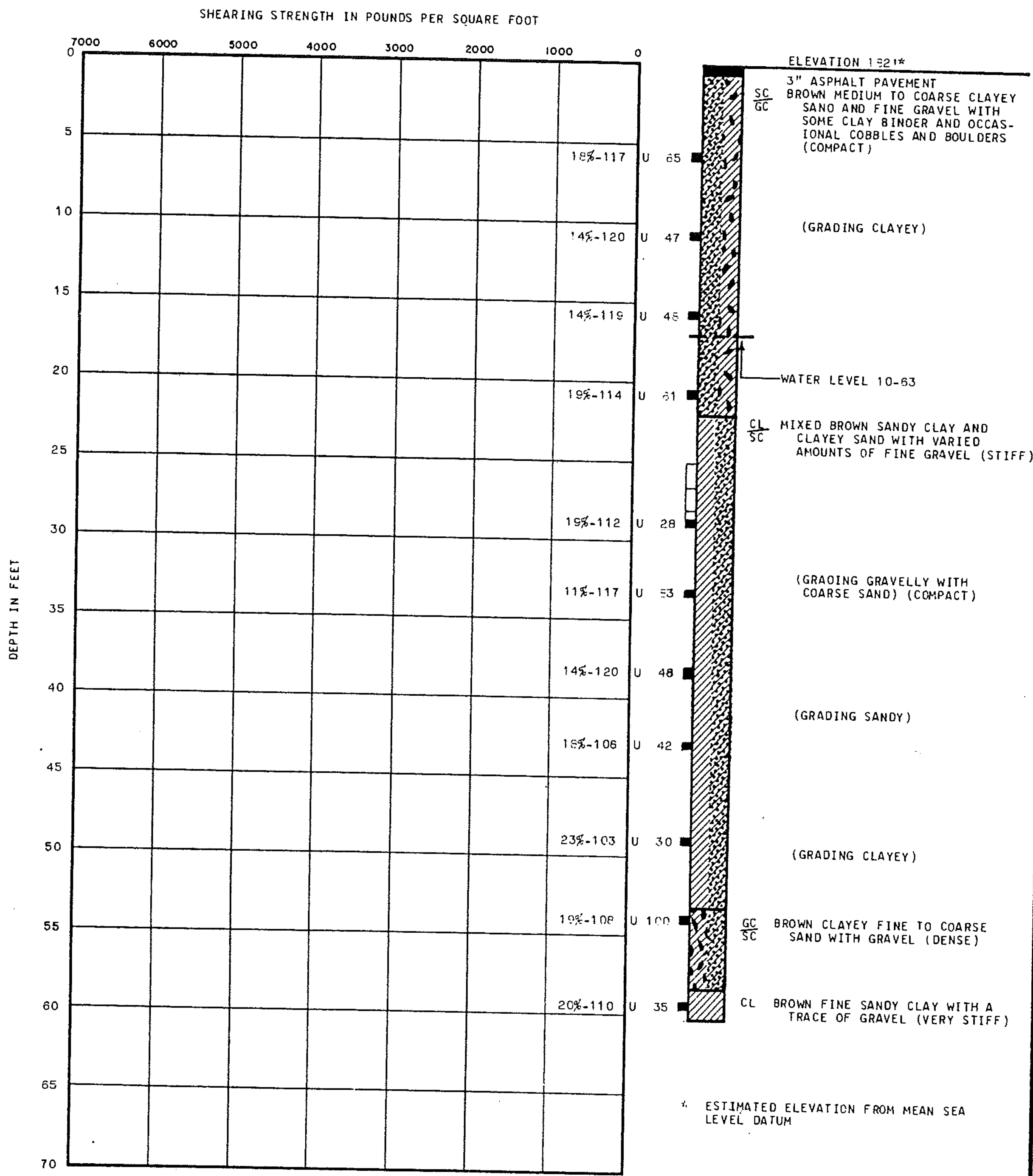
DAMES & MOORE

SOIL MECHANICS ENGINEERS

PLATE A1J

BORING R-005-II

DRILLED 1[illegible]-2[illegible]-63



* ESTIMATED ELEVATION FROM MEAN SEA LEVEL DATUM

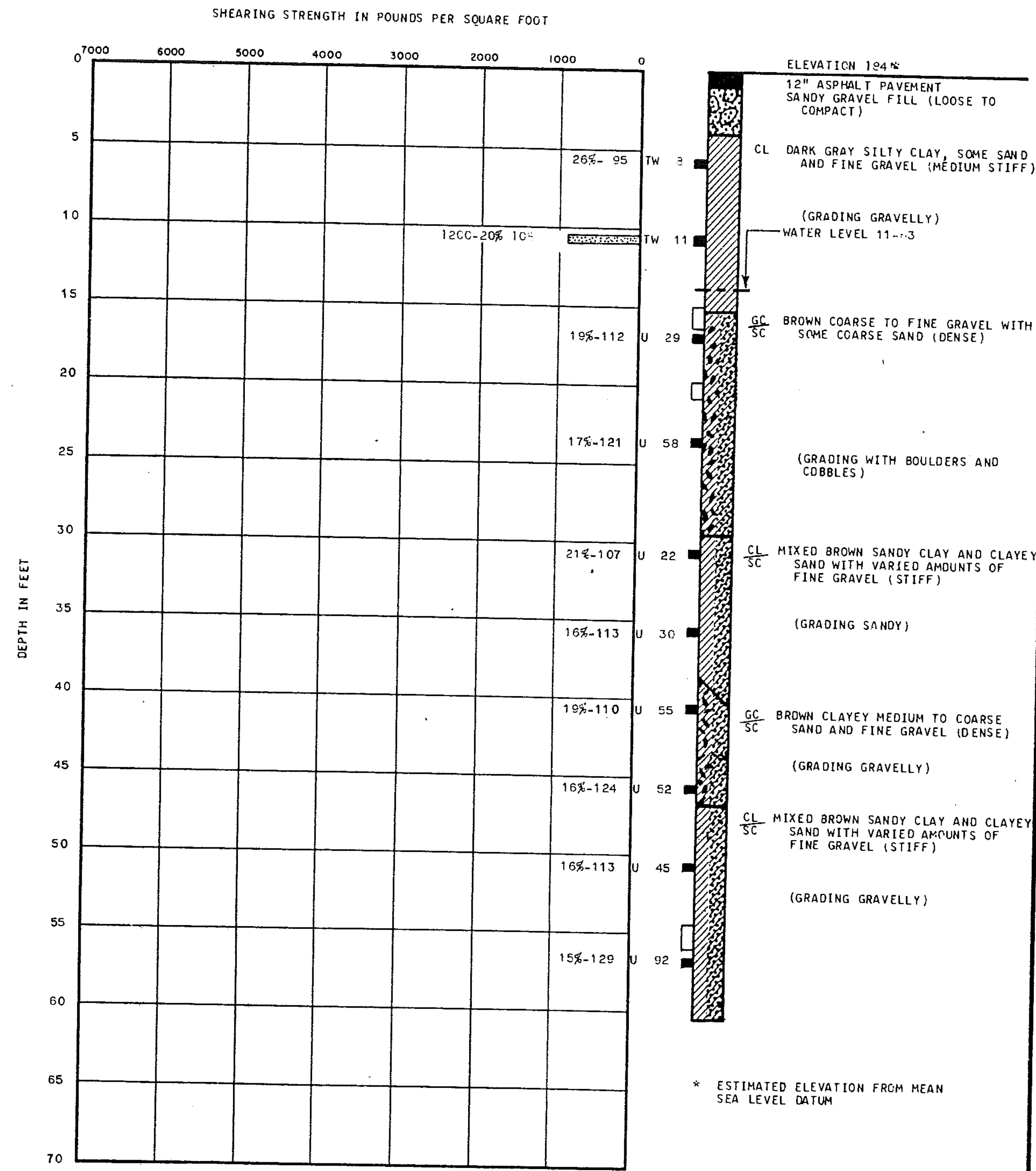
LOG OF BORINGS

DAMES & MOORE
SOIL MECHANICS ENGINEERS

PLATE A1K

BORING R-005-12

DRILLED ?C-22-63



LOG OF BORINGS

DAMES & MOORE

SOIL MECHANICS ENGINEERS

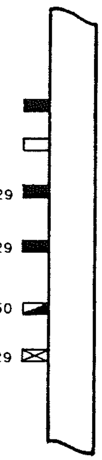
PLATE AIL

BY ____ DATE ____
BY ____ DATE ____
PLATE ____ OF ____

BY LR DATE
CHECKED BY PM DATE 3/6/63

DRY DENSITY EXPRESSED IN POUNDS PER CUBIC FOOT

PERCENT FIELD MOISTURE EXPRESSED AS PERCENTAGE OF DRY WEIGHT



25% - 100 — INDICATES DEPTH OF UNDISTURBED SAMPLE

INDICATES DEPTH OF SAMPLING ATTEMPT WITH NO RECOVERY

U - 29 — INDICATES DRIVING RESISTANCE IN BLOWS PER FOOT FOR SOIL SAMPLER TYPE U

TW -29 — INDICATES DRIVING RESISTANCE IN BLOWS PER FOOT FOR SOIL SAMPLER TYPE U, EXTENDED BY A 6" LONG THIN WALL SAMPLING TUBE

P 150 — INDICATES DEPTH OF SAMPLE TAKEN WITH PISTON SAMPLER - NO BLOW COUNTS - NUMBER INDICATES APPLIED PRESSURE IN POUNDS PER SQUARE INCH

29 — INDICATES STANDARD PENETRATION TEST

NOTE: ALL DRIVING RESISTANCES MEASURED BY A 350 POUND WEIGHT FALLING 18 INCHES

TESTS AT FIELD MOISTURE

TEST SURCHARGE PRESSURE IN POUNDS PER SQUARE FOOT

PER CENT FIELD MOISTURE EXPRESSED AS A PERCENTAGE OF THE DRY WEIGHT OF SOIL

DRY DENSITY EXPRESSED IN POUNDS PER CUBIC FOOT

PER CENT TEST MOISTURE EXPRESSED AS A PERCENTAGE OF THE DRY WEIGHT OF SOIL

DIRECT SHEAR-STRAIN CONTROL

2500-10%-100 YIELD POINT SHEARING STRENGTH IN POUNDS PER SQUARE FOOT 2500-30%-100

TRIAXIAL TEST

2500-10%-100 MAXIMUM SHEARING STRENGTH IN POUNDS PER SQUARE FOOT 2500-30%-100

UNCONFINED COMPRESSION

10%-100 MAXIMUM SHEARING STRENGTH IN POUNDS PER SQUARE FOOT

SUPPLEMENTARY KEY TO TEST DATA

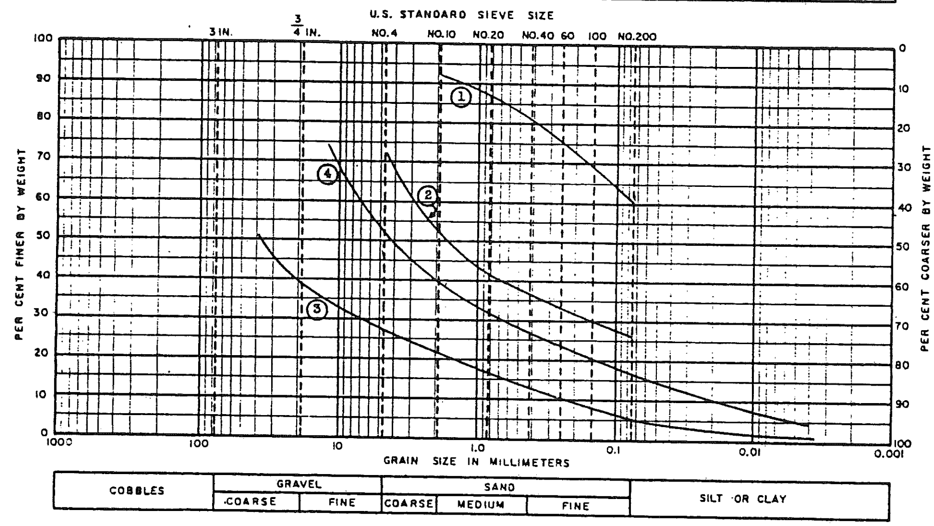
DAMES & MOORE
SOIL MECHANICS ENGINEERS

PLATE A 2B

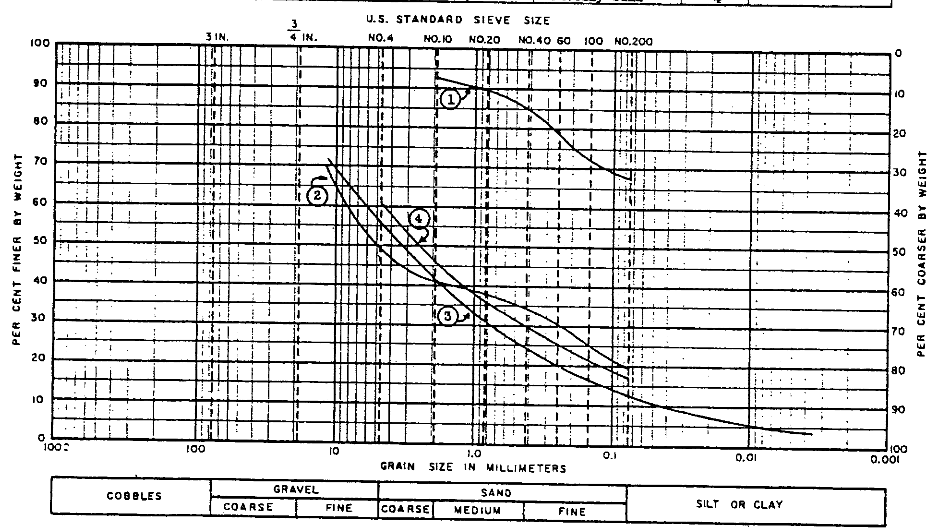
REVISIONS BY DATE BY DATE PLATE OF

FILE BY DATE CHECKED BY DATE

BORING	DEPTH	ELEV.	SAMPLE	LIQUID LIMIT	PLASTIC LIMIT	SYMBOL	SOIL CLASSIFICATION	KEY	REMARKS
B-005-10	5.5'					CL	Sandy Clay	1	
B-005-10	10.5'					SC	Clayey Gravelly Sand	2	
B-005-10	15.5'					GP	Sandy Gravel	3	
B-005-10	20.5'					GP	Sandy Gravel	4	



BORING	DEPTH	ELEV.	SAMPLE	LIQUID LIMIT	PLASTIC LIMIT	SYMBOL	SOIL CLASSIFICATION	KEY	REMARKS
B-005-10	25.5'					CL	Sandy Clay	1	
B-005-11	5.5'					GP	Sandy Gravel	2	
B-005-11	10.5'					GP	Sandy Gravel	3	
B-005-11	15.5'					SP	Gravelly Sand	4	



GRAIN SIZE DISTRIBUTION

REVISIONS
BY ____ DATE ____
BY ____ DATE ____
PLATE ____ OF ____

FILE 2112-011-02
BART
BY H.B.T. DATE 12-12-63
CHECKED BY KR DATE 12/27/63

(. 6-61)

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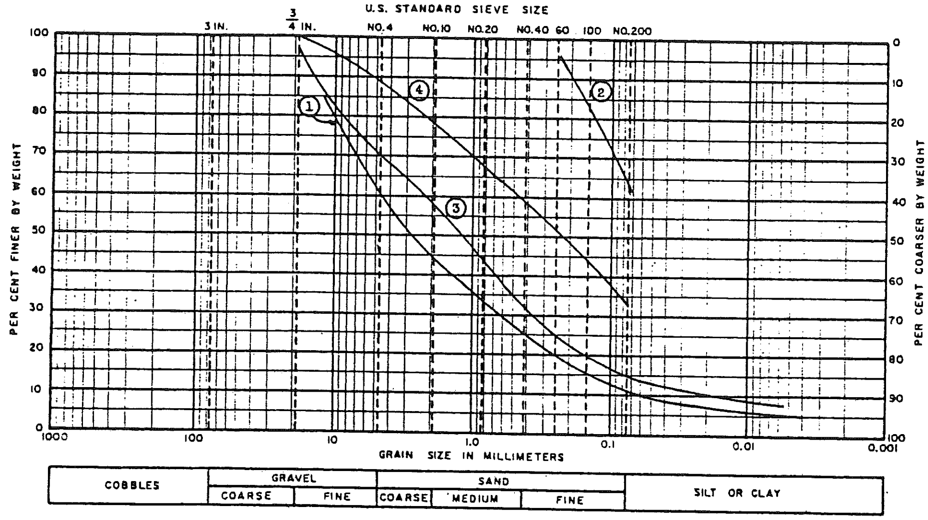
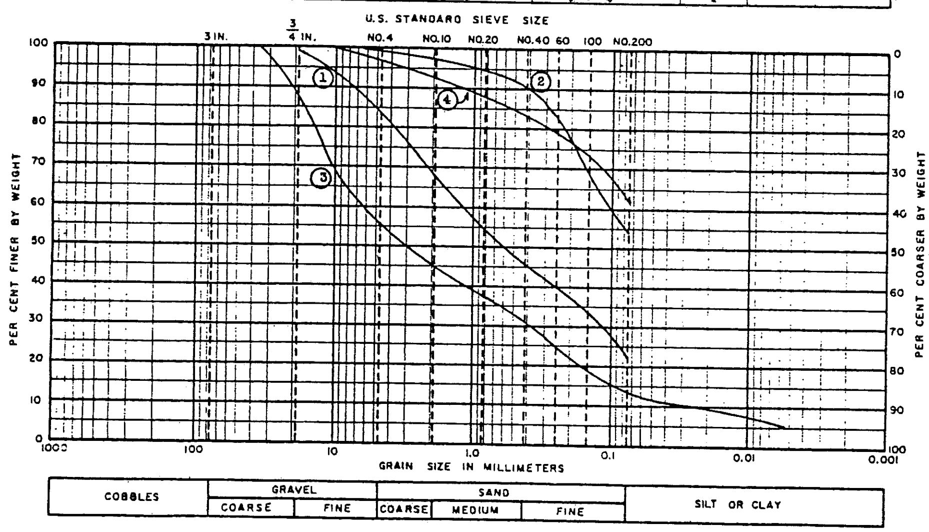
APPLIED EARTH SCIENCES

PLATE A4F

BORING	DEPTH	ELEV.	SAMPLE	LIQUID LIMIT	PLASTIC LIMIT	SYMBOL	SOIL CLASSIFICATION	KEY	REMARKS
R-005-11	20.5'					SM	Gravelly Sand	1	
R-005-11	28.5'					CL	Fine Sandy Clay	2	
R-005-11	33.0'					SC	Gravelly Sand	3	
R-005-11	38.0'					SC	Clayey Sand	4	



BORING	DEPTH	ELEV.	SAMPLE	LIQUID LIMIT	PLASTIC LIMIT	SYMBOL	SOIL CLASSIFICATION	KEY	REMARKS
R-005-11	42.5'					SC	Clayey Sand	1	
R-005-11	48.5'					CL	Fine Sandy Clay	2	
R-005-11	53.5'					GC	Sandy Gravel	3	
R-005-12	10.5'					CL	Sandy Clay	4	

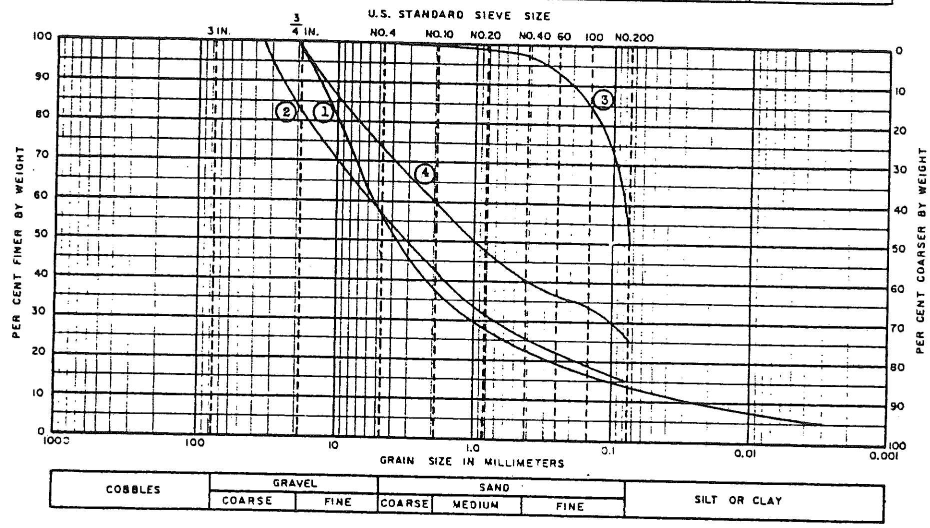


GRAIN SIZE DISTRIBUTION

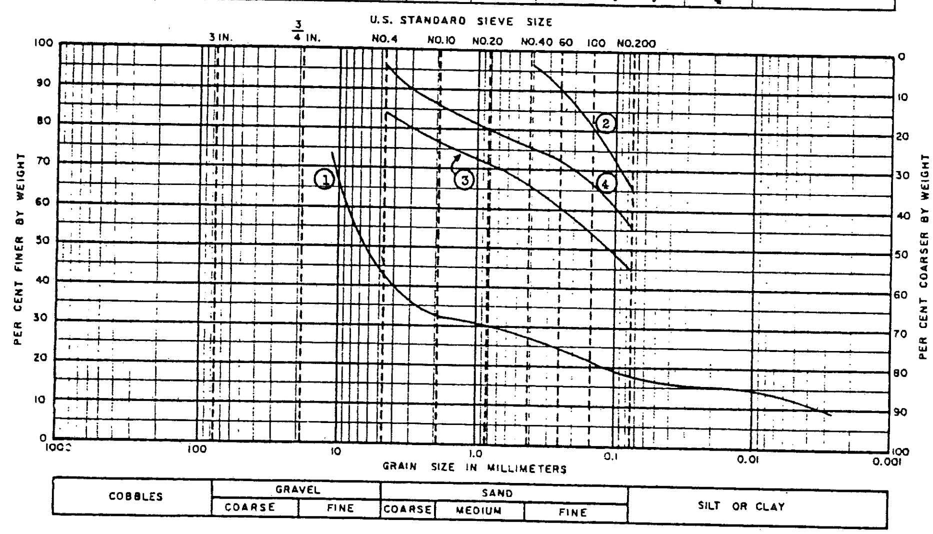
DAMES & MOORE
APPLIED EARTH SCIENCES

PLATE A4G

BORING	DEPTH	ELEV.	SAMPLE	LIQUID LIMIT	PLASTIC LIMIT	SYMBOL	SOIL CLASSIFICATION	KEY	REMARKS
R-005-12	17.0'					GC	Sandy Gravel	1	
R-005-12	23.5'					GC	Sandy Gravel	2	
R-005-12	35.5'					SC	Clayey Sand	3	
R-005-12	40.5'					SC	Gravelly Sand	4	



BORING	DEPTH	ELEV.	SAMPLE	LIQUID LIMIT	PLASTIC LIMIT	SYMBOL	SOIL CLASSIFICATION	KEY	REMARKS
R-005-12	45.5'					GC	Sandy Gravel	1	
R-005-12	50.5'					CL	Fine Sandy Clay	2	
R-005-13	10.5'					SC	Clayey Sand	3	
R-005-13	20.5'					CL	Fine Sandy Clay	4	



GRAIN SIZE DISTRIBUTION

REVISIONS BY ___ DATE ___ BY ___ DATE ___ PLATE ___ OF ___

FILE ___ BY ___ DATE ___ CHECKED BY ___ DATE ___

DAMES & MOORE
APPLIED EARTH SCIENCES

PLATE A4H

APPENDIX E

Sanborn Maps

BERKELEY PLAZA
BERKELEY, CALIFORNIA

THE RESIDENCES AT BERKELEY PLAZA
2211 HAROLD WAY
BERKELEY, CA 94704

Inquiry Number: 5702646.1
June 29, 2019

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

06/29/19

Site Name:	Client Name:
THE RESIDENCES AT BERKE	A3GEO
2211 HAROLD WAY	1331 Seventh Street, Unit E
BERKELEY, CA 94704	Berkeley, CA 94710
EDR Inquiry # 5702646.1	Contact: Laura Buchanan

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by A3GEO were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Certification # 8DF9-409E-ABCB

PO # NA

Project NA

Maps Provided:

1980
1950
1929
1911
1903
1894
1890

Sanborn® Library search results

Certification #: 8DF9-409E-ABCB

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ✔ Library of Congress
- ✔ University Publications of America
- ✔ EDR Private Collection

The Sanborn Library LLC Since 1866™

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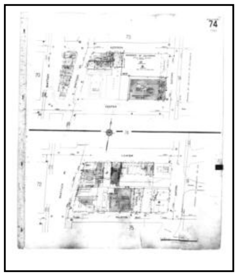
Sanborn Sheet Key

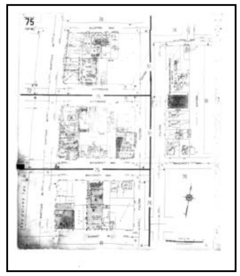
This Certified Sanborn Map Report is based upon the following Sanborn Fire Insurance map sheets.

