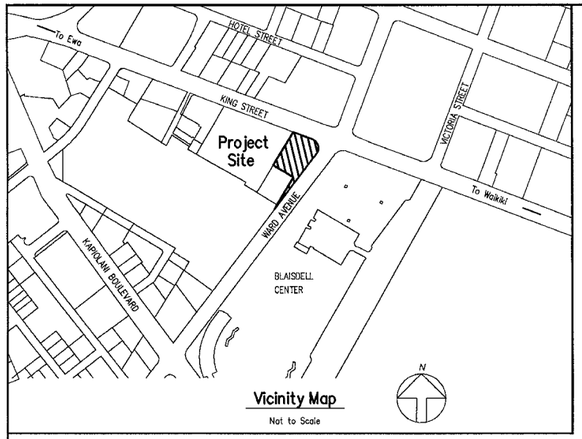
APPENDICES

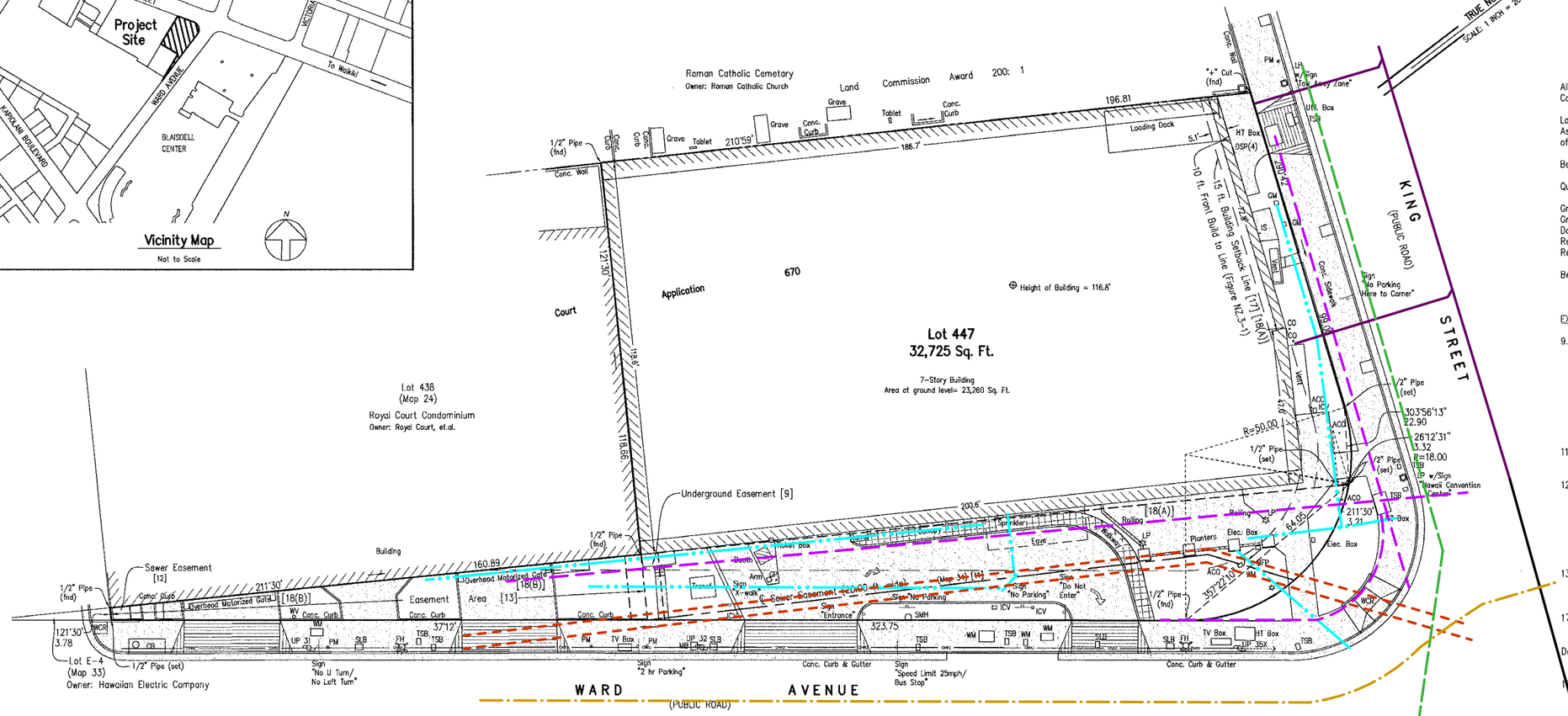
APPENDIX A

ALTA Survey

ALTA/NSPS Land Title Survey
Lot 447 (Map 35)
of Land Court Application 670
At Kewalo, Honolulu, Oahu, Hawaii
Tax Map Key: (1) 2-1-44: 05



Vicinity Map
Not to Scale



Notes:
Azimuths are referred to Government Survey Triangulation Station "PUNCHBOWL" ⚠.