1980 Source Sheets

Volume 1, Sheet 72
1980

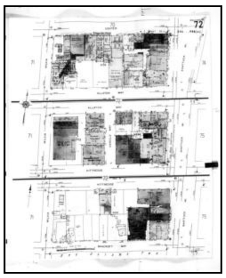


Volume 1, Sheet 74
1980

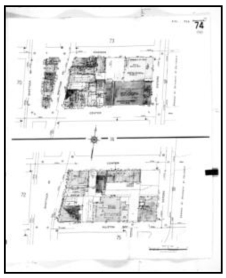


Volume 1, Sheet 75
1980

1950 Source Sheets



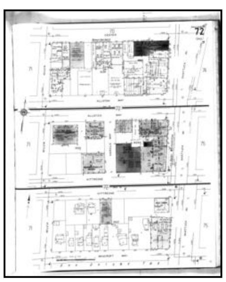
Volume 1, Sheet 72
1950



Volume 1, Sheet 74
1950

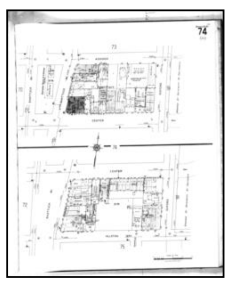
Volume 1, Sheet 75
1950

1929 Source Sheets



Volume 1, Sheet 72
1929

Volume 1, Sheet 75
1929



Volume 1, Sheet 74
1929

1911 Source Sheets

Volume 1, Sheet 73
1911

Volume 1, Sheet 84
1911

Volume 1, Sheet 85
1911

Sanborn Sheet Key

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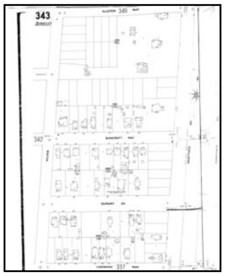
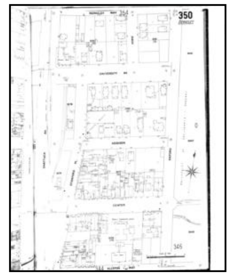
1903 Source Sheets



Volume 3, Sheet 343
1903

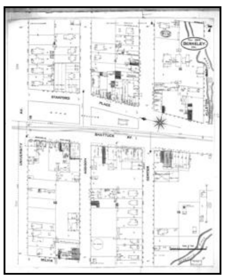
Volume 3, Sheet 344
1903

Volume 3, Sheet 349
1903



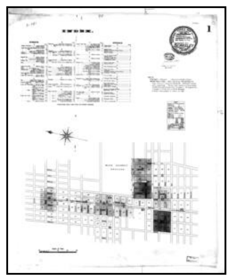
Volume 3, Sheet 350
1903

1894 Source Sheets



Volume 1, Sheet 7
1894

Volume 1, Sheet 10
1894



Volume 1, Sheet 1
1894

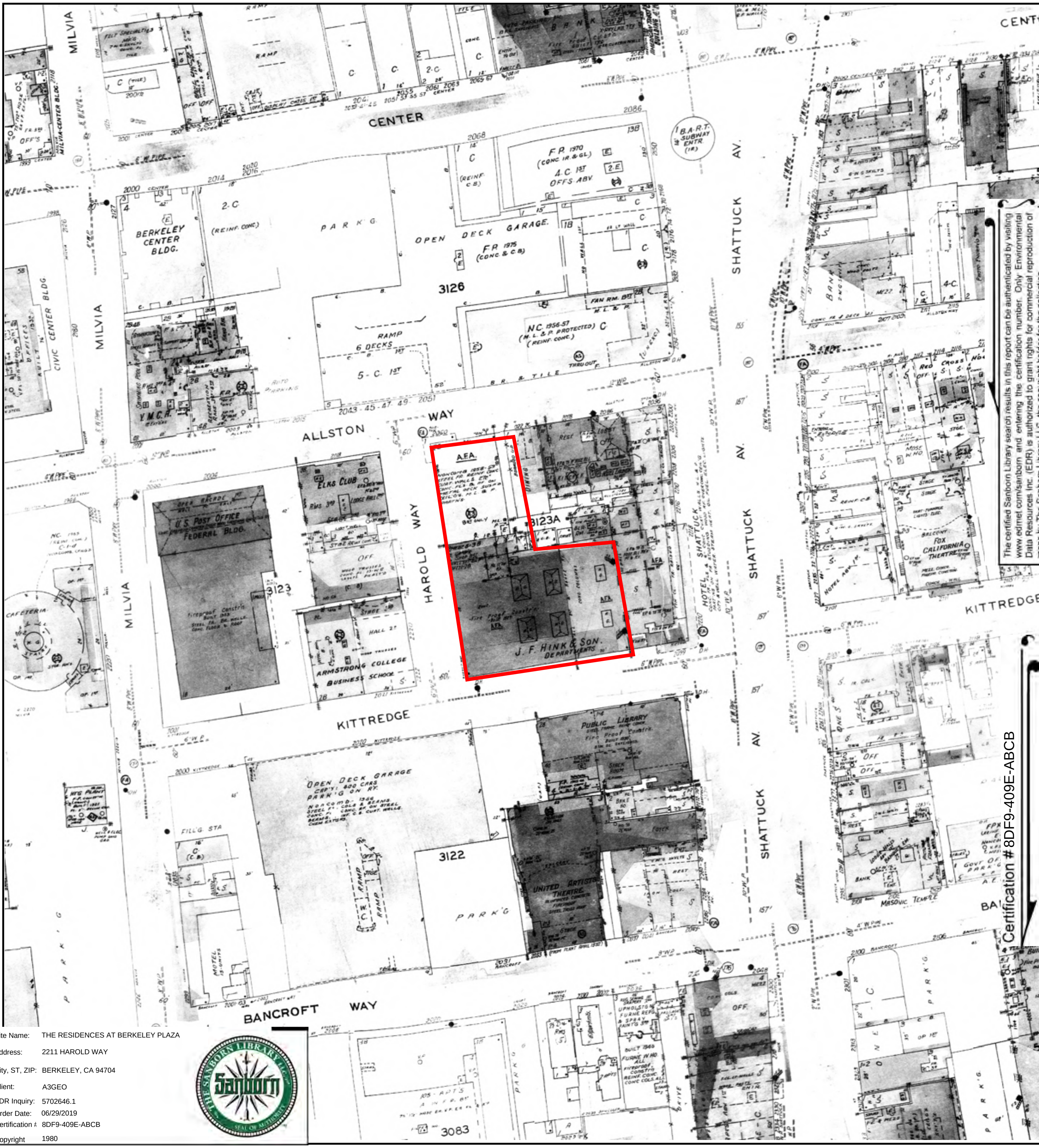
1890 Source Sheets

Volume 1, Sheet 5
1890

Volume 1, Sheet 3
1890

Certified Sanborn® Map

1980



Site Name: THE RESIDENCES AT BERKELEY PLAZA
Address: 2211 HAROLD WAY
City, ST, ZIP: BERKELEY, CA 94704
Client: A3GEO
EDR Inquiry: 5702646.1
Order Date: 06/29/2019
Certification #: 8DF9-409E-ABCB
Copyright: 1980

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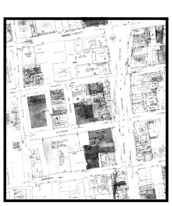
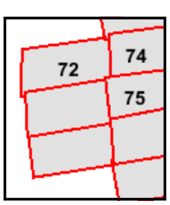




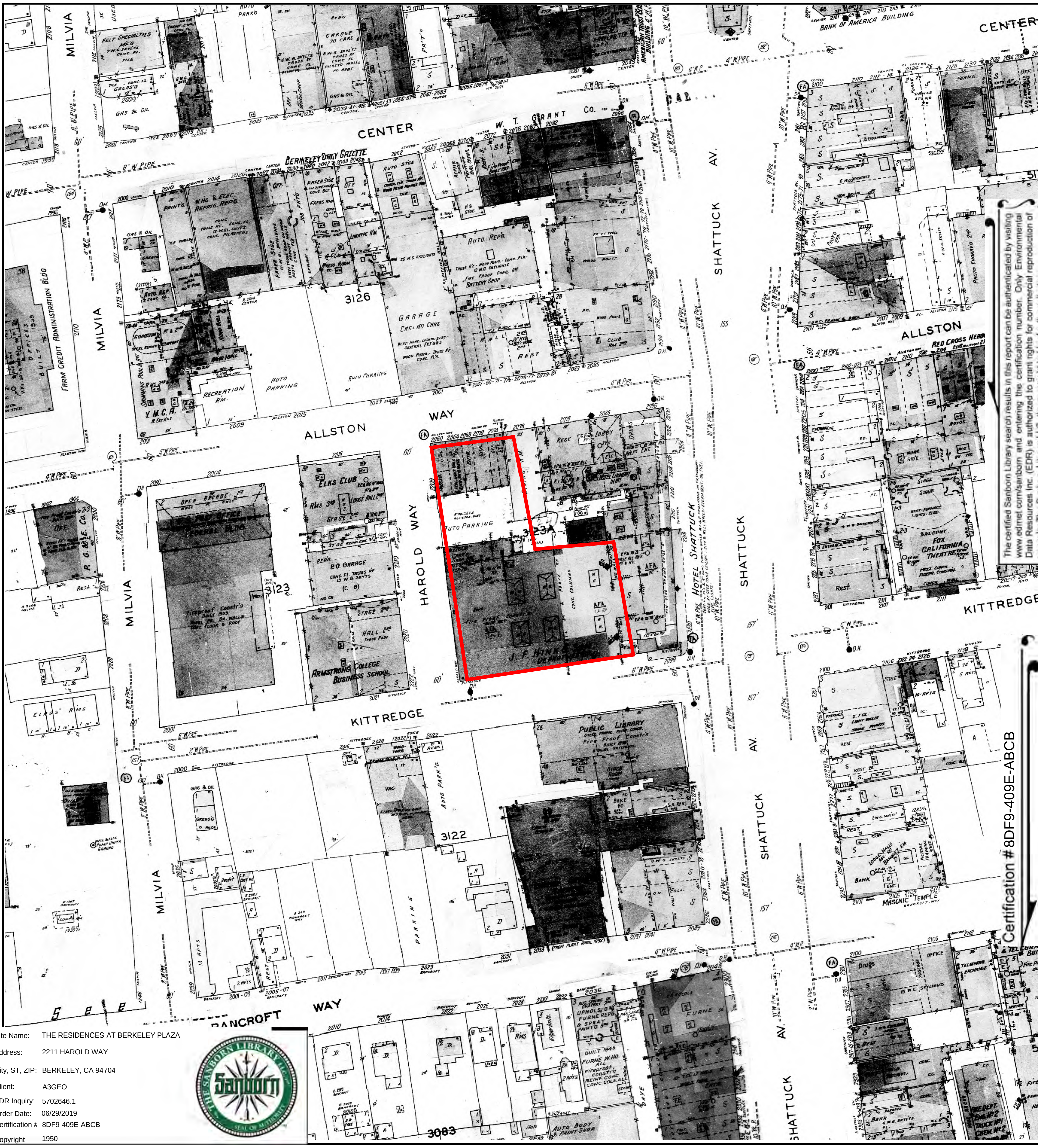
Volume 1, Sheet 75
Volume 1, Sheet 74
Volume 1, Sheet 72

N

EDR

Certified Sanborn® Map

1950



Certification # 8DF9-409E-ABCB

Site Name: THE RESIDENCES AT BERKELEY PLAZA
Address: 2211 HAROLD WAY
City, ST, ZIP: BERKELEY, CA 94704
Client: A3GEO
EDR Inquiry: 5702646.1
Order Date: 06/29/2019
Certification #: 8DF9-409E-ABCB
Copyright 1950

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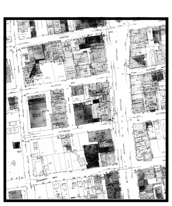

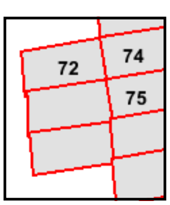

Volume 1, Sheet 75
Volume 1, Sheet 74
Volume 1, Sheet 72

N

Certified Sanborn® Map

1929

Site Name:	THE RESIDENCES AT BERKELEY PLAZA
Address:	2211 HAROLD WAY
City, ST, ZIP:	BERKELEY, CA 94704
Client:	A3GEO
EDR Inquiry:	5702646.1
Order Date:	06/29/2019
Certification #:	8DF9-409E-ABCB
Copyright	1929

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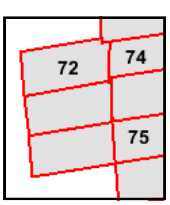
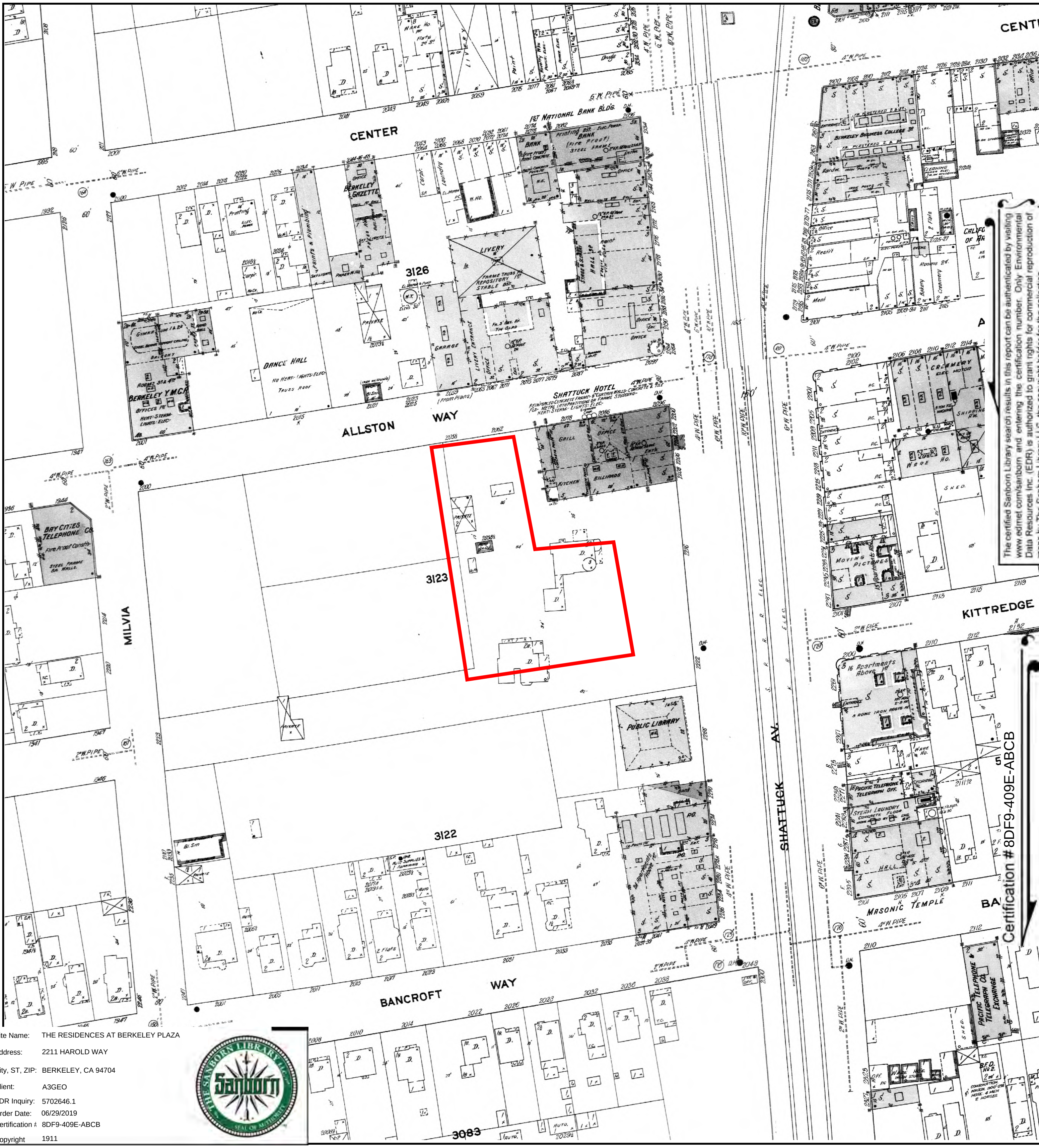


Volume 1, Sheet 74
Volume 1, Sheet 75
Volume 1, Sheet 72

Certified Sanborn® Map

1911



Site Name: THE RESIDENCES AT BERKELEY PLAZA
Address: 2211 HAROLD WAY
City, ST, ZIP: BERKELEY, CA 94704
Client: A3GEO
EDR Inquiry: 5702646.1
Order Date: 06/29/2019
Certification #: 8DF9-409E-ABCB
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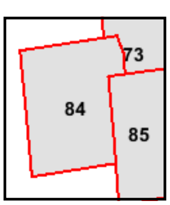
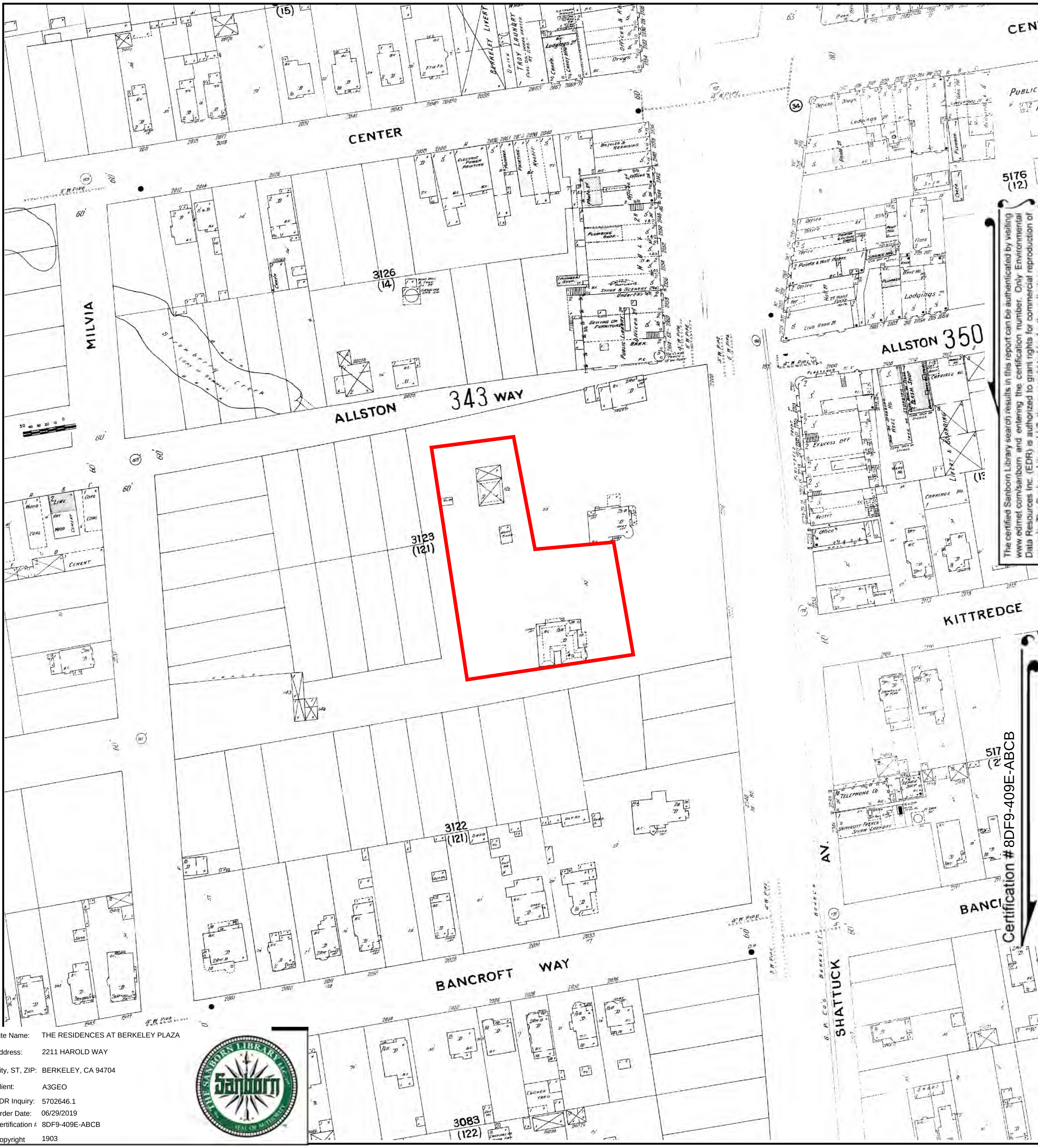


Volume 1, Sheet 85
Volume 1, Sheet 84
Volume 1, Sheet 73

N

Certified Sanborn® Map

1903



Certification # 8DF9-409E-ABCB

Site Name: THE RESIDENCES AT BERKELEY PLAZA
Address: 2211 HAROLD WAY
City, ST, ZIP: BERKELEY, CA 94704
Client: A3GEO
EDR Inquiry: 5702646.1
Order Date: 06/29/2019
Certification #: 8DF9-409E-ABCB
Copyright 1903

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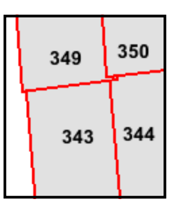
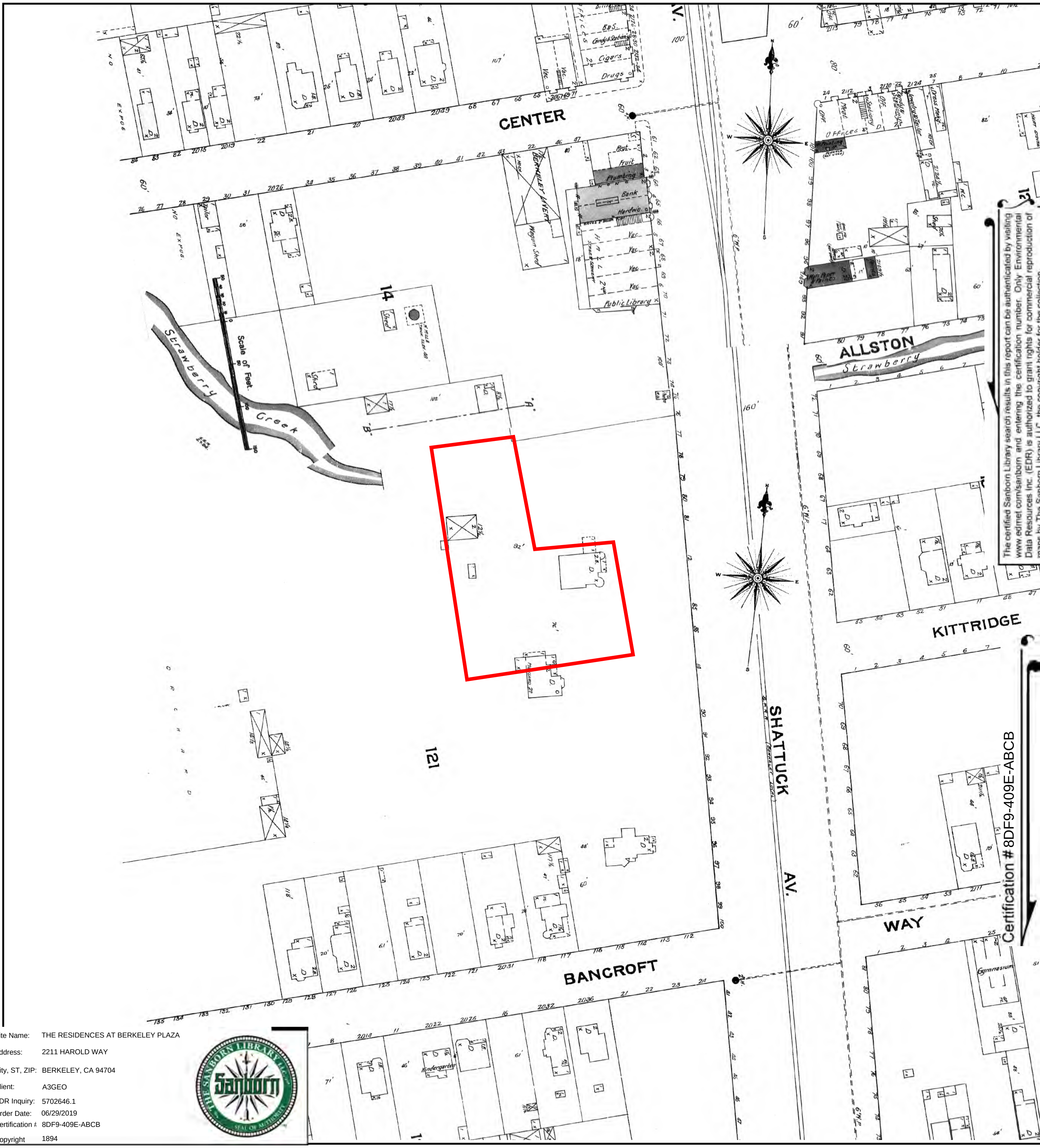


Volume 3, Sheet 350
Volume 3, Sheet 349
Volume 3, Sheet 344
Volume 3, Sheet 343

N

Certified Sanborn® Map



Certification # 8DF9-409E-ABCB

Site Name:	THE RESIDENCES AT BERKELEY PLAZA
Address:	2211 HAROLD WAY
City, ST, ZIP:	BERKELEY, CA 94704
Client:	A3GEO
EDR Inquiry:	5702646.1
Order Date:	06/29/2019
Certification #	8DF9-409E-ABCB
Copyright	1894

0 Feet 150 300 600

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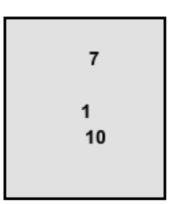
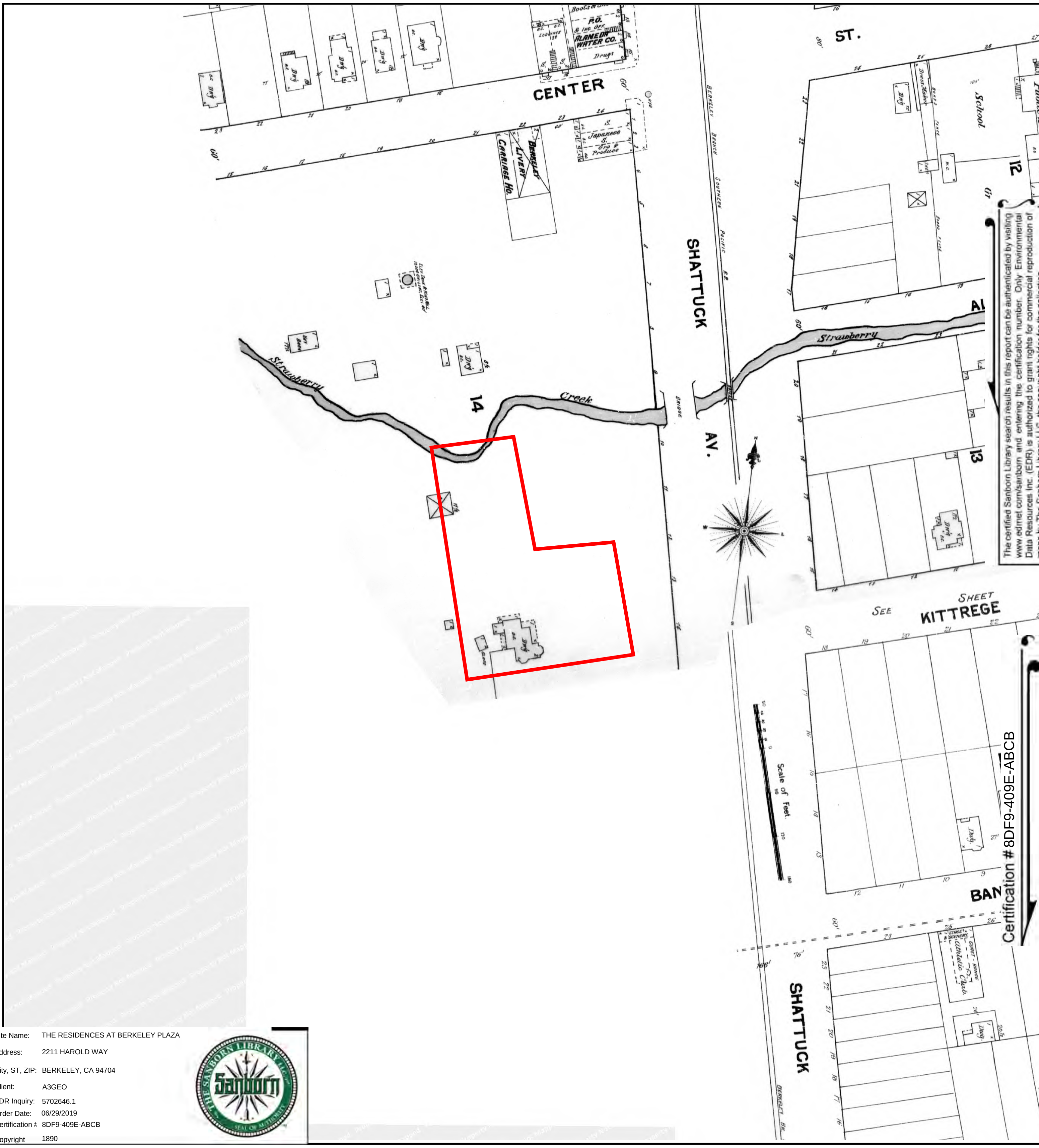


Volume 1, Sheet 1
Volume 1, Sheet 10
Volume 1, Sheet 7

N



Site Name:	THE RESIDENCES AT BERKELEY PLAZA
Address:	2211 HAROLD WAY
City, ST, ZIP:	BERKELEY, CA 94704
Client:	A3GEO
EDR Inquiry:	5702646.1
Order Date:	06/29/2019
Certification #	8DF9-409E-ABCB
Copyright	1890

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Outlined areas indicate map sheets within the collection.

Volume 1, Sheet 3
Volume 1, Sheet 5

0 Feet 150 300 600

N

APPENDIX F

Historical Aerial Photographs

BERKELEY PLAZA
BERKELEY, CALIFORNIA


A B C D E F
1 2 3 4 5 6
N
0 62.5 125 250 375 500
Feet
PACIFIC AERIAL SURVEYS
AN ALAN KROPP & ASSCOCIATES, INC. COMPANY
GY-30-34 1930

A
B
C
D
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F
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2
3
4
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6
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0
62.5
125
250
375
500
Feet
PACIFIC AERIAL SURVEYS
AN ALAN KROPP & ASSCOCIATES, INC. COMPANY
AV28-14-28 04-14-50


A B C D E F
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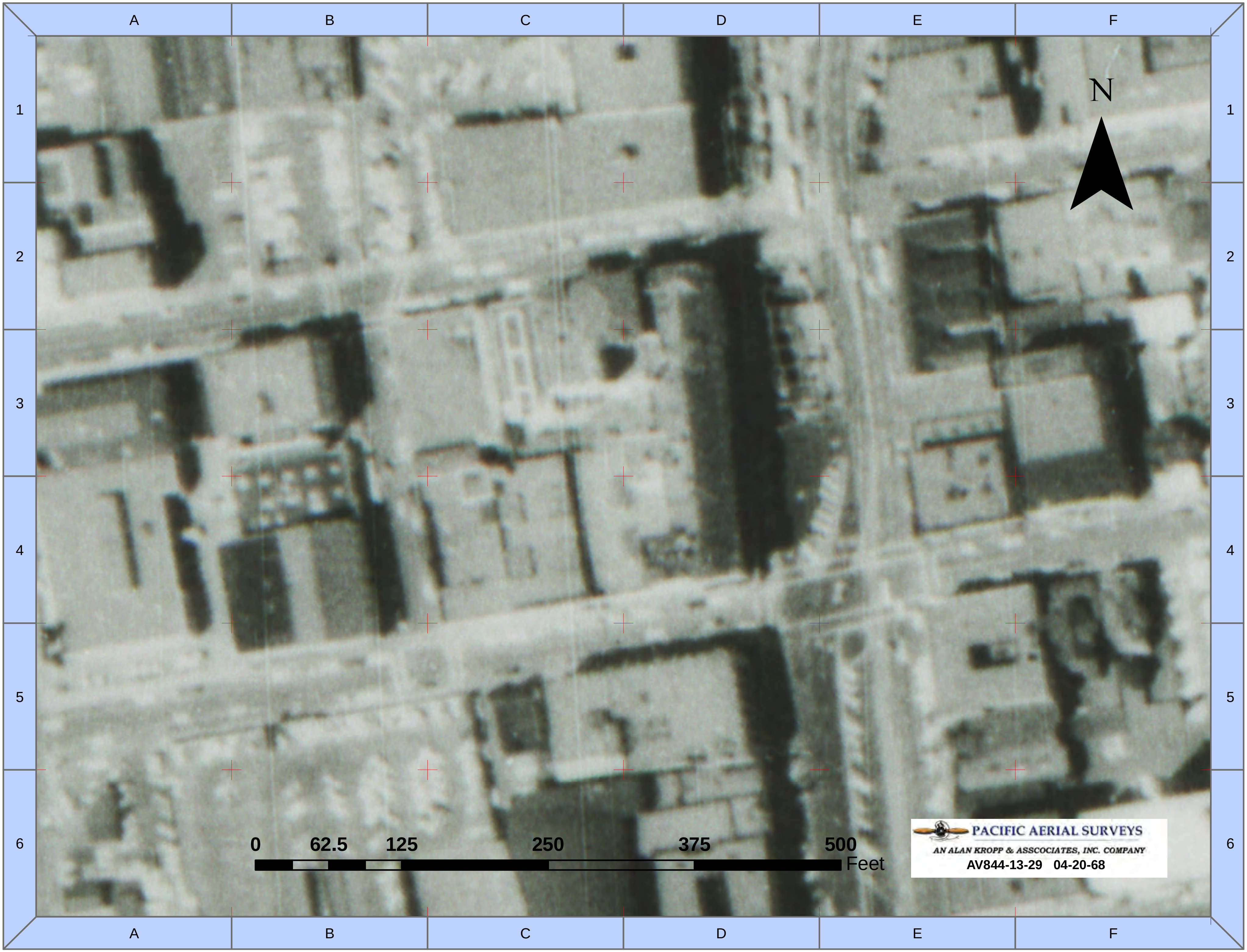
N
0 62.5 125 250 375 500
Feet
PACIFIC AERIAL SURVEYS
AN ALAN KROPP & ASSCOCIATES, INC. COMPANY
AV710-09-23 04-20-66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PACIFIC AERIAL SURVEYS
AN ALAN KROPP & ASSSOCIATES, INC. COMPANY
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A
B
C
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F
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2
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250
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Feet
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Feet
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AN ALAN KROPP & ASSSOCIATES, INC. COMPANY
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Feet
PACIFIC AERIAL SURVEYS
AN ALAN KROPP & ASSCOCIATES, INC. COMPANY
Harold Way Berkeley - February 2015

APPENDIX G

Liquefaction Analyses

BERKELEY PLAZA
BERKELEY, CALIFORNIA

TABLE OF CONTENTS

A3GEO, Inc.
821 Bancroft Way
Berkeley, CA 94710

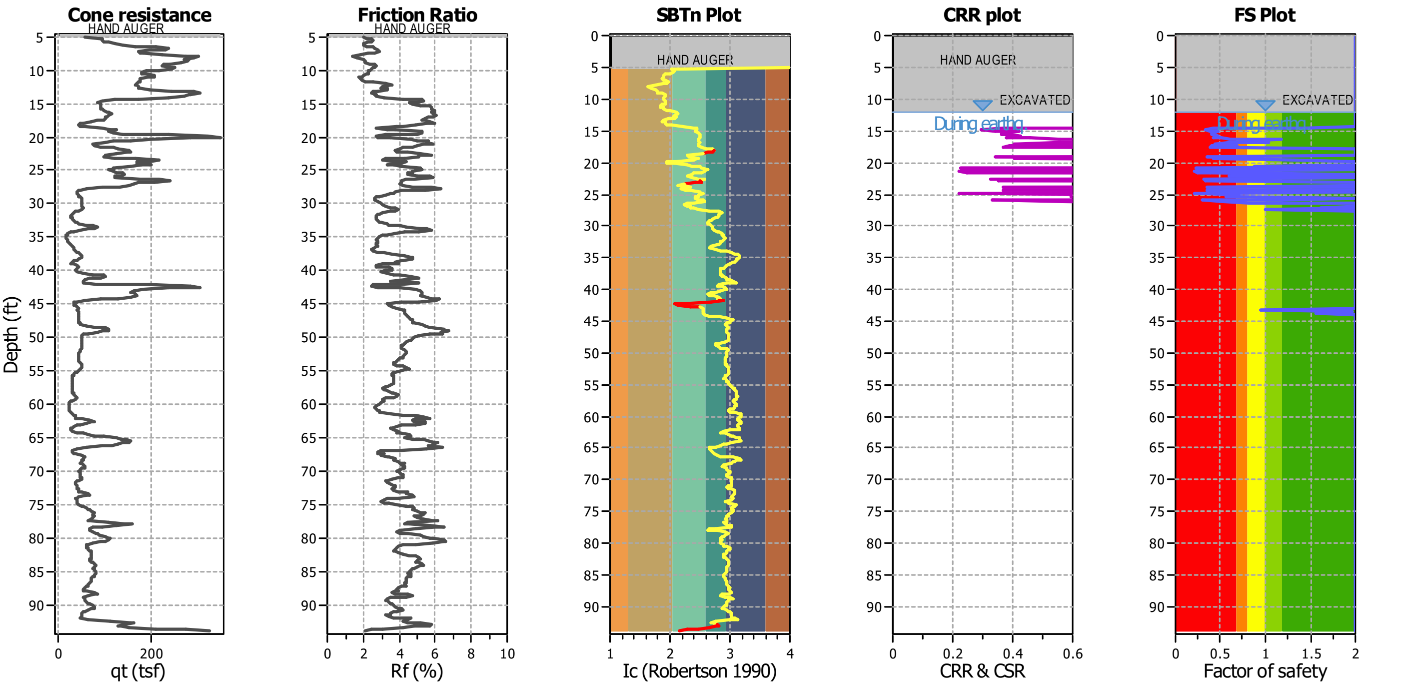
LIQUEFACTION ANALYSIS REPORT

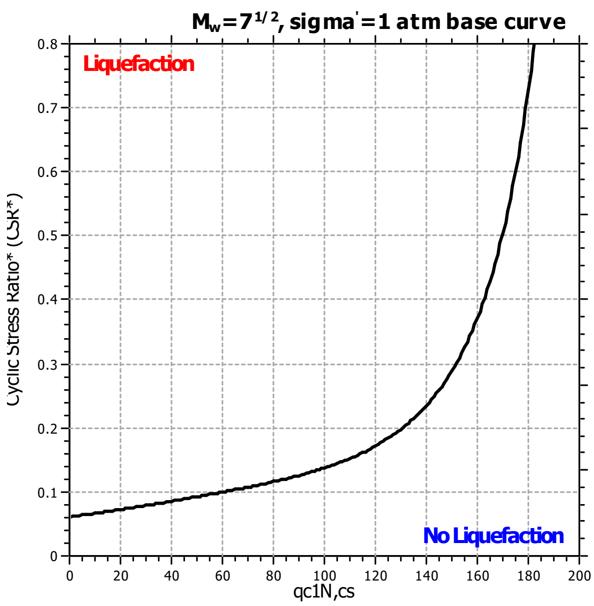
Project title : 1114-10A - Berkeley Plaza **Location :**

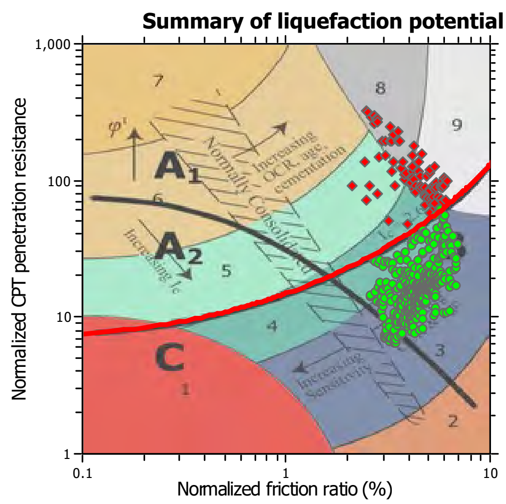
CPT file : CPT-2

Input parameters and analysis data

Analysis method:	B&I (2014)	G.W.T. (in-situ):	35.00 ft	Excavation:	Yes	Clay like behavior applied:	Sands only
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	12.00 ft	Excavation depth:	12.00 ft	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Footing load:	1.00 tsf	Limit depth:	N/A
Earthquake magnitude M_w:	7.33	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	1.01	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

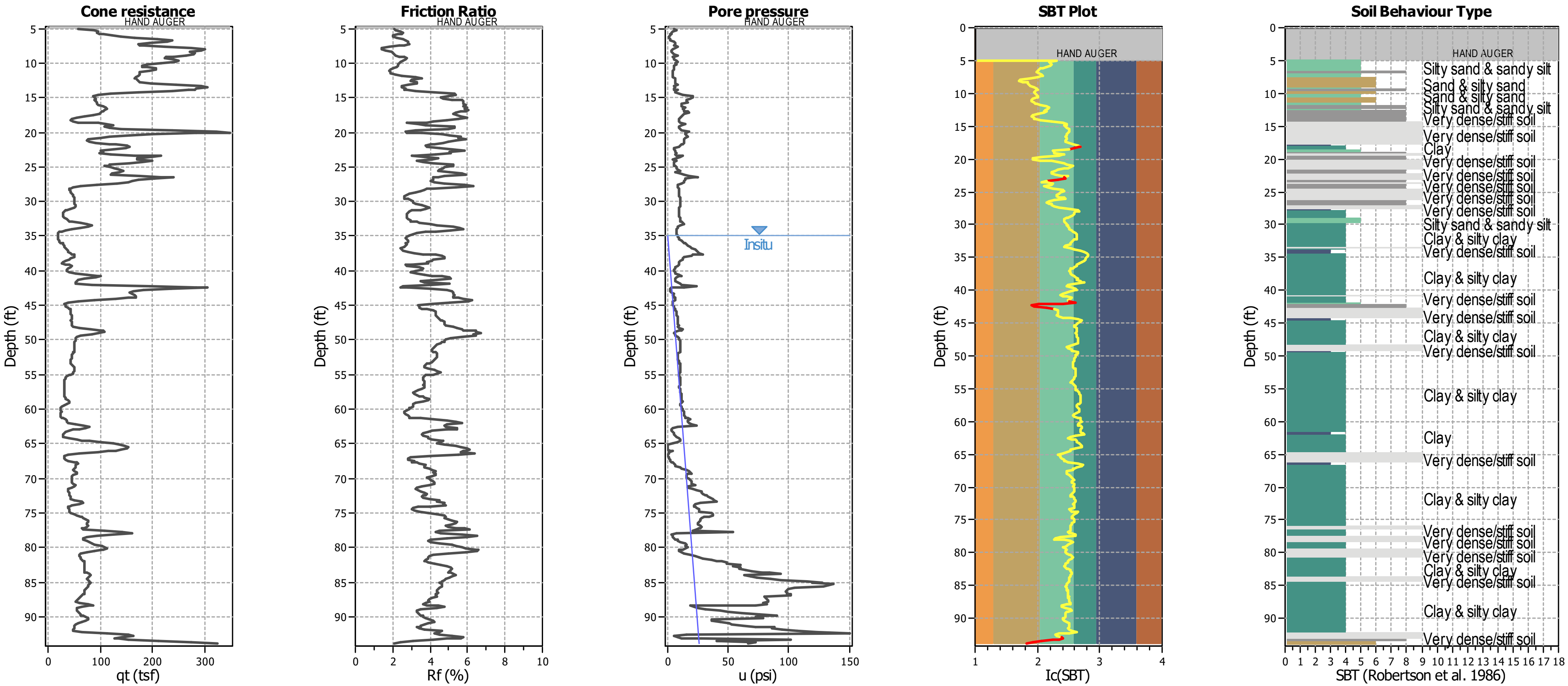






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and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

CPT basic interpretation plots



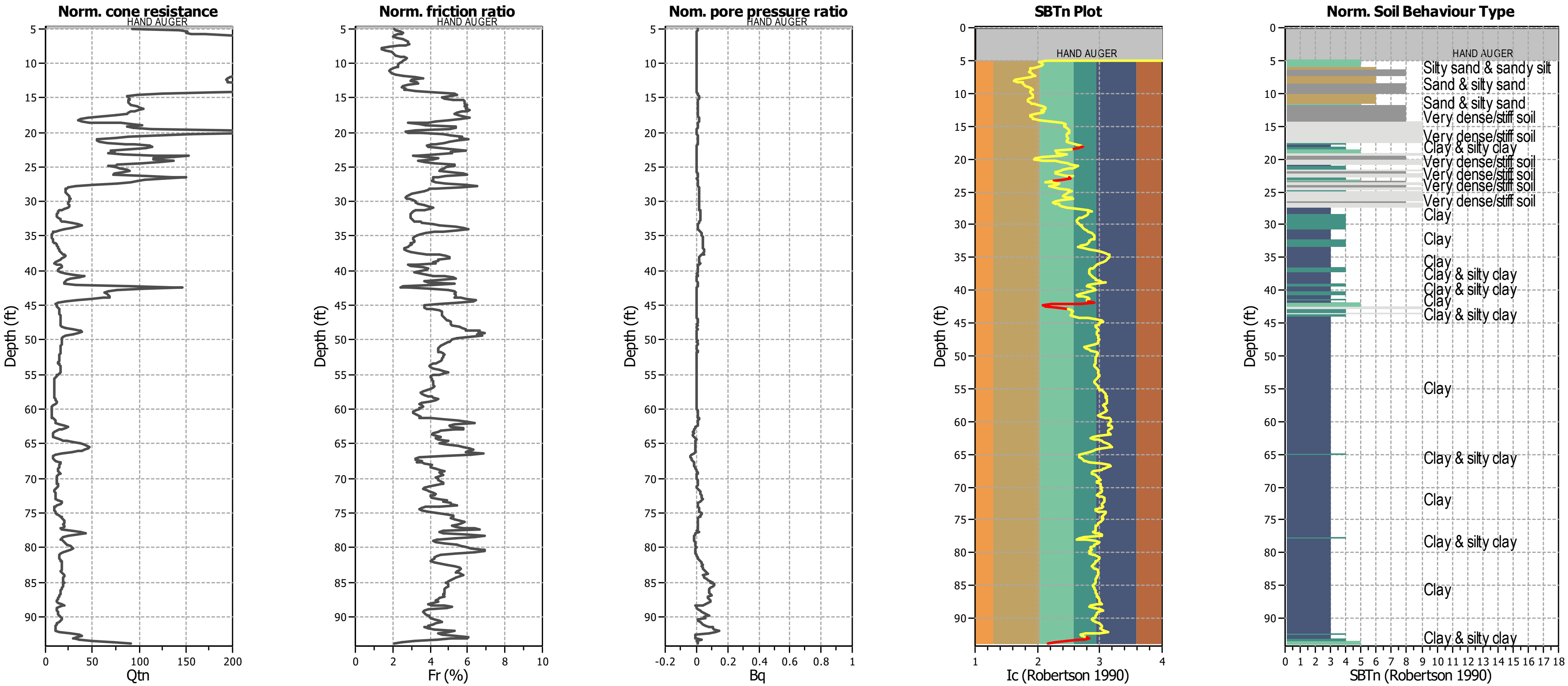
Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	12.00 ft	Footing load:	1.00 tsf
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.33	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	1.01	Excavation:	Yes	Limit depth applied:	No
Depth to water table (insitu):	35.00 ft	Excavation depth:	12.00 ft	Limit depth:	N/A

SBT legend

1. Sensitive fine grained	4. Clayey silt to silty	7. Gravely sand to sand
2. Organic material	5. Silty sand to sandy silt	8. Very stiff sand to
3. Clay to silty clay	6. Clean sand to silty sand	9. Very stiff fine grained

CPT basic interpretation plots (normalized)



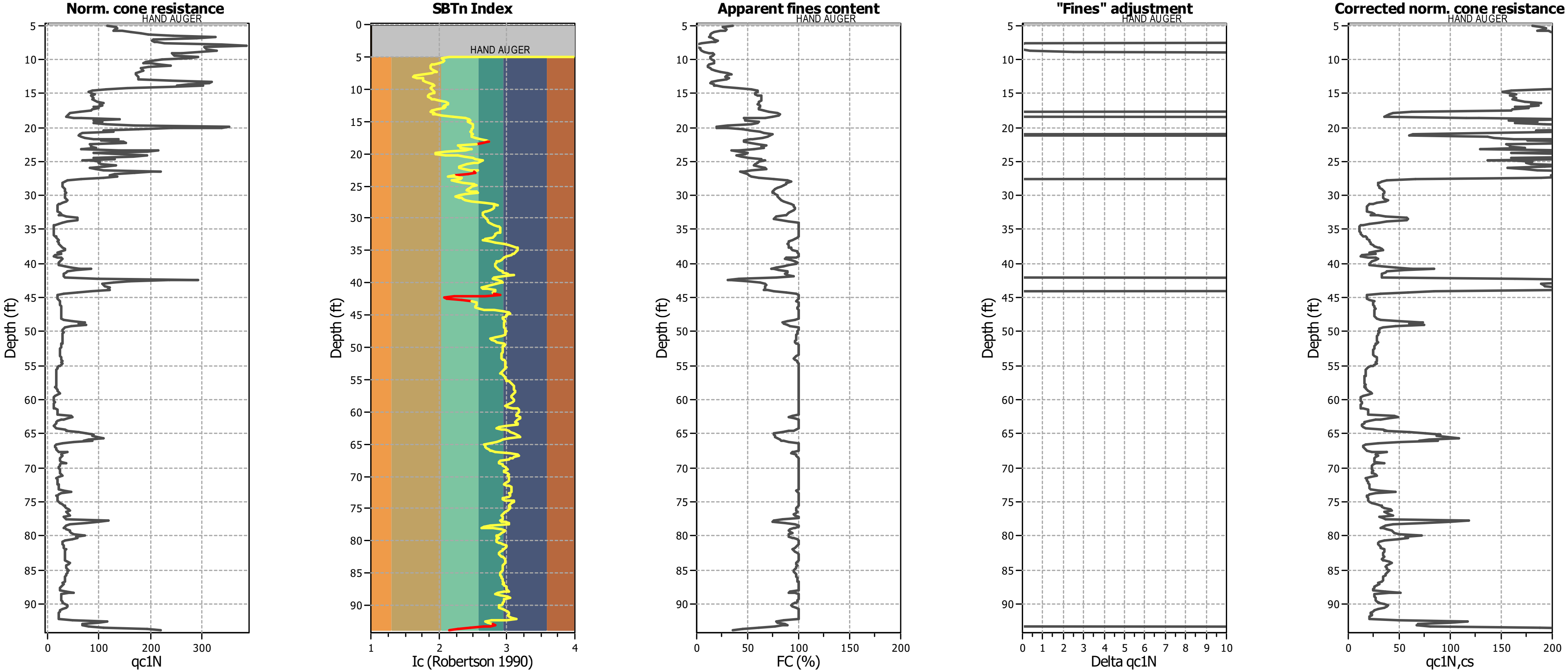
Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	12.00 ft	Footing load:	1.00 tsf
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.33	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	1.01	Excavation:	Yes	Limit depth applied:	No
Depth to water table (insitu):	35.00 ft	Excavation depth:	12.00 ft	Limit depth:	N/A

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

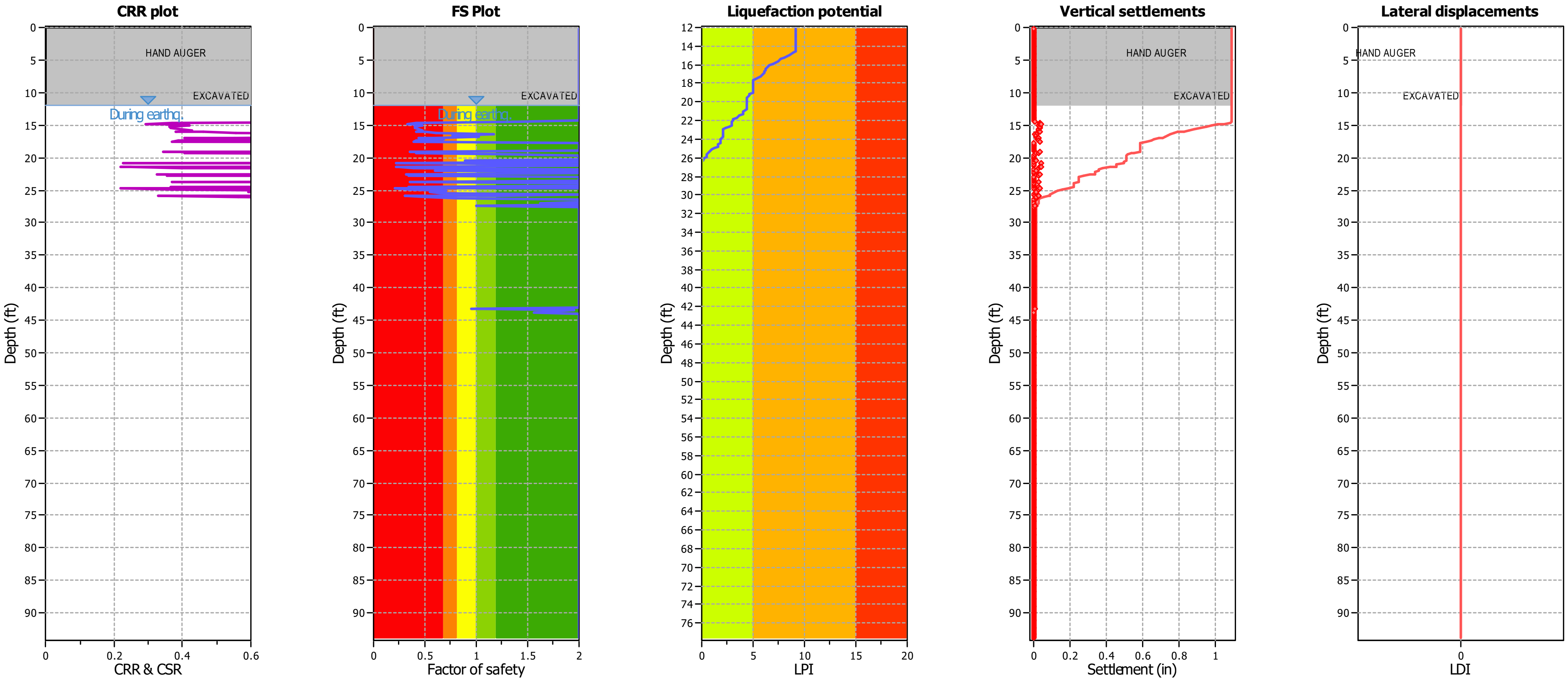
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	12.00 ft	Footing load:	1.00 tsf
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.33	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	1.01	Excavation:	Yes	Limit depth applied:	No
Depth to water table (insitu):	35.00 ft	Excavation depth:	12.00 ft	Limit depth:	N/A

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	12.00 ft	Footing load:	1.00 tsf
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.33	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	1.01	Excavation:	Yes	Limit depth applied:	No
Depth to water table (insitu):	35.00 ft	Excavation depth:	12.00 ft	Limit depth:	N/A

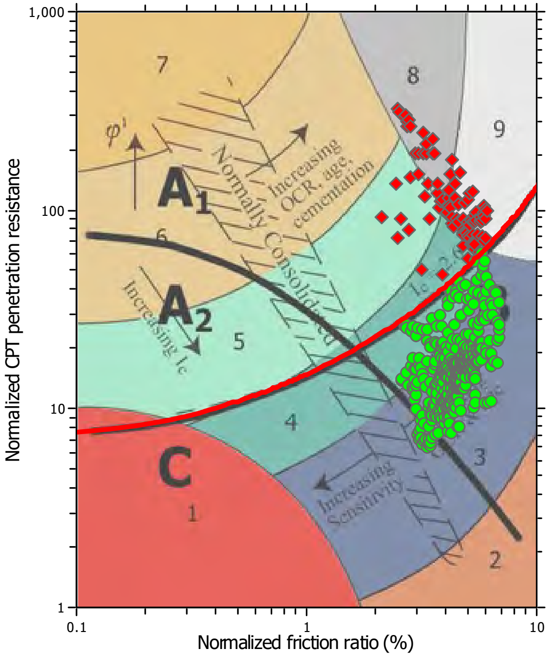
F.S. color scheme

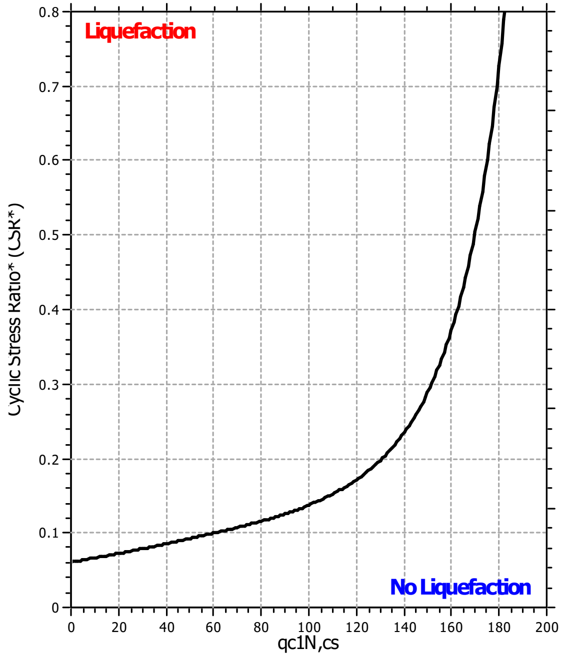
- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

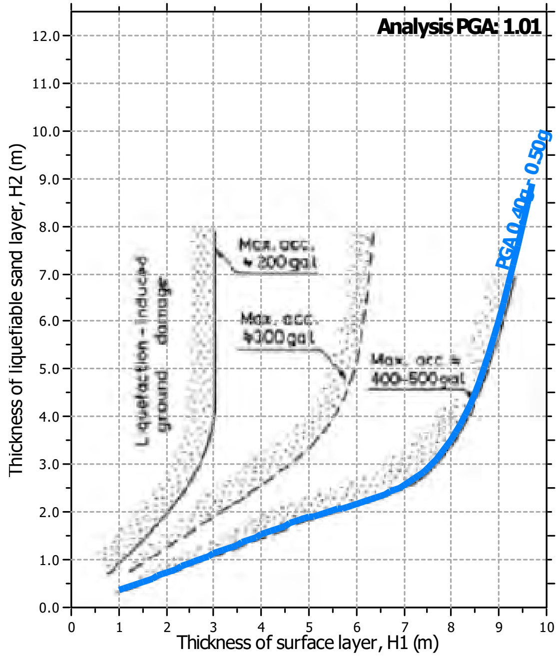
LPI color scheme

- Very high risk
- High risk
- Low risk

Liquefaction analysis summary plots



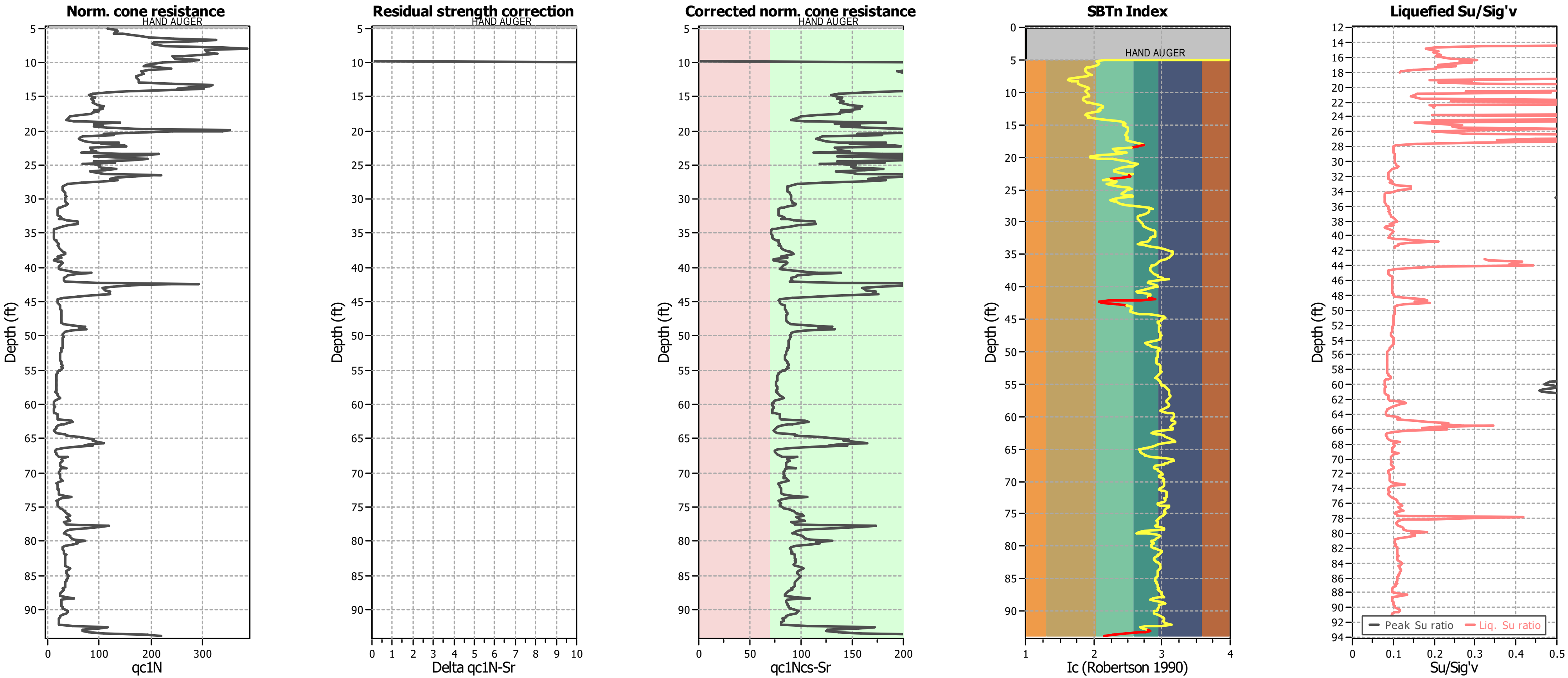




Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	12.00 ft	Footing load:	1.00 tsf
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.33	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	1.01	Excavation:	Yes	Limit depth applied:	No
Depth to water table (insitu):	35.00 ft	Excavation depth:	12.00 ft	Limit depth:	N/A

Check for strength loss plots (Idriss & Boulanger (2008))



Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	12.00 ft	Footing load:	1.00 tsf
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.33	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	1.01	Excavation:	Yes	Limit depth applied:	No
Depth to water table (insitu):	35.00 ft	Excavation depth:	12.00 ft	Limit depth:	N/A

A3GEO, Inc.
821 Bancroft Way
Berkeley, CA 94710

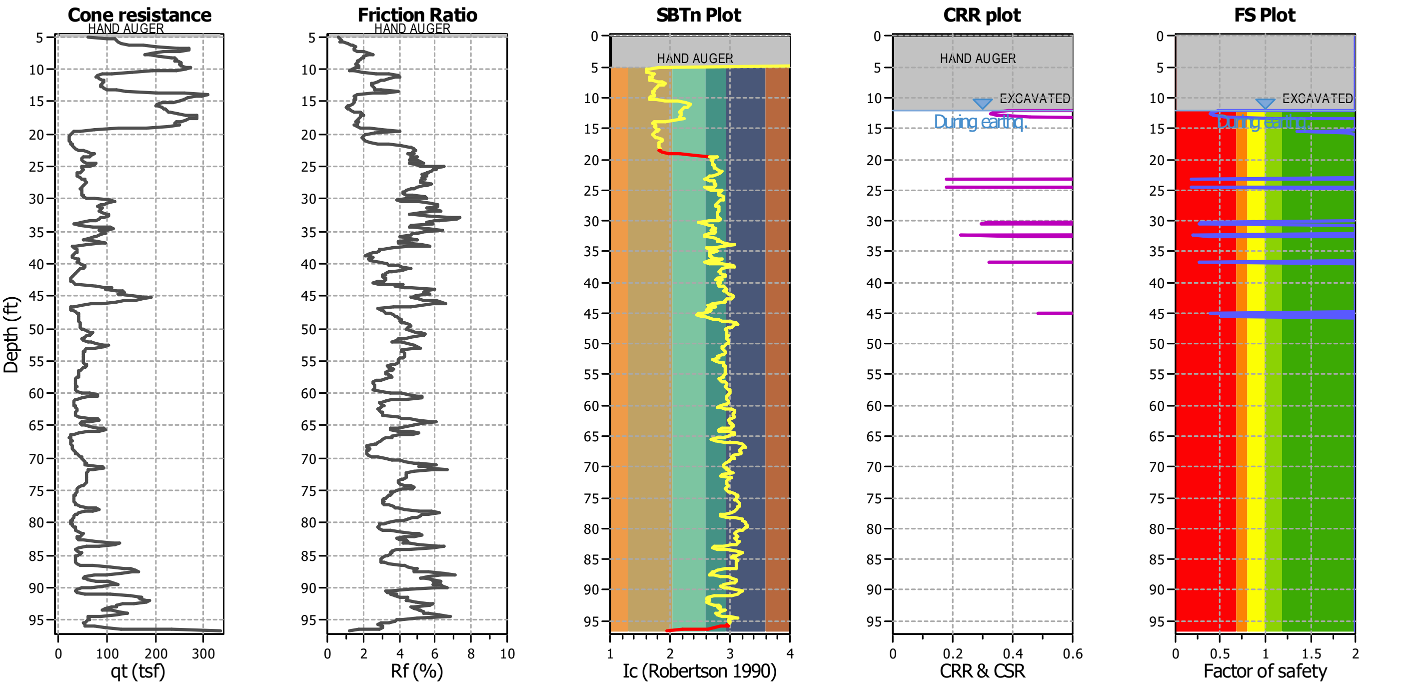
LIQUEFACTION ANALYSIS REPORT

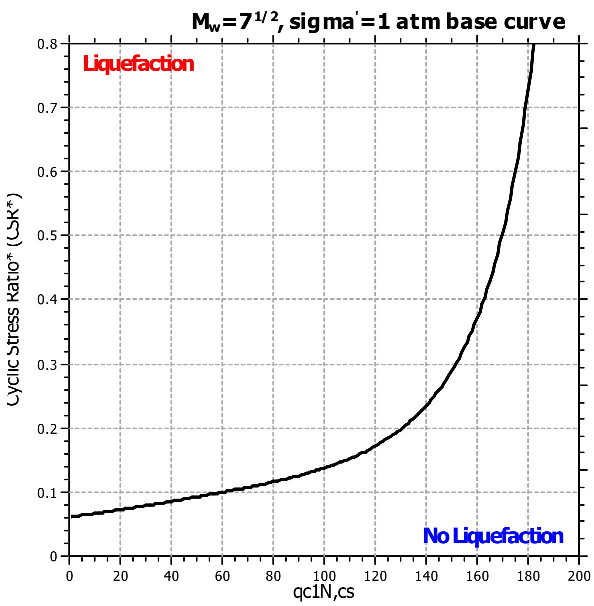
Project title : 1114-10A - Berkeley Plaza **Location :**

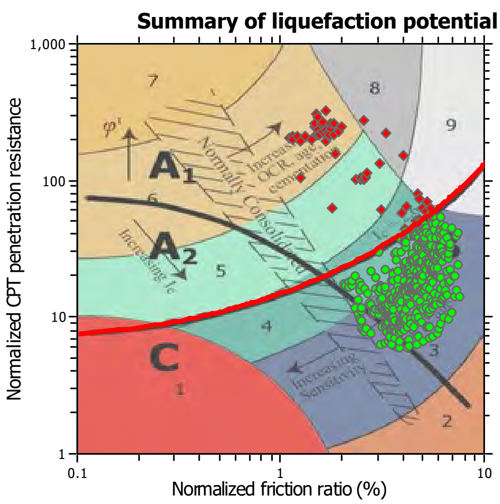
CPT file : CPT-3

Input parameters and analysis data

Analysis method:	B&I (2014)	G.W.T. (in-situ):	35.00 ft	Excavation:	Yes	Clay like behavior applied:	Sands only
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	12.00 ft	Excavation depth:	12.00 ft	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Footing load:	1.00 tsf	Limit depth:	N/A
Earthquake magnitude M_w:	7.33	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	1.01	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

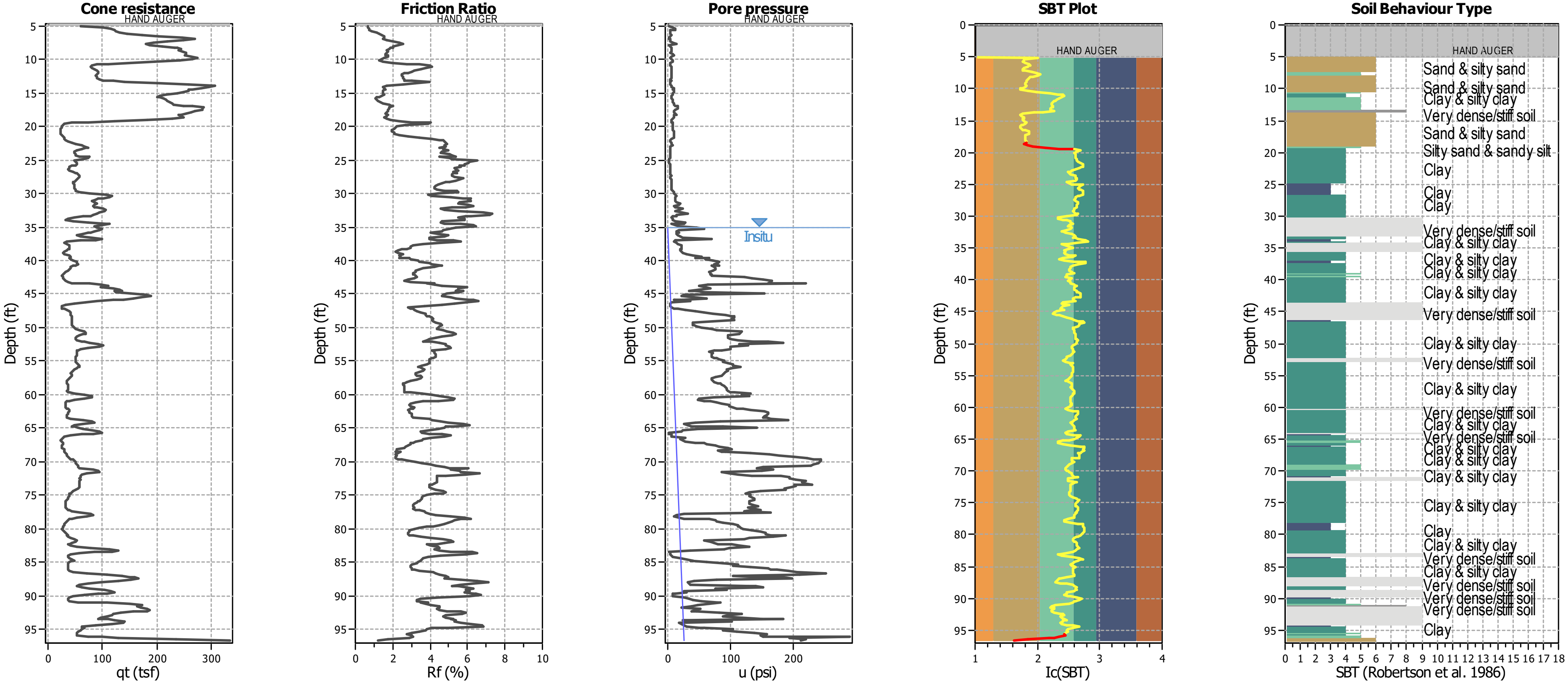






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and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

CPT basic interpretation plots



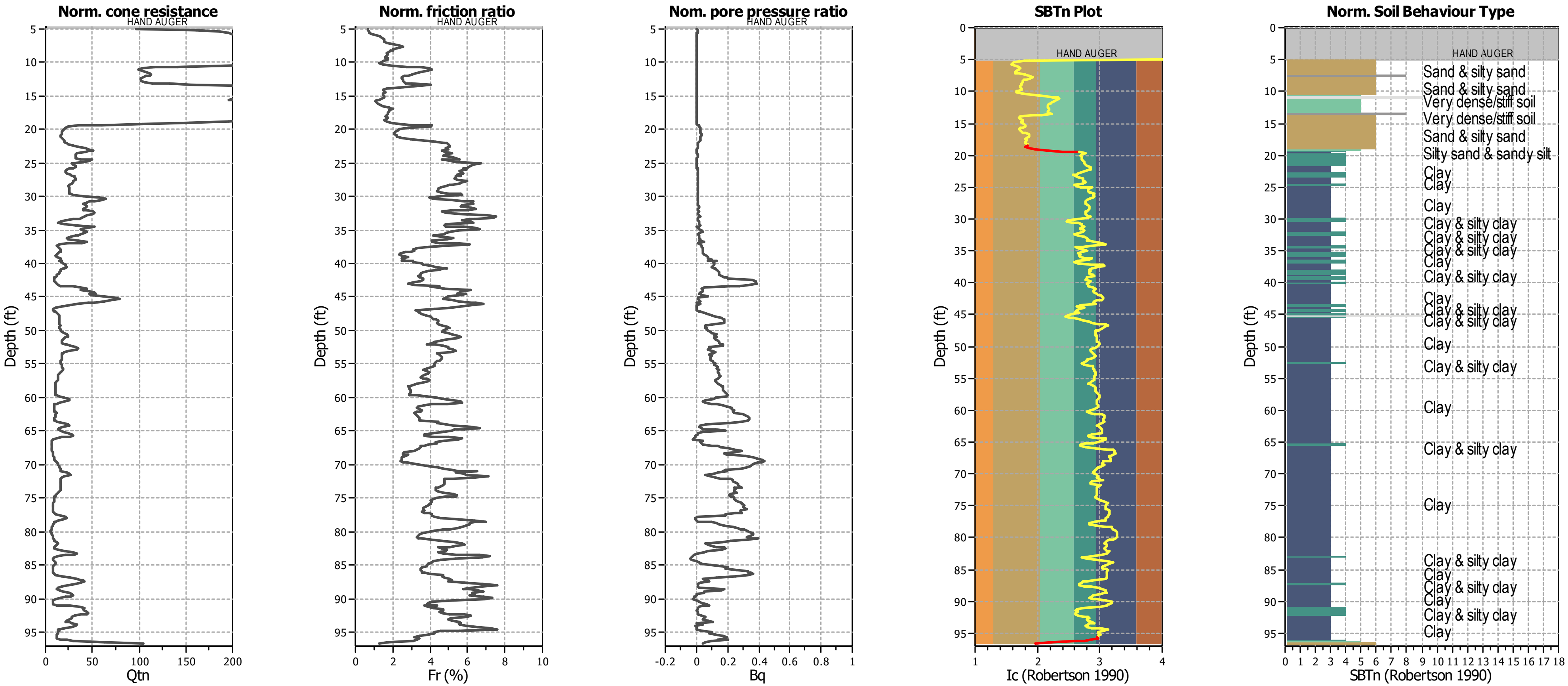
Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	12.00 ft	Footing load:	1.00 tsf
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.33	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	1.01	Excavation:	Yes	Limit depth applied:	No
Depth to water table (insitu):	35.00 ft	Excavation depth:	12.00 ft	Limit depth:	N/A

SBT legend

1. Sensitive fine grained	4. Clayey silt to silty	7. Gravely sand to sand
2. Organic material	5. Silty sand to sandy silt	8. Very stiff sand to
3. Clay to silty clay	6. Clean sand to silty sand	9. Very stiff fine grained

CPT basic interpretation plots (normalized)



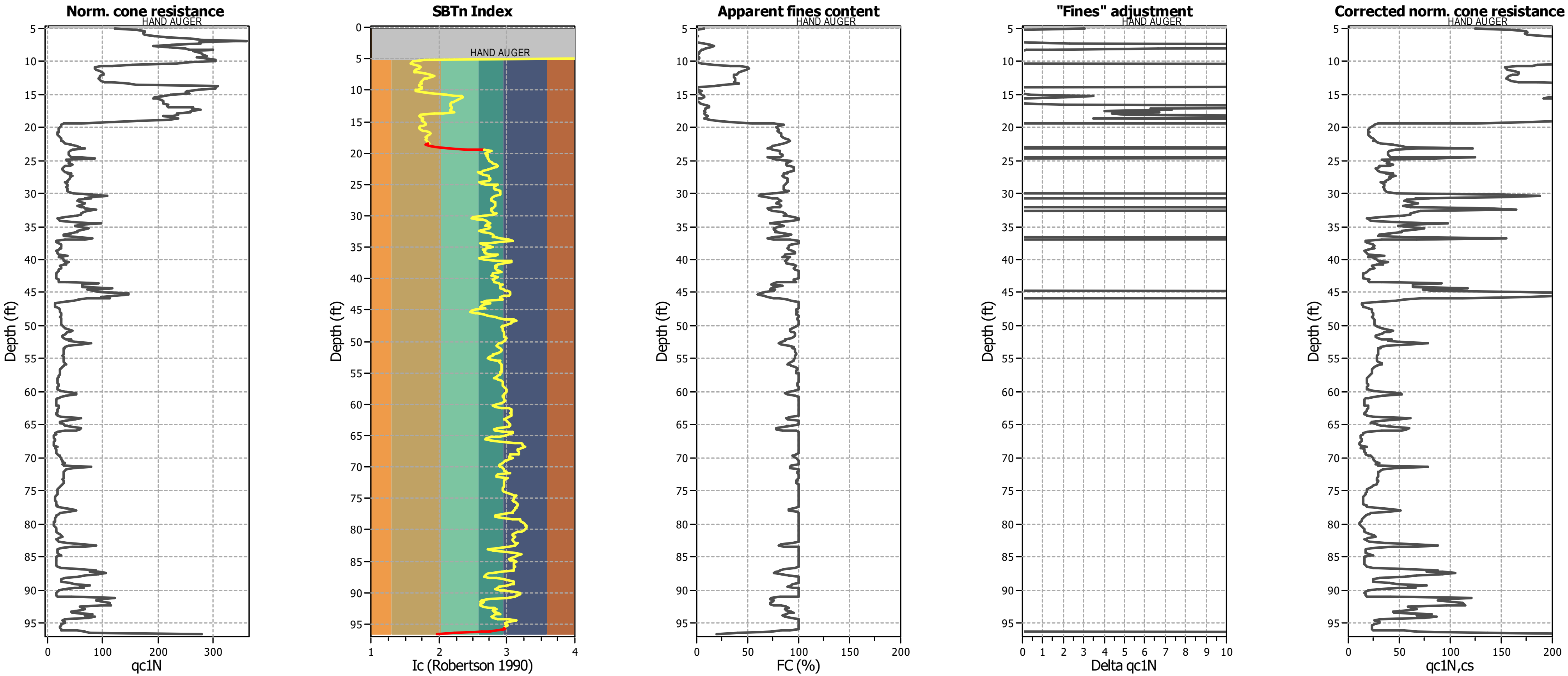
Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	12.00 ft	Footing load:	1.00 tsf
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.33	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	1.01	Excavation:	Yes	Limit depth applied:	No
Depth to water table (insitu):	35.00 ft	Excavation depth:	12.00 ft	Limit depth:	N/A

SBTn legend

1. Sensitive fine grained	4. Clayey silt to silty	7. Gravely sand to sand
2. Organic material	5. Silty sand to sandy silt	8. Very stiff sand to
3. Clay to silty clay	6. Clean sand to silty sand	9. Very stiff fine grained

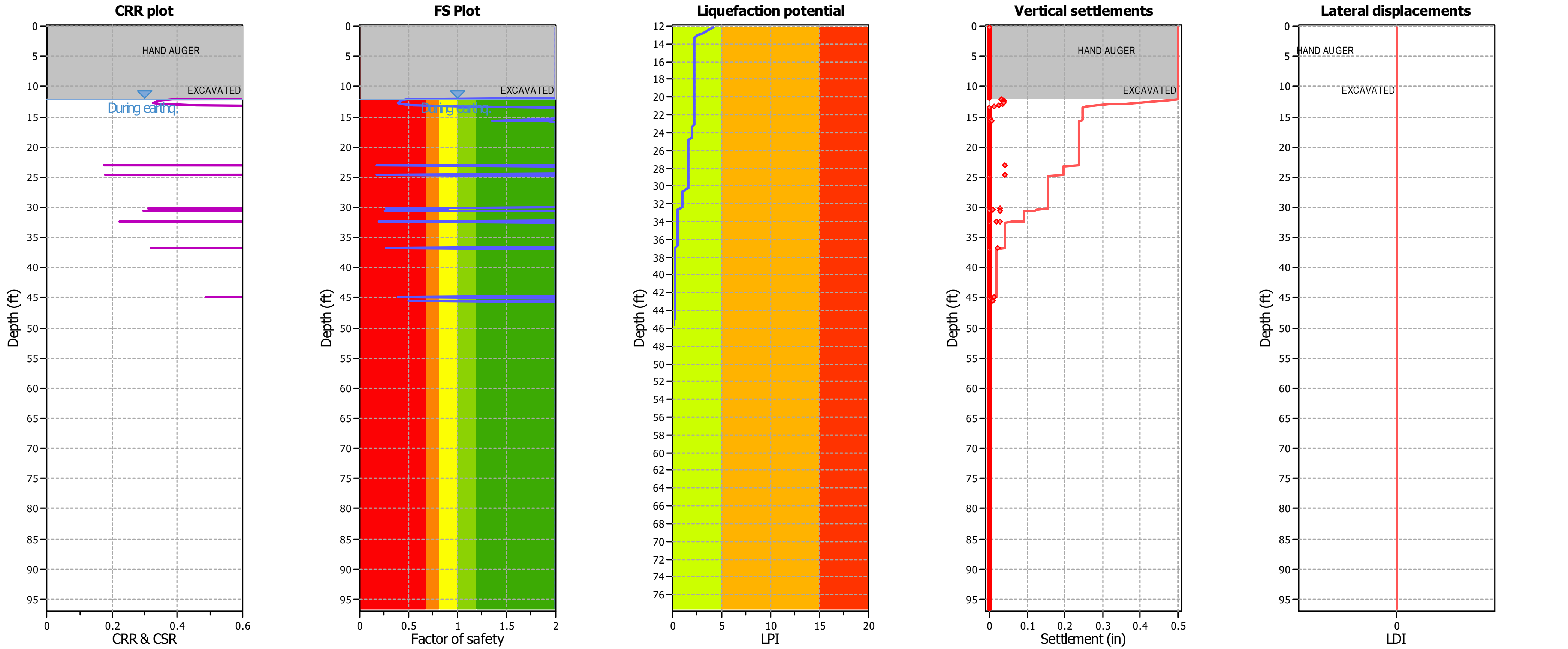
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	12.00 ft	Footing load:	1.00 tsf
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.33	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	1.01	Excavation:	Yes	Limit depth applied:	No
Depth to water table (insitu):	35.00 ft	Excavation depth:	12.00 ft	Limit depth:	N/A

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	12.00 ft	Footing load:	1.00 tsf
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.33	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	1.01	Excavation:	Yes	Limit depth applied:	No
Depth to water table (insitu):	35.00 ft	Excavation depth:	12.00 ft	Limit depth:	N/A

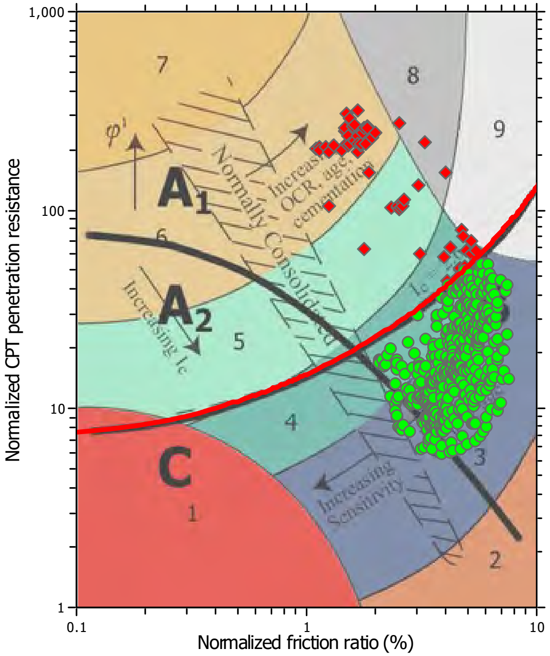
F.S. color scheme

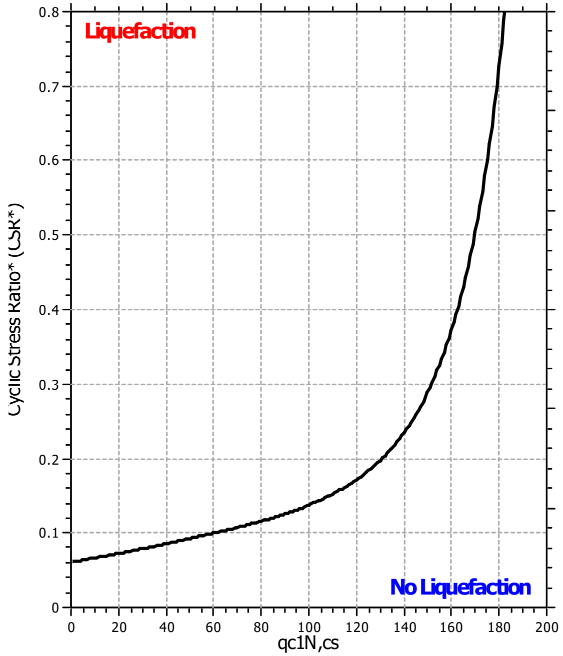
- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

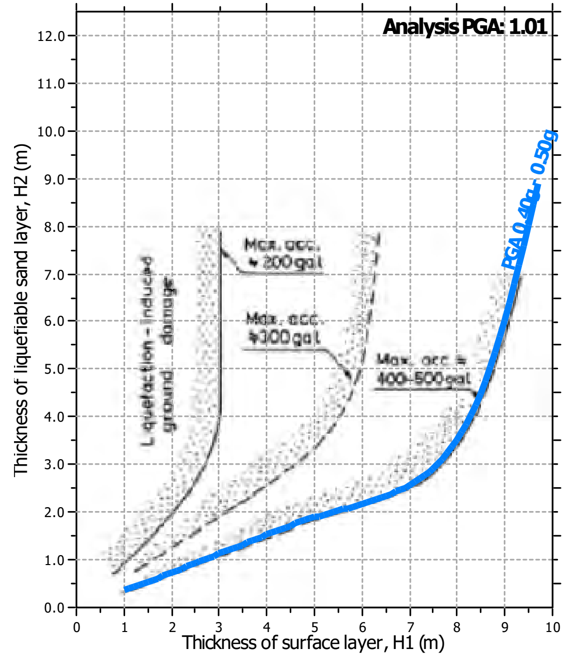
LPI color scheme

- Very high risk
- High risk
- Low risk

Liquefaction analysis summary plots



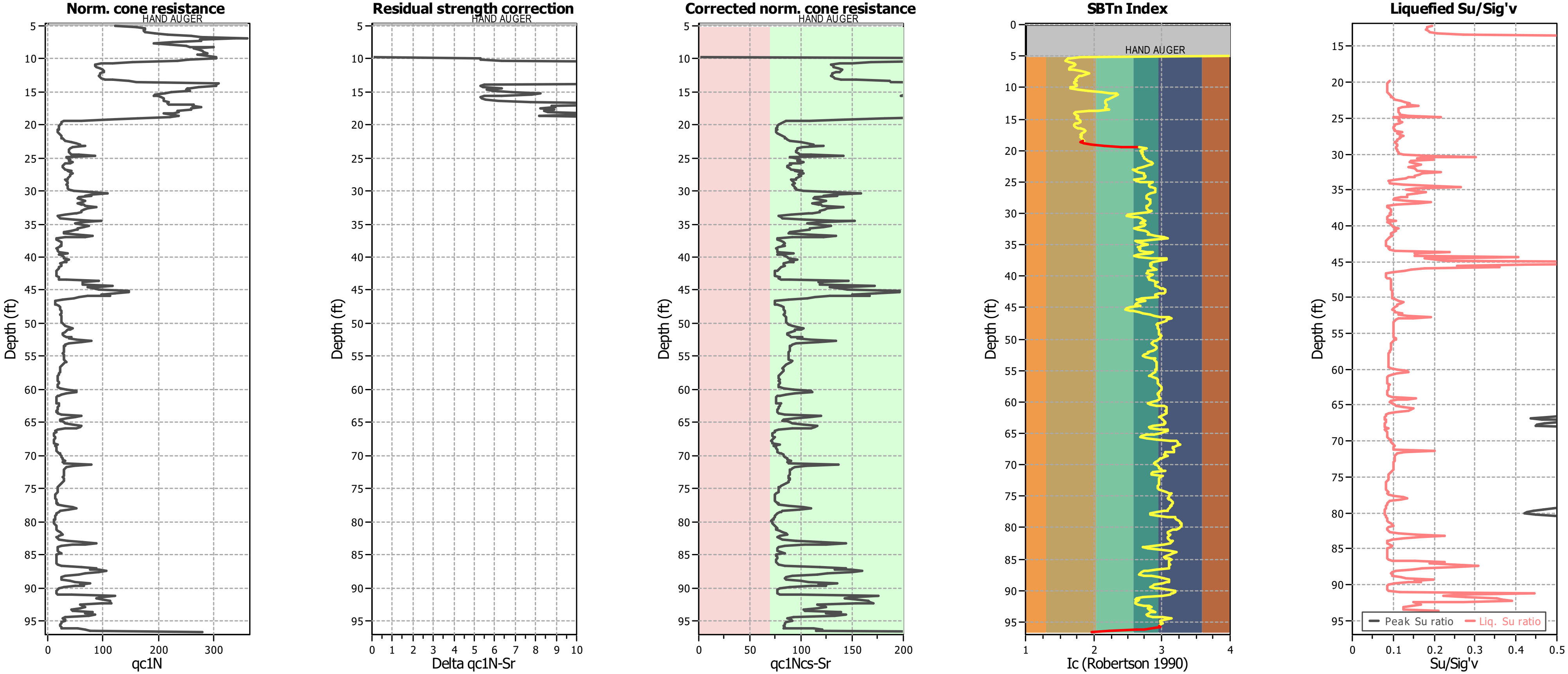




Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	12.00 ft	Footing load:	1.00 tsf
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.33	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	1.01	Excavation:	Yes	Limit depth applied:	No
Depth to water table (insitu):	35.00 ft	Excavation depth:	12.00 ft	Limit depth:	N/A

Check for strength loss plots (Idriss & Boulanger (2008))



Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	12.00 ft	Footing load:	1.00 tsf
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.33	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	1.01	Excavation:	Yes	Limit depth applied:	No
Depth to water table (insitu):	35.00 ft	Excavation depth:	12.00 ft	Limit depth:	N/A

A3GEO, Inc.
821 Bancroft Way
Berkeley, CA 94710

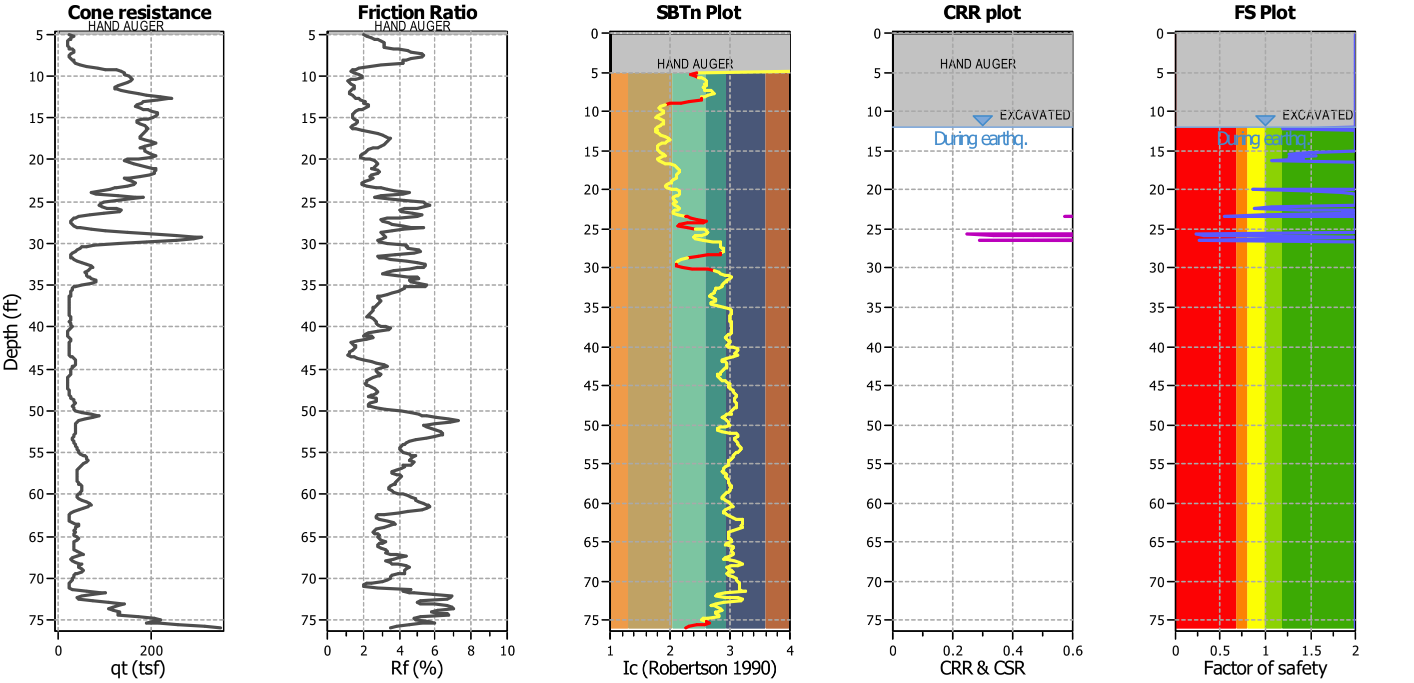
LIQUEFACTION ANALYSIS REPORT

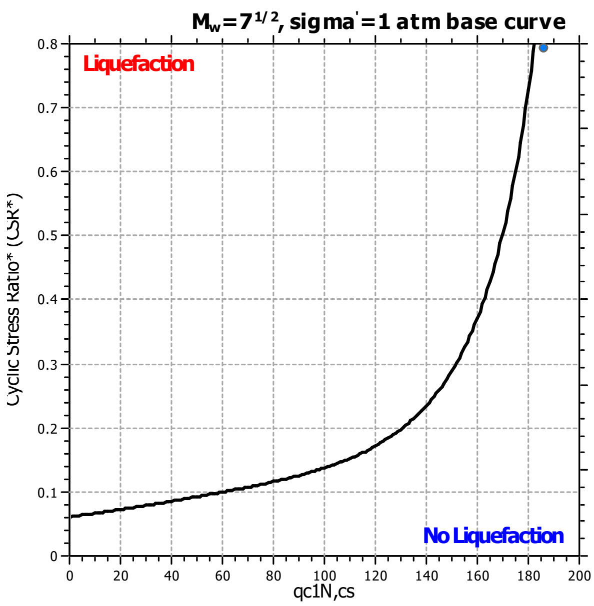
Project title : 1114-10A - Berkeley Plaza **Location :**

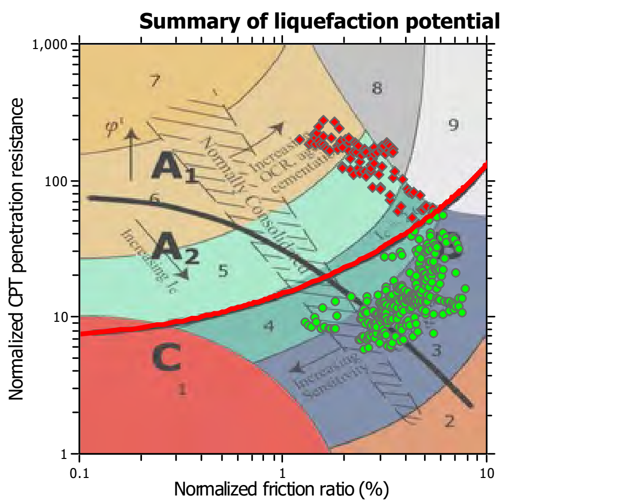
CPT file : CPT-4

Input parameters and analysis data

Analysis method:	B&I (2014)	G.W.T. (in-situ):	35.00 ft	Excavation:	Yes	Clay like behavior applied:	Sands only
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	12.00 ft	Excavation depth:	12.00 ft		
Points to test:	Based on Ic value	Average results interval:	3	Footing load:	1.00 tsf	Limit depth applied:	No
Earthquake magnitude M_w:	7.33	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	Limit depth:	N/A
Peak ground acceleration:	1.01	Unit weight calculation:	Based on SBT	K_σ applied:	Yes	MSF method:	Method based

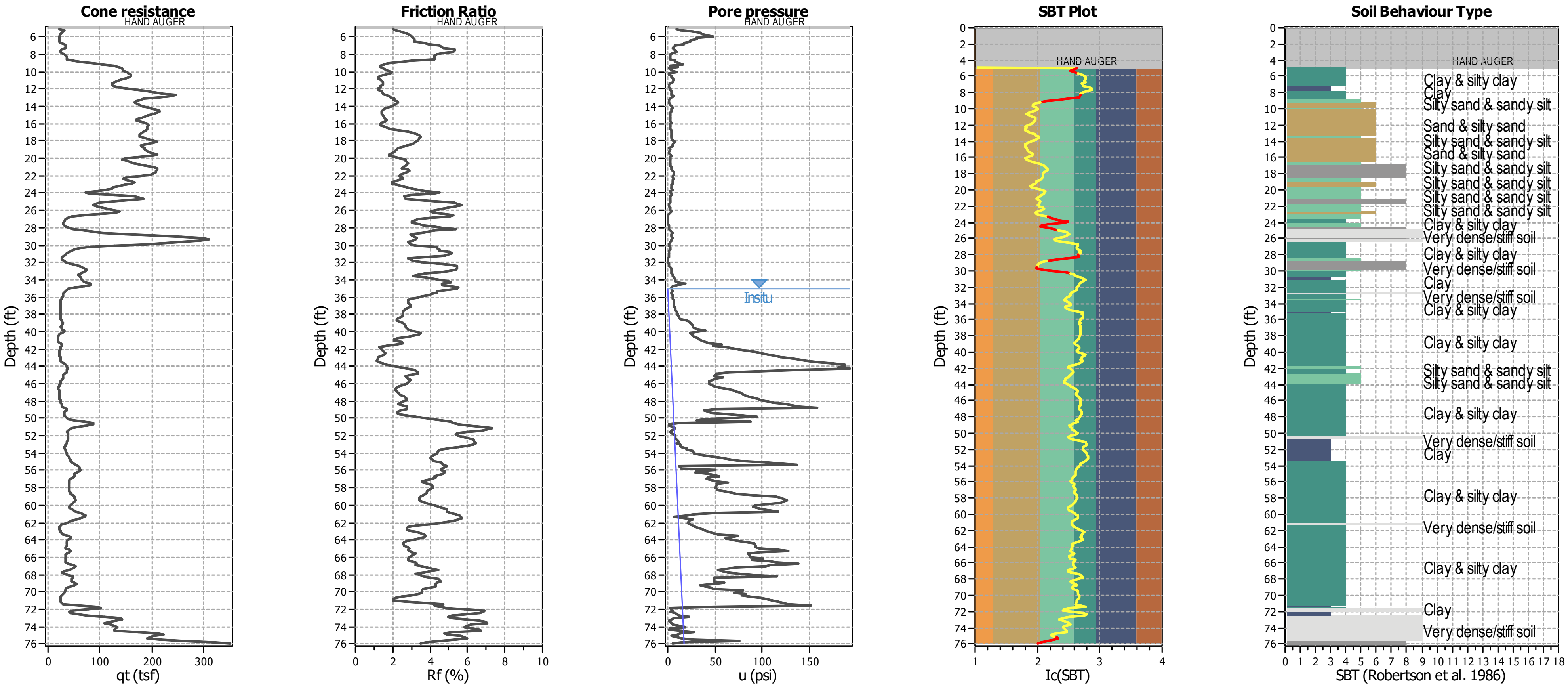






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and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

CPT basic interpretation plots



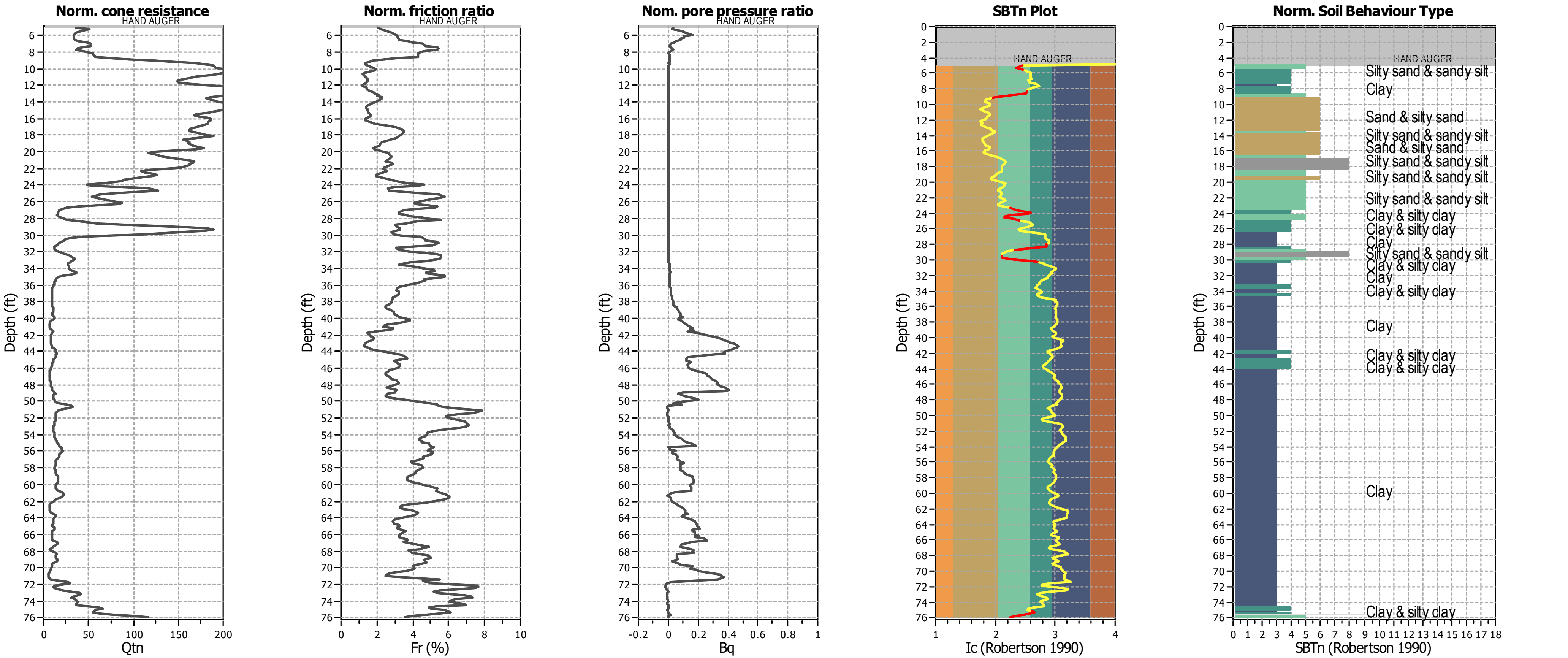
Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	12.00 ft	Footing load:	1.00 tsf
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.33	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	1.01	Excavation:	Yes	Limit depth applied:	No
Depth to water table (insitu):	35.00 ft	Excavation depth:	12.00 ft	Limit depth:	N/A

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



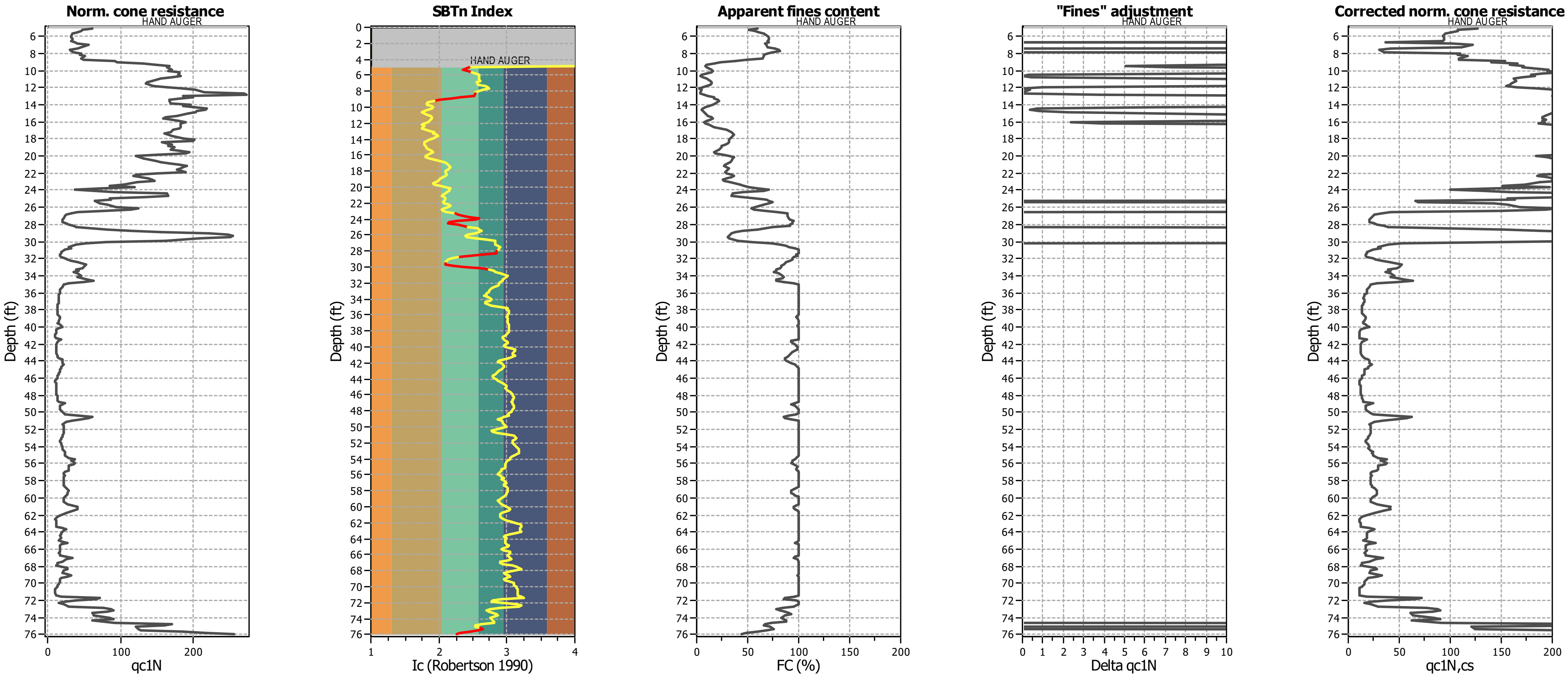
Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	12.00 ft	Footing load:	1.00 tsf
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.33	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	1.01	Excavation:	Yes	Limit depth applied:	No
Depth to water table (insitu):	35.00 ft	Excavation depth:	12.00 ft	Limit depth:	N/A

SBTn legend

1. Sensitive fine grained	4. Clayey silt to silty	7. Gravely sand to sand
2. Organic material	5. Silty sand to sandy silt	8. Very stiff sand to
3. Clay to silty clay	6. Clean sand to silty sand	9. Very stiff fine grained

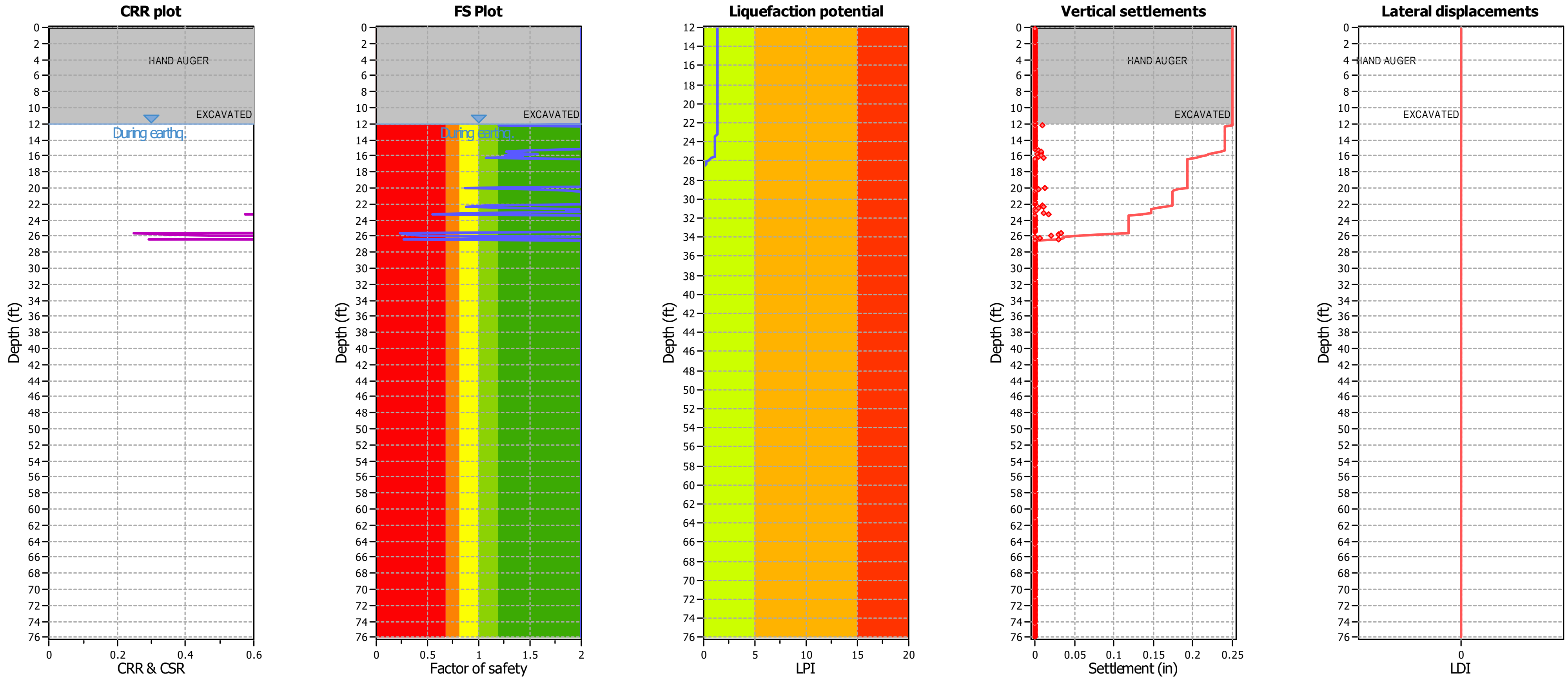
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	12.00 ft	Footing load:	1.00 tsf
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.33	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	1.01	Excavation:	Yes	Limit depth applied:	No
Depth to water table (insitu):	35.00 ft	Excavation depth:	12.00 ft	Limit depth:	N/A

Liquefaction analysis overall plots



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Depth to water table (insitu):	35.00 ft	Excavation depth:	12.00 ft	Limit depth:	N/A

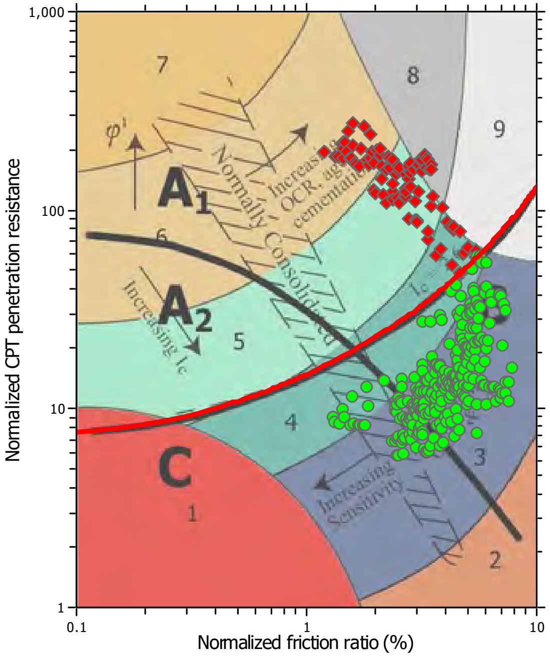
F.S. color scheme

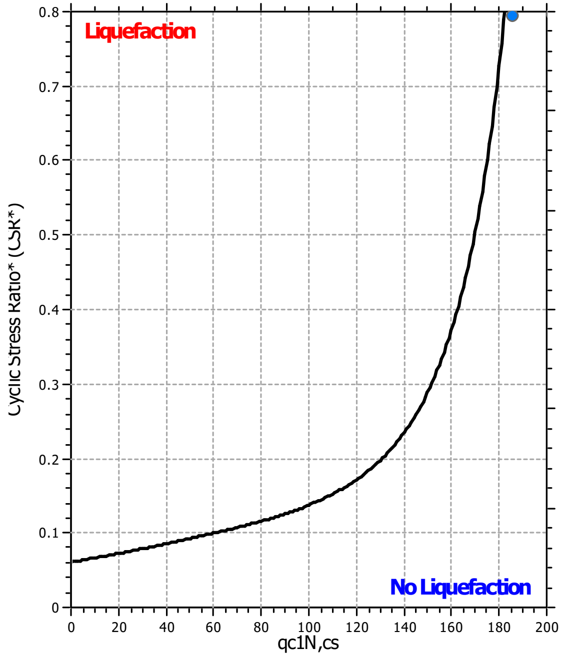
- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

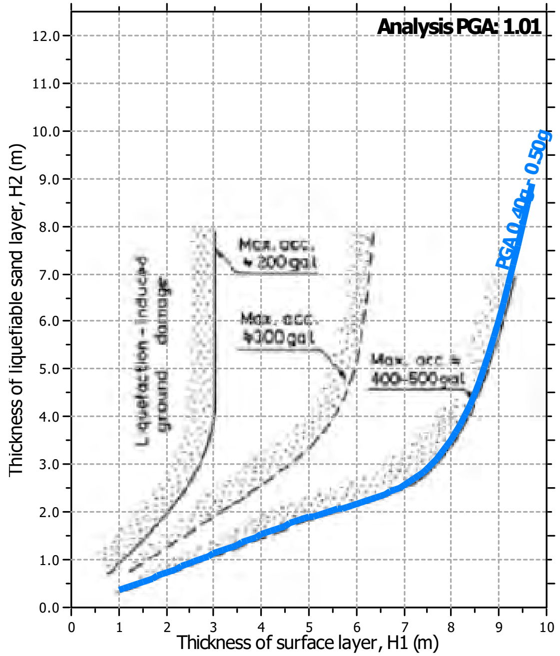
LPI color scheme

- Very high risk
- High risk
- Low risk

Liquefaction analysis summary plots







Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	12.00 ft	Footing load:	1.00 tsf
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	Yes
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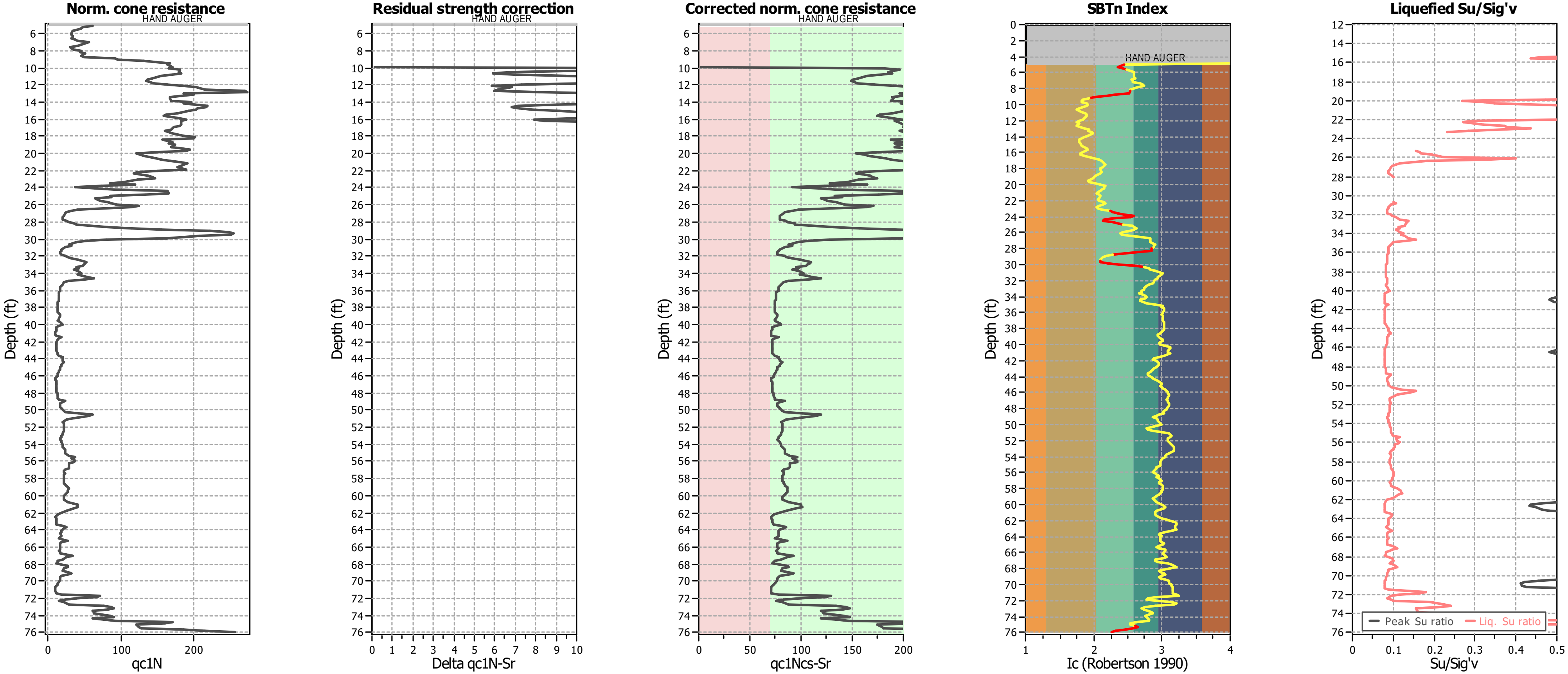
Earthquake magnitude M_w:	7.33	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	1.01	Excavation:	Yes	Limit depth applied:	No
Depth to water table (insitu):	35.00 ft	Excavation depth:	12.00 ft	Limit depth:	N/A

Check for strength loss plots (Idriss & Boulanger (2008))



Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	12.00 ft	Footing load:	1.00 tsf
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.33	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	1.01	Excavation:	Yes	Limit depth applied:	No
Depth to water table (insitu):	35.00 ft	Excavation depth:	12.00 ft	Limit depth:	N/A

A3GEO, Inc.
821 Bancroft Way
Berkeley, CA 94710

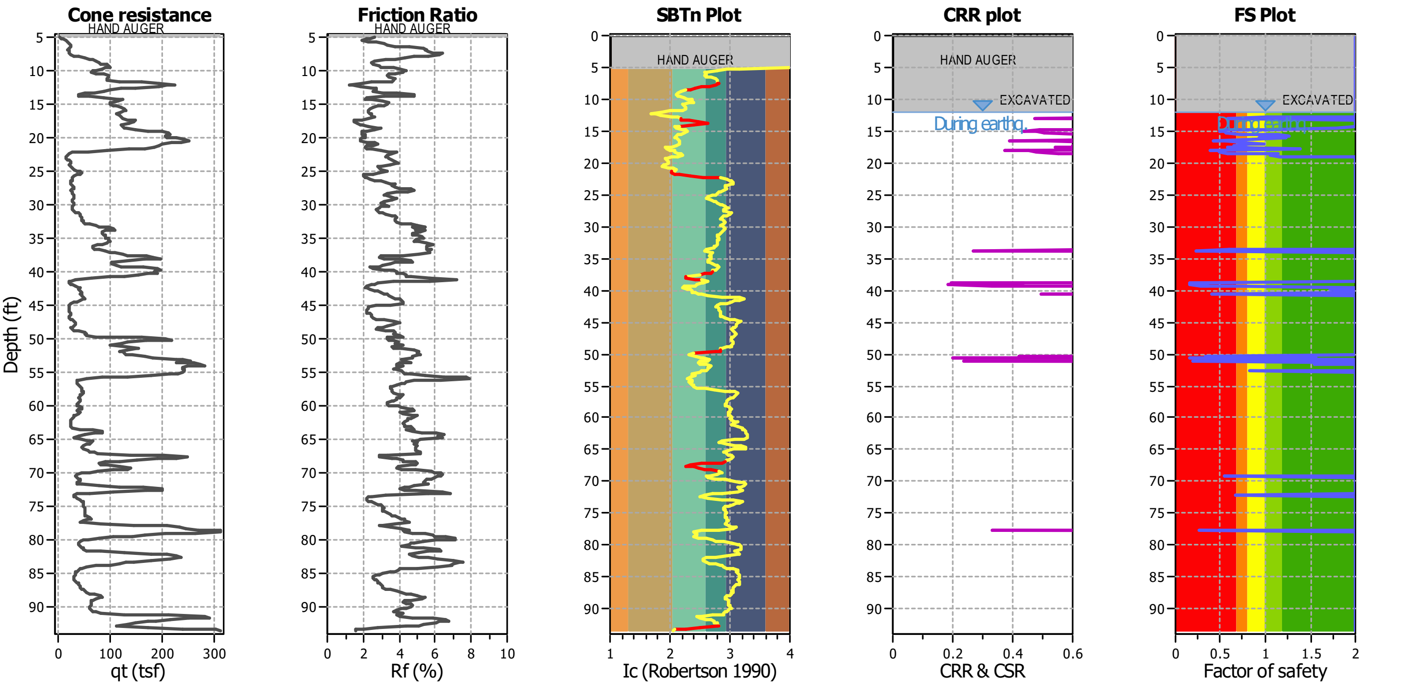
LIQUEFACTION ANALYSIS REPORT

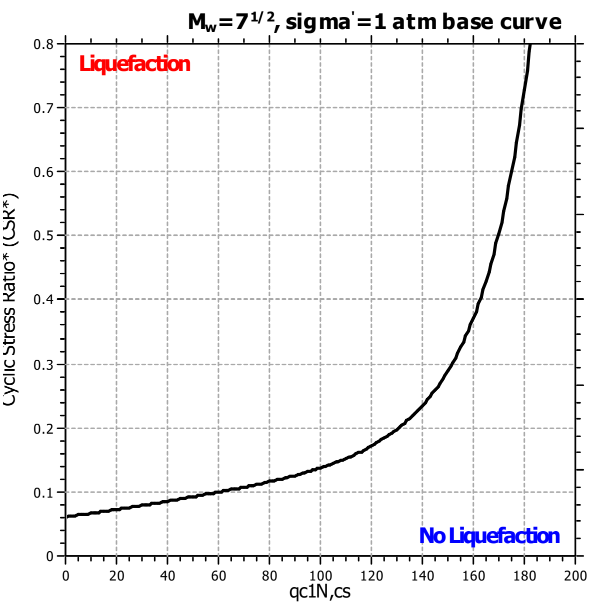
Project title : 1114-10A - Berkeley Plaza **Location :**

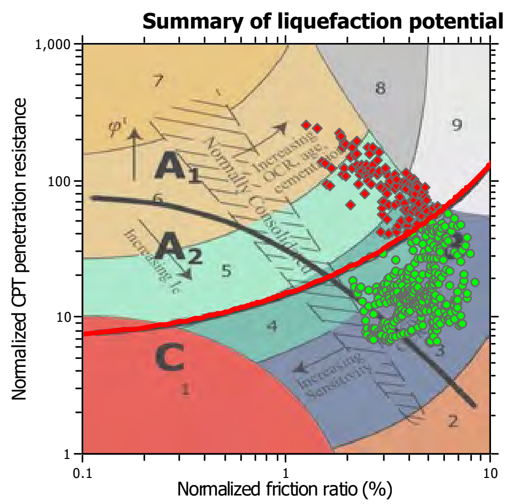
CPT file : CPT-5

Input parameters and analysis data

Analysis method:	B&I (2014)	G.W.T. (in-situ):	35.00 ft	Excavation:	Yes	Clay like behavior applied:	Sands only
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	12.00 ft	Excavation depth:	12.00 ft	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Footing load:	1.00 tsf	Limit depth:	N/A
Earthquake magnitude M_w:	7.33	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	1.01	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

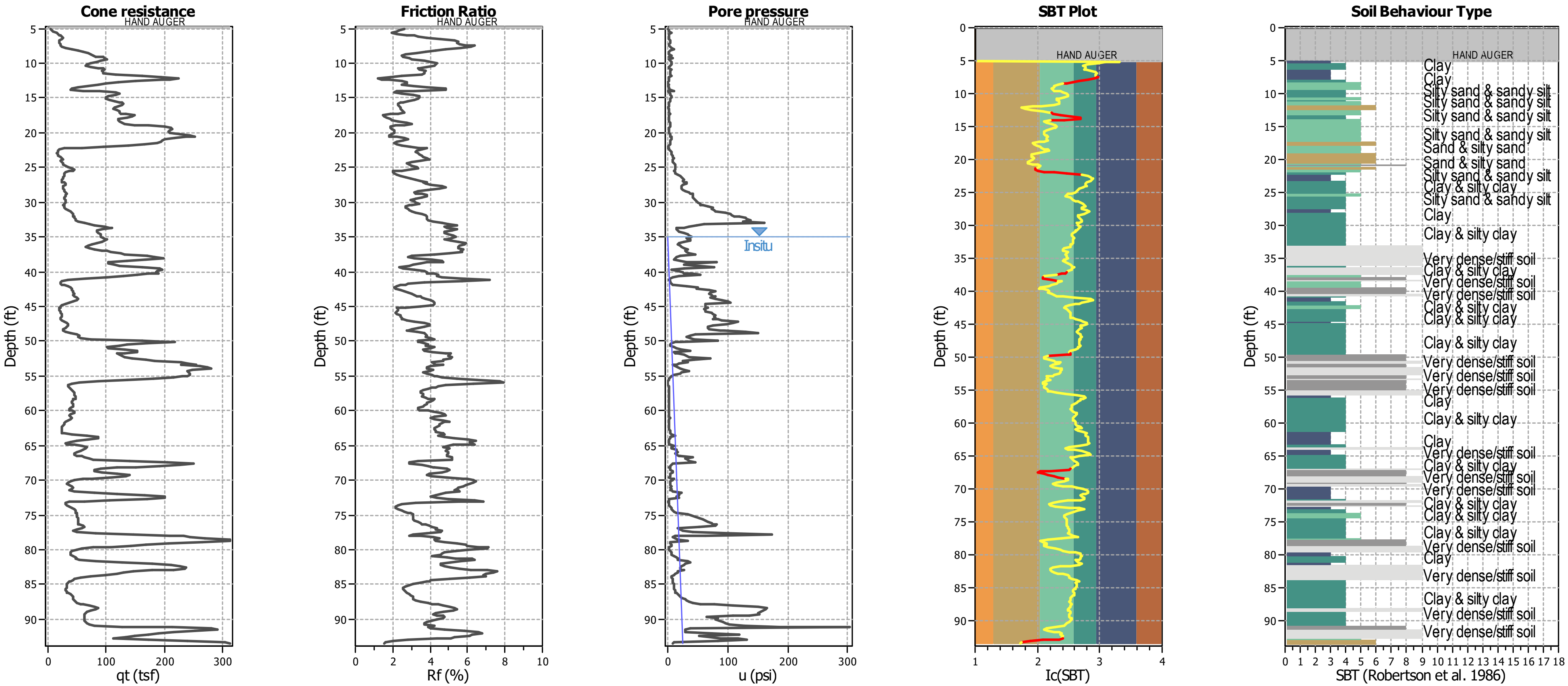






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and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

CPT basic interpretation plots



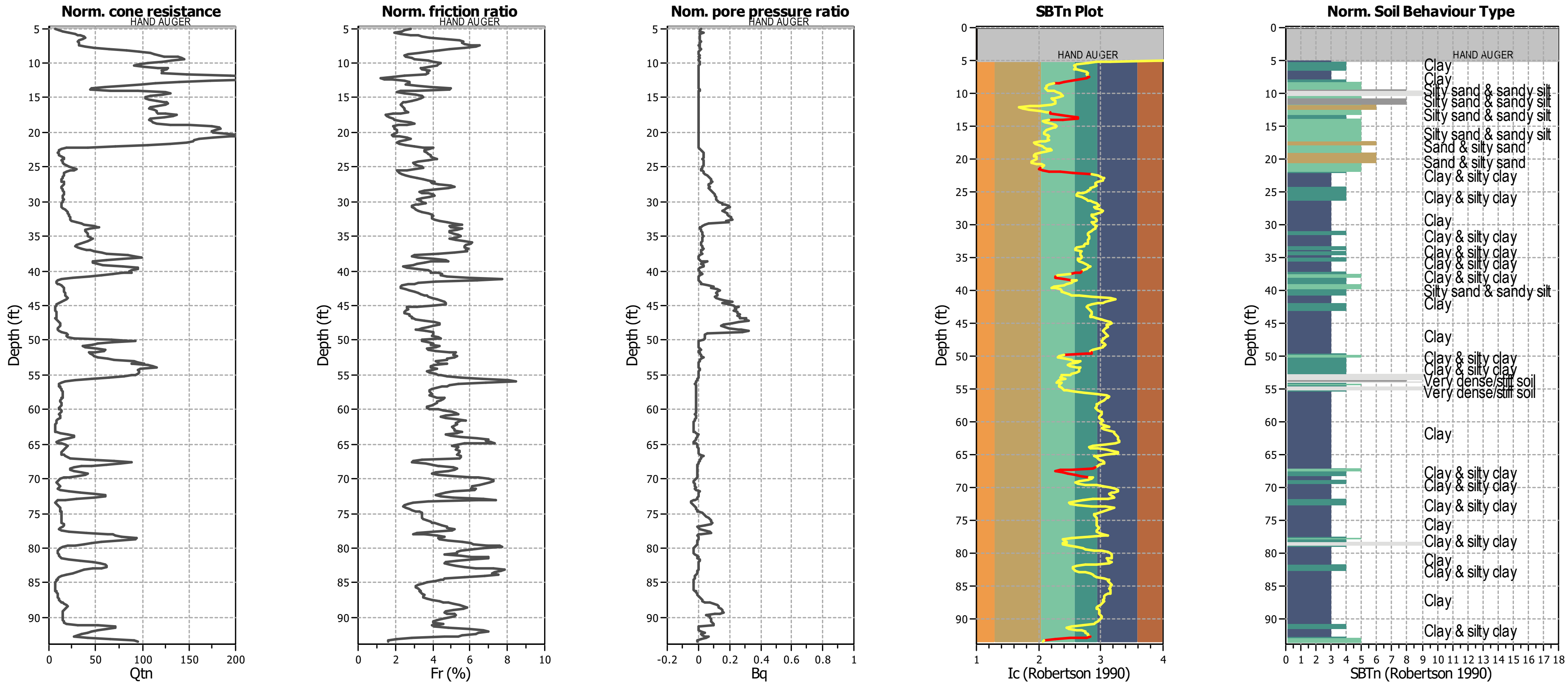
Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	12.00 ft	Footing load:	1.00 tsf
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.33	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	1.01	Excavation:	Yes	Limit depth applied:	No
Depth to water table (insitu):	35.00 ft	Excavation depth:	12.00 ft	Limit depth:	N/A

SBT legend

- 1. Sensitive fine grained
- 2. Organic material
- 3. Clay to silty clay
- 4. Clayey silt to silty
- 5. Silty sand to sandy silt
- 6. Clean sand to silty sand
- 7. Gravely sand to sand
- 8. Very stiff sand to
- 9. Very stiff fine grained

CPT basic interpretation plots (normalized)



Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	12.00 ft	Footing load:	1.00 tsf
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	Yes
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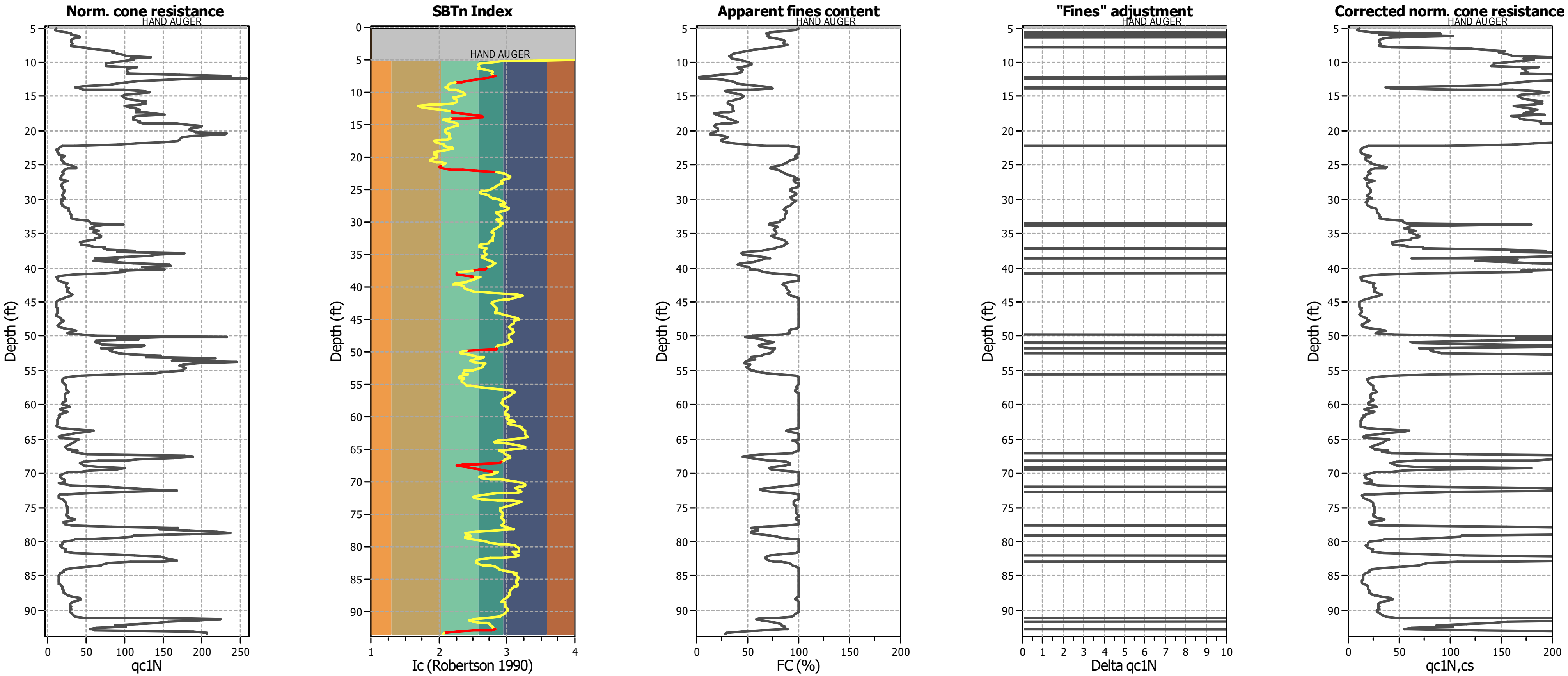
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

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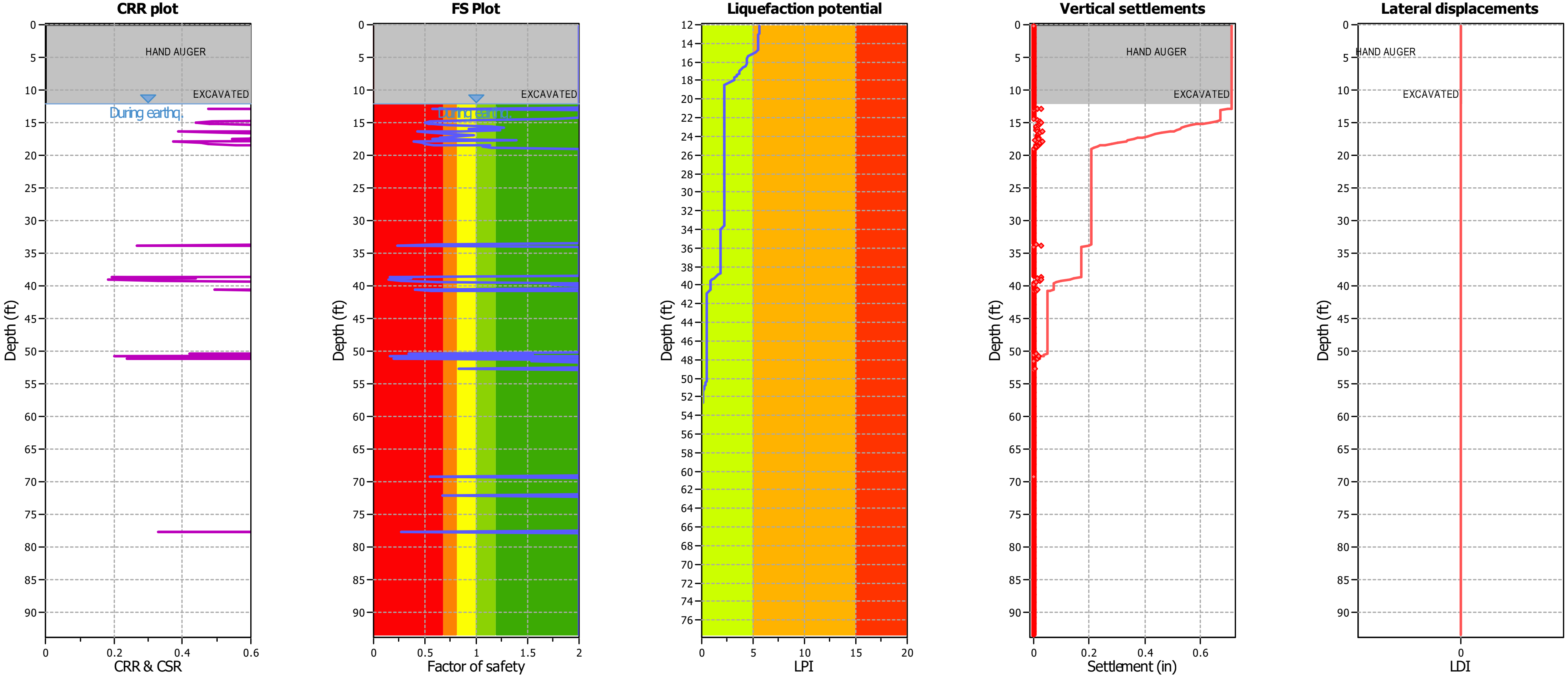
Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	12.00 ft	Footing load:	1.00 tsf
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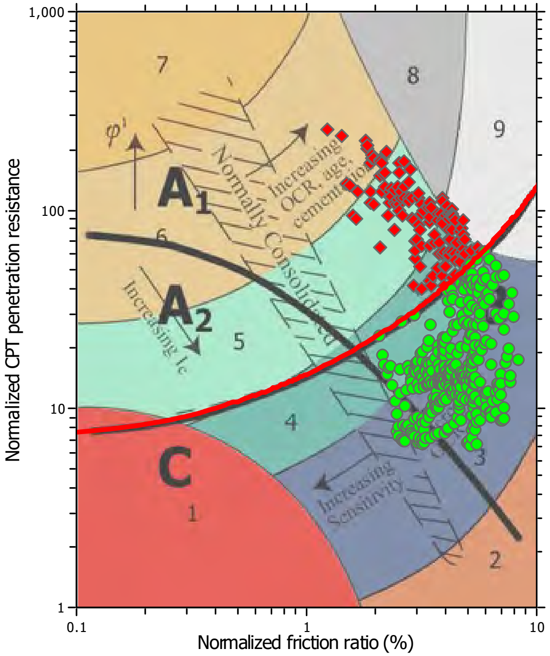
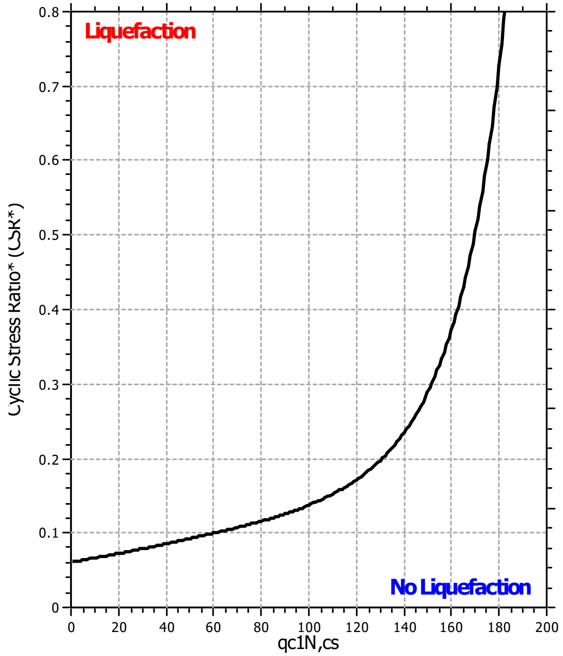
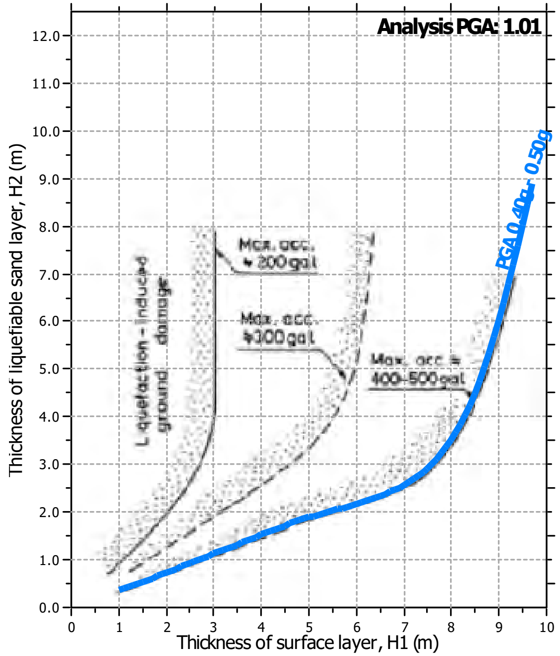
Liquefaction analysis summary plots







Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	12.00 ft	Footing load:	1.00 tsf
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	Yes
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Peak ground acceleration:	1.01	Excavation:	Yes	Limit depth applied:	No
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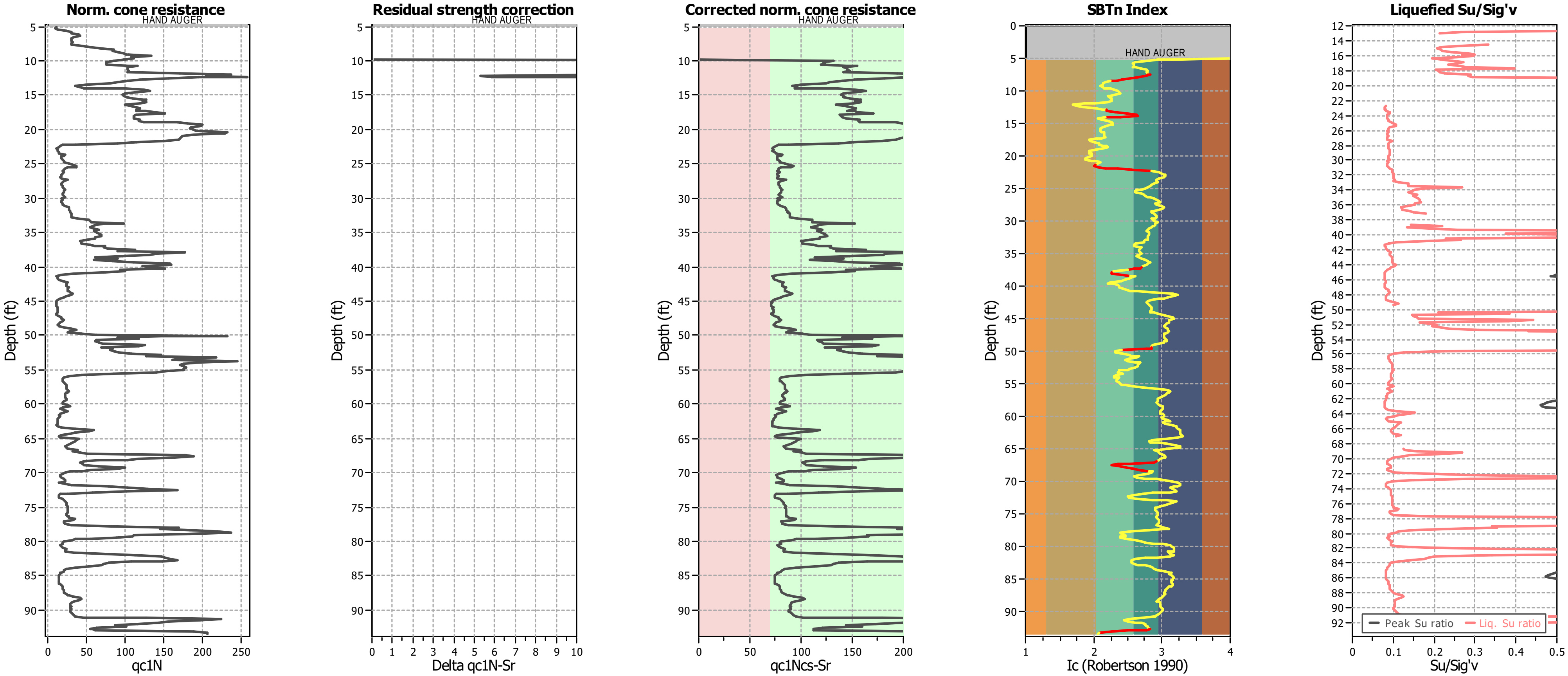

Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	12.00 ft	Footing load:	1.00 tsf
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	Yes
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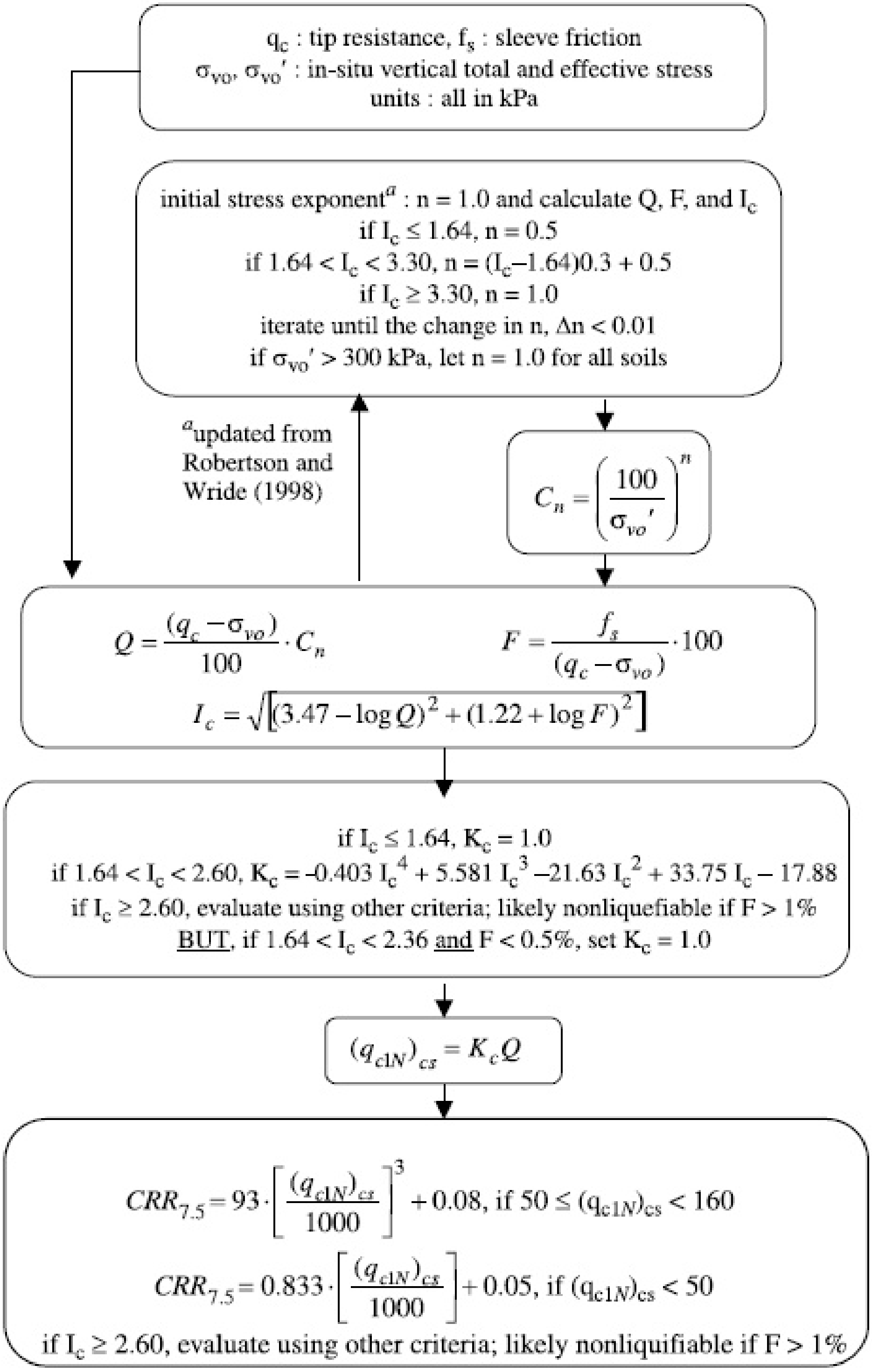
Earthquake magnitude M_w:	7.33	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	1.01	Excavation:	Yes	Limit depth applied:	No
Depth to water table (insitu):	35.00 ft	Excavation depth:	12.00 ft	Limit depth:	N/A

Procedure for the evaluation of soil liquefaction resistance, NCEER (1998)

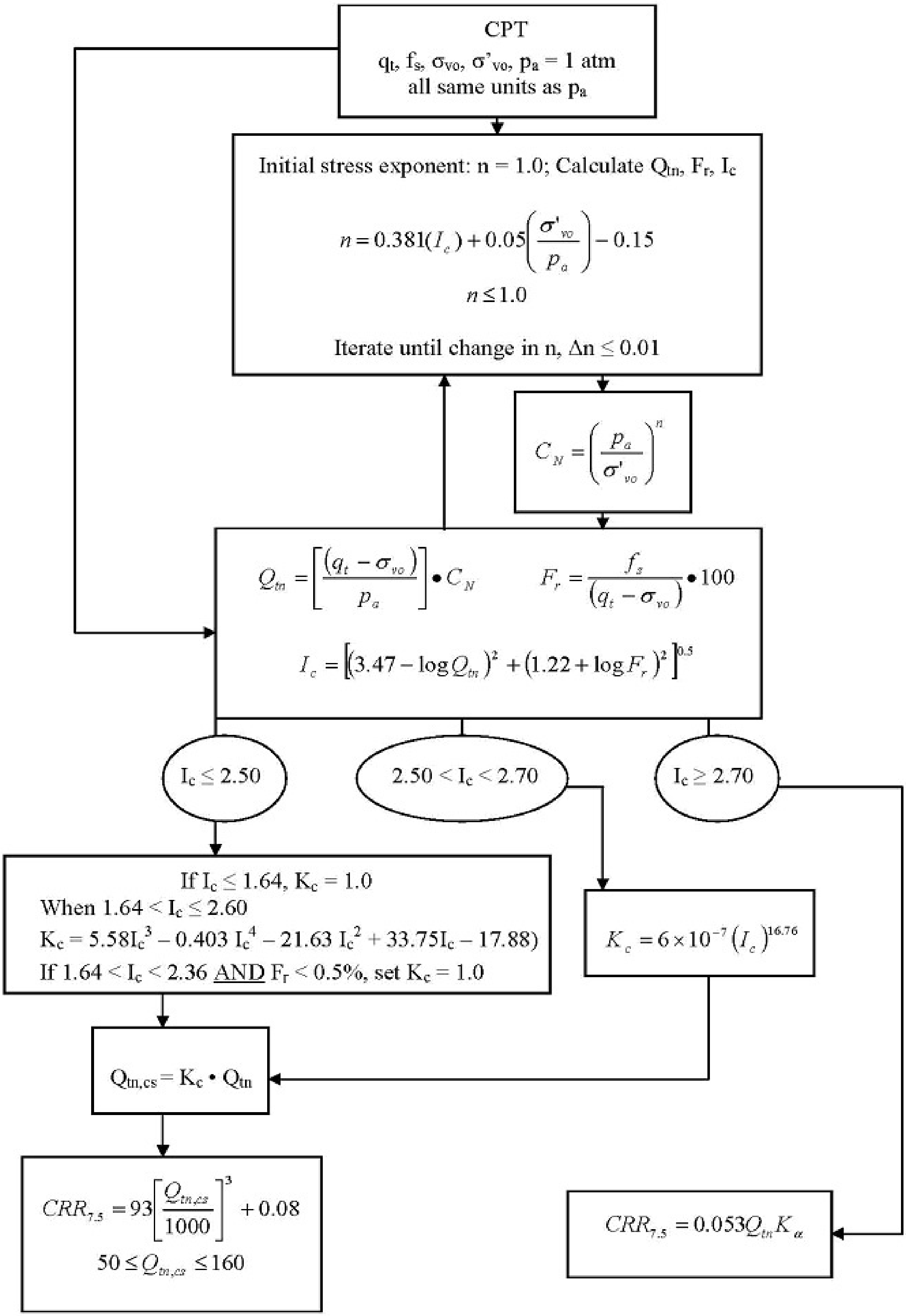
Calculation of soil resistance against liquefaction is performed according to the Robertson & Wride (1998) procedure. The procedure used in the software, slightly differs from the one originally published in NCEER-97-0022 (Proceedings of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils). The revised procedure is presented below in the form of a flowchart[1]:



[1] "Estimating liquefaction-induced ground settlements from CPT for level ground", G. Zhang, P.K. Robertson, and R.W.I. Brachman

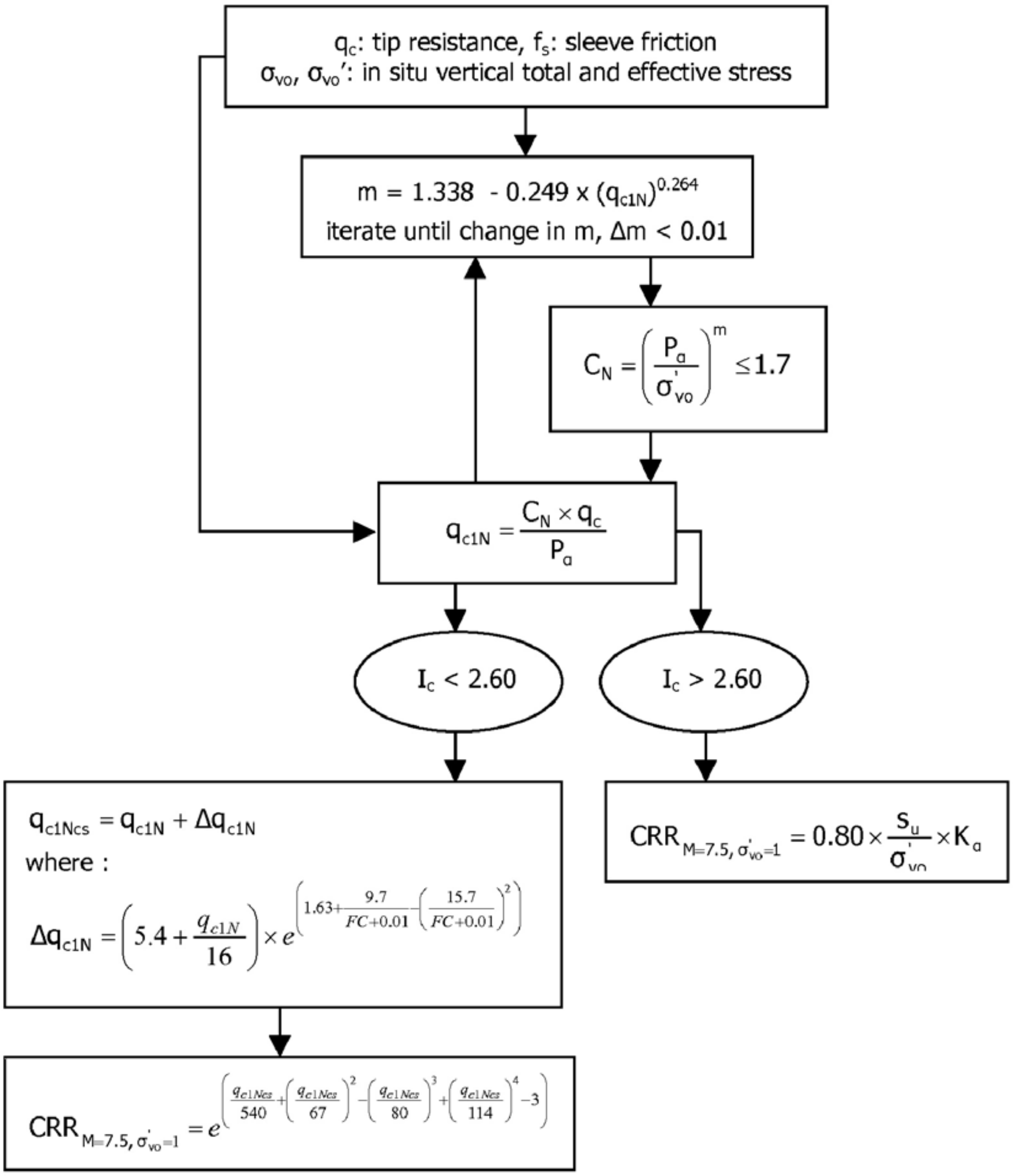
Procedure for the evaluation of soil liquefaction resistance (all soils), Robertson (2010)

Calculation of soil resistance against liquefaction is performed according to the Robertson & Wride (1998) procedure. This procedure used in the software, slightly differs from the one originally published in NCEER-97-0022 (Proceedings of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils). The revised procedure is presented below in the form of a flowchart[1]:



[1] P.K. Robertson, 2009. "Performance based earthquake design using the CPT", Keynote Lecture, International Conference on Performance-based Design in Earthquake Geotechnical Engineering – from case history to practice, IS-Tokyo, June 2009

Procedure for the evaluation of soil liquefaction resistance, Idriss & Boulanger (2008)



Procedure for the evaluation of soil liquefaction resistance (sandy soils), Moss et al. (2006)

CPT

q_t, f_s, I_c

$I_c < I_c$ cut-off

Initial estimate using raw tip measurements, friction ratio. Calculate $q_{t,1}$. Repeat until an acceptable convergence tolerance is achieved.

$$c = f_1 \cdot \left(\frac{R_f}{f_3}\right)^{f_2}$$

$$C_q = \left(\frac{P_a}{\sigma'_v}\right)^{c}$$

$$q_{t,1} = C_q \cdot q_t$$

$$CRR = \exp\left[\frac{q_{t,1}^{1.045} + q_{t,1}\cdot(0.110\cdot R_f) + (0.001\cdot R_f) + c\cdot(1+0.850\cdot R_f) - 0.848\cdot\ln(M_w) - 0.002\cdot\ln(\sigma'_v) - 20.923 + 1.632\cdot\Phi^{-1}(P_L)}{7.177}\right]$$

Procedure for the evaluation of soil liquefaction resistance, Boulanger & Idriss(2014)

$$FS_{liq} = \frac{CRR_{M=7.5,\sigma_v'=1atm}}{CSR_{M=7.5,\sigma_v'=1atm}}$$

$$CSR_{M=7.5,\sigma_v'=1atm} = 0.65 \frac{\sigma_v}{\sigma_v'} \frac{a_{\max}}{g} r_d \frac{1}{MSF} \frac{1}{K_\sigma}$$

$$r_d = \exp\left[\alpha(z) + \beta(z) \cdot M\right]$$

$$\alpha(z) = -1.012 - 1.126 \sin\left(\frac{z}{11.73} + 5.133\right)$$

$$\beta(z) = 0.106 + 0.118 \sin\left(\frac{z}{11.28} + 5.142\right)$$

$$K_\sigma = 1 - C_\sigma \ln\left(\frac{\sigma_v'}{P_a}\right) \le 1.1$$

$$C_\sigma = \frac{1}{37.3 - 8.27\left(q_{c1Ncs}\right)^{0.264}} \le 0.3$$

$$MSF = 1 + \left(MSF_{max} - 1\right)\left(8.64 \exp\left(\frac{-M}{4}\right) - 1.325\right)$$

$$MSF_{max} = 1.09 + \left(\frac{q_{c1Ncs}}{180}\right)^3 \le 2.2$$

σ_v' *and* σ_v *at start of earthquake shaking*

$$CRR_{M=7.5,\sigma_v'=1atm} = \exp\left(\frac{q_{c1Ncs}}{113} + \left(\frac{q_{c1Ncs}}{1000}\right)^2 - \left(\frac{q_{c1Ncs}}{140}\right)^3 + \left(\frac{q_{c1Ncs}}{137}\right)^4 - 2.80\right)$$

$$q_{c1Ncs} = q_{c1N} + \Delta q_{c1N}$$

$$\Delta q_{c1N} = \left(11.9 + \frac{q_{c1N}}{14.6}\right) \exp\left(1.63 - \frac{9.7}{FC+2} - \left(\frac{15.7}{FC+2}\right)^2\right)$$

$$q_{c1N} = C_{N} \frac{q_c}{P_a}$$

$$C_{N} = \left(\frac{P_a}{\sigma_v'}\right)^m \le 1.7$$

$$m = 1.338 - 0.249\left(q_{c1Ncs}\right)^{0.264} \quad with \quad 0.264 \le m \le 0.782$$

$$FC = 80\left(I_C + C_{FC}\right) - 137 \quad with \quad 0\% \le FC \le 100\%$$

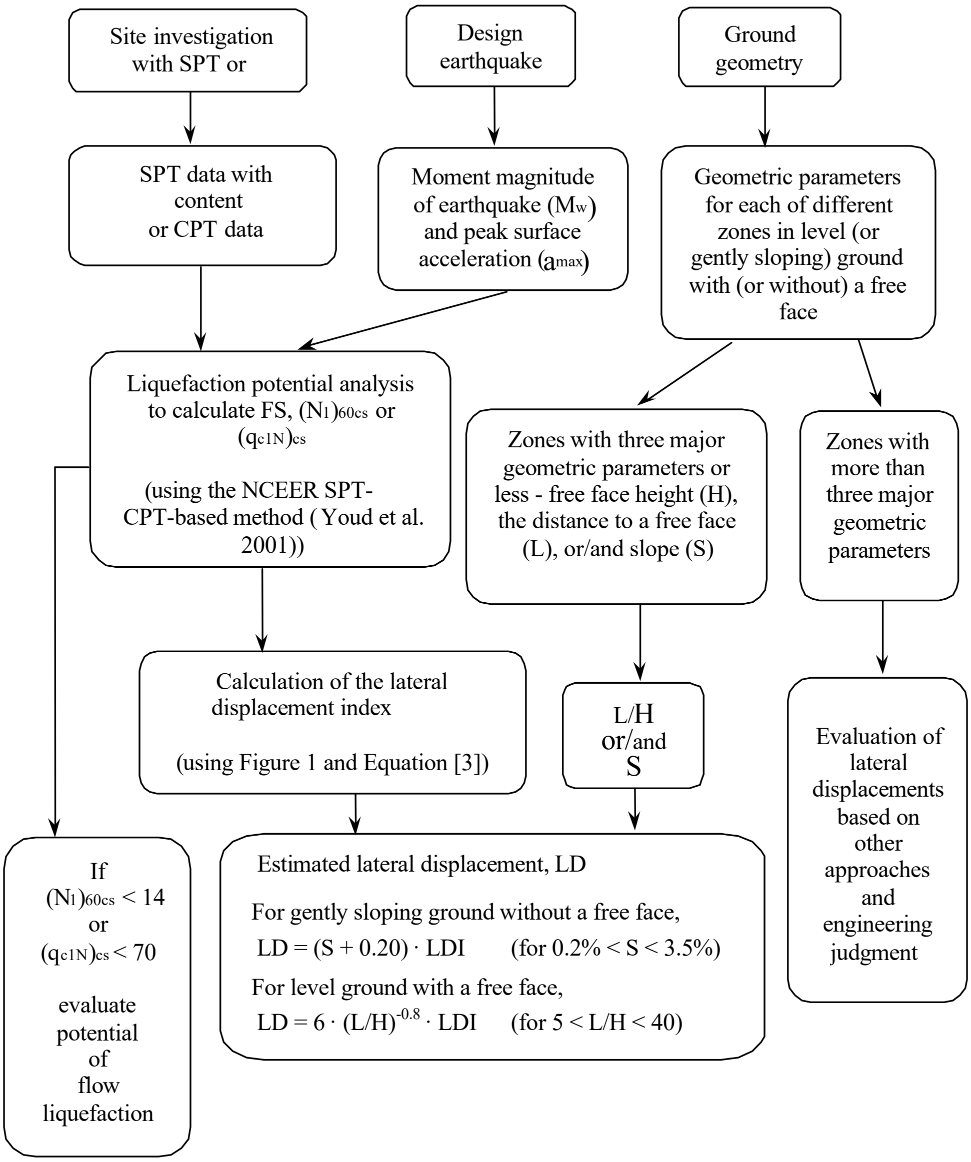
$$I_c = \left[\left(3.47 - \log(Q)\right)^2 + \left(1.22 + \log(F)\right)^2\right]^{0.5}$$

$$Q = \left(\frac{q_c - \sigma_{vc}}{P_a}\right)\left(\frac{P_a}{\sigma_{vc}'}\right)^n \; with\; 0.5 \le n \le 1.0 \; per\; Robertson\;\&\;Wride\,(1998)$$

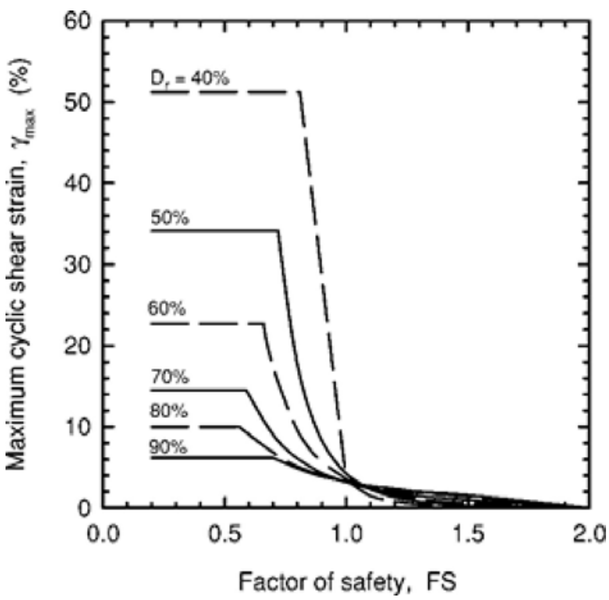
$$F = \left(\frac{f_s}{q_c - \sigma_{vc}}\right) \cdot 100\%$$

σ_v' *at time of CPT sounding*

Procedure for the evaluation of liquefaction-induced lateral spreading displacements



[1] Flow chart illustrating major steps in estimating liquefaction-induced lateral spreading displacements using the proposed approach



[1] **Figure 1**

$$LDI = \int_0^{Z_{max}} \gamma_{max} \, dz$$

[1] **Equation [3]**

[1] "Estimating liquefaction-induced ground settlements from CPT for level ground", G. Zhang, P.K. Robertson, and R.W.I. Brachman

Procedure for the estimation of seismic induced settlements in dry sands

Average shear stress, τ_{av}

$$\tau_{av} = CSR^{*} \cdot \sigma_{v0}' = 0.65 \cdot \frac{a_{max}}{g} \cdot \sigma_{v0} \cdot \tau_a$$

Estimate small shear strain modulus, G_0

$$G_0 = 0.0188 \cdot \left[10^{(0.55 I_c - 1.68)}\right] \cdot (q_t - \sigma_v)$$

Estimate shear strain amplitude, γ (based on Pradel (1998))

$$\gamma = \left[\frac{1 + \alpha \cdot e^{bR}}{1 + \alpha}\right] \cdot R \cdot 100\ (\%)$$

$$R = \frac{\tau_{av}}{G_0} \text{ (Note } \tau_{av} \text{ and } G_0 \text{ same units)}$$

$$\alpha = 0.0389 \cdot \left(\frac{\sigma_v}{p_a}\right) + 0.124$$

$$b = 6400 \cdot \left(\frac{\sigma_v}{p_a}\right)$$

Estimate volumetric strain in 15 cycles

$$\varepsilon_{vol(15)} = \gamma \cdot \left[\frac{(N_1)_{60,cs}}{20}\right]^{-1.20}$$

$$(N_1)_{60,cs} = \frac{Q_{tn,cs}}{8.5 \cdot \left[1 - \frac{I_c}{4.6}\right]}$$

Volumetric strain in design earthquake

$$\Sigma_{vol} = \varepsilon_{vol(15)} \cdot \left[\frac{N_c}{15}\right]^{0.45}$$

$$N_c = (M - 4)^{2.17}$$

Seismic settlement, s

$$s = 2 \cdot \int_0^{GWT} \Sigma_{vol} \cdot dz$$

Robertson, P.K. and Lisheng, S., 2010, "Estimation of seismic compression in dry soils using the CPT" FIFTH INTERNATIONAL CONFERENCE ON RECENT ADVANCES IN GEOTECHNICAL EARTHQUAKE ENGINEERING AND SOIL DYNAMICS, Symposium in honor of professor I. M. Idriss, San Diego, CA

Liquefaction Potential Index (LPI) calculation procedure

Calculation of the Liquefaction Potential Index (LPI) is used to interpret the liquefaction assessment calculations in terms of severity over depth. The calculation procedure is based on the methology developed by Iwasaki (1982) and is adopted by AFPS.

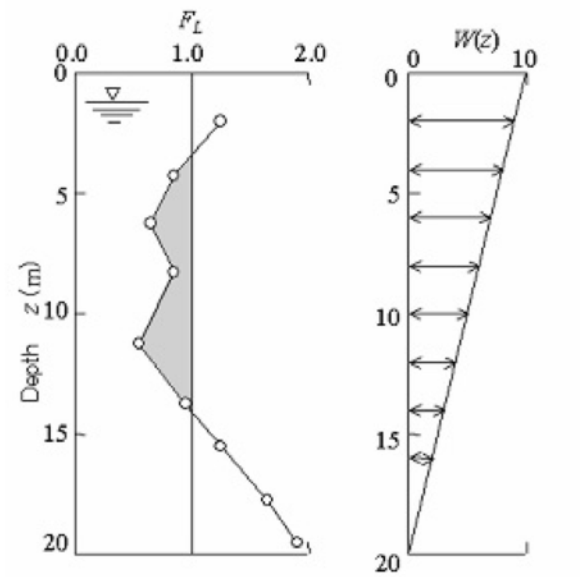
To estimate the severity of liquefaction extent at a given site, LPI is calculated based on the following equation:

$$\textbf{LPI} = \int_0^{20} (10 - 0{,}5_z) \times F_L \times d_z$$

where:
F_L = 1 - F.S. when F.S. less than 1
F_L = 0 when F.S. greater than 1
z depth of measurment in meters

Values of LPI range between zero (0) when no test point is characterized as liquefiable and 100 when all points are characterized as susceptible to liquefaction. Iwasaki proposed four (4) discrete categories based on the numeric value of LPI:

- LPI = 0 : Liquefaction risk is very low
- 0 < LPI <= 5 : Liquefaction risk is low
- 5 < LPI <= 15 : Liquefaction risk is high
- LPI > 15 : Liquefaction risk is very high



Graphical presentation of the LPI calculation procedure

Shear-Induced Building Settlement (Ds) calculation procedure

The shear-induced building settlement (Ds) due to liquefaction below the building can be estimated using the relationship developed by Bray and Macedo (2017):

$$Ln(Ds) = c1 + c2 * LBS + 0.58 * Ln\left(Tanh\left(\frac{HL}{6}\right)\right) +$$
$$4.59 * Ln(Q) - 0.42 * Ln(Q)^2 - 0.02 * B +$$
$$0.84 * Ln(CAVdp) + 0.41 * Ln(Sa1) + \varepsilon$$

where Ds is in the units of mm, c1= -8.35 and c2= 0.072 for LBS ≤ 16, and c1= -7.48 and c2= 0.014 otherwise. Q is the building contact pressure in units of kPa, HL is the cumulative thickness of the liquefiable layers in the units of m, B is the building width in the units of m, CAVdp is a standardized version of the cumulative absolute velocity in the units of g-s, Sa1 is 5%-damped pseudo-acceleration response spectral value at a period of 1 s in the units of g, and ε is a normal random variable with zero mean and 0.50 standard deviation in Ln units. The liquefaction-induced building settlement index (LBS) is:

$$LBS = \sum W * \frac{\varepsilon_{shear}}{z} dz$$

where z (m) is the depth measured from the ground surface > 0, W is a foundation-weighting factor wherein W = 0.0 for z less than Df, which is the embedment depth of the foundation, and W = 1.0 otherwise. The shear strain parameter (ε_shear) is the liquefaction-induced free-field shear strain (in %) estimated using Zhang et al. (2004). It is calculated based on the estimated Dr of the liquefied soil layer and the calculated safety factor against liquefaction triggering (FSL).

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END OF REPORT

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Date:	September 8, 2022
To:	Sharon Gong, Senior Planner
Project:	2065 Kittredge Street Mixed Use Project EIR Addendum
From:	Abe Leider, AICP CEP, Principal Jesse Voremberg, MS, Environmental Planner
Re:	Supplemental Analysis to the EIR Addendum – Minor Project Revisions

The purpose of this memorandum is to provide supplemental analysis to the Addendum to the 2211 Harold Way Mixed-Use Project Final Environmental Impact Report (EIR), which was prepared in July 2022 and analyzes impacts of the proposed 2065 Kittredge Street Mixed Use Project in relation to the analysis in the 2211 Harold Way Mixed-Use Project EIR. The supplemental analysis is necessary to determine whether revisions to the proposed project that were submitted in August 2022 substantially affect the analysis or conclusions of the Addendum.

Summary of Proposed August 2022 Project Revisions

Changes to the proposed project as analyzed in the Addendum include the following items:

- Enlargement of the proposed first floor commercial area from 4,181 square feet to 4,993 square feet.
- Enlargement of the proposed underground parking area from 20,881 square feet to 20,959 square feet.
- Reduction of proposed one-bedroom units from 31 units to 30 units, lowering the overall proposed units from 188 units to 187 units and residential square footage from 149,678 to 149,398.

- Reduction in bicycle parking from 129 spaces to 125 spaces.
- Minor adjustments to simplify the façade of the building, including altered window proportions, continuation of the building base, and added storefront to the commercial space.

Comparison of August 2022 Project Revisions to the Addendum Analysis

The issue areas that were analyzed in the Addendum are discussed below with respect to the proposed project changes. No changes have occurred in respect to environmental conditions; as such, section 4.1 of the Addendum, *Changes in Environmental Conditions*, is not discussed in this memorandum.

Air Quality

The addition of 812 square feet of commercial space[1] would marginally increase construction and operational air quality emissions. This increase would be partially offset by the decrease of residential units from 188 units to 187 units. The elimination of four bicycle parking spaces would have a negligible impact on air quality emissions, as this would not measurably induce more vehicle usage. As shown in Table 3 of the Addendum, air quality net emissions for both construction and operation were negative (reduction in emissions as compared to the existing use at the time of preparation of the original EIR) and therefore significantly below Bay Area Air Quality Management District thresholds. The marginal increase in commercial space would have a negligible impact on air quality emissions. Therefore, given the low estimated emissions of the project as analyzed in the Addendum, the proposed changes would increase air quality impacts and the analysis in the Addendum stands and requires no revisions. Impacts remain less than significant, and the Addendum's conclusion that the project would not have new or substantially increased impacts compared to the project studied in the original EIR remains valid.

Cultural Resources

The proposed project changes include minor adjustments to simplify the façade of the proposed building, including minor alterations to proposed storefront entries on Harold Way and Allston Way and the removal of a bay of windows along the proposed new building's hidden, east elevation to accommodate minor floorplan updates. Such simplifications would continue to be generally consistent with Downtown Berkley Design Guidelines and allow the building to further be compatible with existing conditions, avoids large blank wall surfaces, and continues to reinforce the harmony of the proposed new building and the Shattuck Hotel Given the minor nature of the alterations to the proposed building façade, the proposed changes would not result in new or increased cultural resources impacts and the analysis in the Addendum would not change. Impacts related to demolition and alteration of historic buildings would remain significant and unavoidable with mitigation, the same as discussed in the original EIR and the Addendum, and other impacts would remain less than significant with mitigation. Overall, the Addendum's conclusion that the project would not have new or substantially increased impacts compared to the project studied in the original EIR remains valid.

Greenhouse Gas Emissions

Similar to the impact discussion under *Air Quality*, the marginal modifications to the commercial space, parking, residential units, and bicycle parking would not significantly change the magnitude of

[1] While parking square footage increased by 78 square feet, air quality emissions from parking are driven by the quantity of parking spaces. No changes to the number of parking spaces are proposed. Therefore, the slight increase in parking area would not impact the air quality analysis.

greenhouse has emissions. As discussed in Section 4.4 of the Addendum, *Greenhouse Gas Emissions*, the original project would already be below Bay Area Air Quality Management District's emissions thresholds, and the proposed project modifications would not cause the project to exceed the magnitude of the original project. Given the low estimated project emissions described in the Addendum, the proposed changes would not increase greenhouse gas emissions impacts and analysis in the Addendum stands. Impacts remain less than significant. The Addendum's conclusion that the project would not have new or substantially increased impacts compared to the project studied in the original EIR remains valid

Noise

As discussed below under *Transportation*, the proposed changes would result in a negligible change to vehicle trips compared to the modified project as studied in the Addendum. As discussed in Section 4.5 of the Addendum, *Noise*, traffic volumes would not increase by 40 percent on area roadways. Construction techniques would not change. Therefore, given the negligible changes to traffic volumes, the proposed changes would not increase noise impacts and analysis in the Addendum stands. Impacts during construction would remain significant and unavoidable with mitigation and operational impacts would remain less than significant. Overall, the Addendum's conclusion that the project would not have new or substantially increased impacts compared to the project studied in the original EIR remains valid.

Transportation

The conclusions of the Traffic Impact Report, as discussed in Section 4.6 of the Addendum, *Transportation,* would not be affected by the proposed changes. The proposed increase in commercial space is marginal and would be partially offset by the decrease in residential units. Furthermore, the quantity of parking spaces remains unchanged, and traffic volumes are influenced by parking spaces, not square footage of parking areas. Therefore, given the minor density alterations, the proposed changes would not increase transportation impacts and analysis in the Addendum stands. Impacts remain less than significant. Overall, the Addendum's conclusion that the project would not have new or substantially increased impacts compared to the project studied in the original EIR remains valid.

Utilities and Service Systems

The proposed changes would marginally impact water demand, wastewater generation, gas demand, electricity demand, and solid waste generation. The increase in commercial space and decrease in residential units would slightly offset one another, and analysis in the Section 4.7 of the Addendum, *Utilities and Service Systems*, would remain generally accurate. Given the minor shift in proposed square footage of uses, the proposed changes would not increase impacts related to utilities and service systems and changes to the Addendum are not warranted. Impacts remain less than significant. Overall, the Addendum's conclusion that the project would not have new or substantially increased impacts compared to the project studied in the original EIR remains valid.

Other Impacts

Section 4.8 of the Addendum, *Other Impacts*, briefly analyzes issue areas including aesthetics, agriculture and forestry, biological resources, energy, geology and soils, hazards and hazardous materials, hydrology and water quality, land use and planning, mineral resources, public services, recreation, tribal cultural resources, and wildfire. Considering the minor nature of the proposed project changes and the initial assessment of the aforementioned issue areas discussed under Section 4.8 of the

Addendum, *Other Impacts*, as less than significant in the original EIR for the project, the proposed changes to the project would not alter the analysis in the Addendum. Therefore, the proposed changes would not substantially increase other impacts, and changes to the Addendum are not warranted. Impacts remain less than significant.

Conclusion

The minor increase to commercial space and parking area, the slight reduction in residential units and bicycle parking, coupled with the minor changes to the building façade would not result in new or substantially increased impacts compared to the project studied in the original EIR. The proposed changes to the project do not warrant changes to the Addendum, and the impact discussions and comparisons with the original EIR remain the same as analyzed in the Addendum.