Survey is based on Preliminary Report, Title No. T01600551-TC, prepared by Fidelity National Title Insurance Company, dated October 28, 2020.

This plat does not delineate any plants or vegetation, sub-surface features, footings and utilities.

Owner: DEG III LLC, a Delaware Limited Liability Company

Property Address: 930 Ward Avenue, Honolulu, Oahu, Hawaii 96814

Flood Zone: X, Flood Insurance Rate Map, City and County of Honolulu, Community Panel No. 15000103626, dated January 19, 2011

Gross Land Area: 32,725 Sq. Ft.

Zoning Information:

Hawaii Administration Rules, Title 15, Department of Business and Economic Development, Subtitle 4, Hawaii Community Development Authority, Chapter 217, Mauka Area Rules

Zone: Thomas Square (TS)

C. Building Placement

Front Build to Line	7' - 15'
Frontage Occupancy at Build to Line	60% min.
Setback Side	0'
Setback Rear	0'

D. Building Form

Maximum Height	400'
Street Front Element Height Range	30' - 65'
Max Density (FAR)	3.5

No zoning report provided.

The subject lot is bounded by Ward Avenue and King Street, both are public right-of-ways.

Parking Stalls:

Level		Regular	Compact	Handicapped	Tandem	Electric Vehicle
Basement		38	16	2	4	1
1st		2	4			
2nd	A	17	9			
	B	30	5	2		
3rd	A	17	9			
	B	29	5	2		
4th		12	7			
Total		145	55	6	4	1

There is no evidence of recent earth moving work, building construction, or building additions observed in the process of conducting the fieldwork.

There are no proposed changes in street right of way lines or evidence of recent street or sidewalk construction or repairs observed in the process of conducting the fieldwork

Based on the U.S. Fish and Wildlife, National Wetlands Inventory, there is no data available and there were no markers observed in the process of conducting the fieldwork.

Abbreviations:

ACO	AC Outlet
BFP	Backflow Preventer
CB	Catch Basin
CO	Cleanout
DSP	Dry Stand Pipe
FH	Fire Hydrant
GM	Gas Meter
GP	Guard Post
HT	Hawaiian Telcom
ICV	Irrigation Control Valve
IS	Irrigation Switch
JB	Junction Box
LP	Light Pole
MB	Mail Box
---- Data ----	Overhead Utility Line
PM	Parking Meter
SMH	Sewer Manhole
SLB	Street Light Box
TV	Television
TSB	Traffic Signal Box
UP	Utility Pole
WM	Water Meter
WV	Water Valve
WCR	Wheel Chair Ramp
[8]	Exception Number in Title Report

Proposed and Existing Site Utilites

- Abandoned Sewer Main
- Telephone
- Gas
- Electric
- Storm Water
- Sewer

GRAPHIC SCALE
20 0 10 20 40
1 INCH = 20 FEET

All of that certain parcel of land situate at Kaokaukukui, Kewalo and Kukuluaeo, Honolulu, City and County of Honolulu, State of Hawaii, described as follows:

Lot 447, area 32,725 square feet, more or less, as shown on Map 35, filed in the Office of the Assistant Registrar of the Land Court of the State of Hawaii with Land Court Application No. 670 of Victoria Ward;

Being all of the property conveyed by the following:

Quitclaim Deed

Grantor	:	Gold Stone Investment INC, a Delaware corporation
Grantee	:	DEG III, LLC, a Delaware Limited Liability Company, as Tenants in Severality
Dated	:	February 13, 2008
Recording Date	:	February 13, 2008
Recording No.	:	3711221.

Being all of the property described in and covered by Transfer Certificate of Title No. 895,107.

EXCEPTIONS

9. Grant

In favor of	:	Hawaiian Electric Company, INC., a Hawaii corporation, and Hawaiian Telephone Company, a Hawaii corporation
Dated	:	April 9, 1969 Recording Date: May 9, 1969
Recording No:		472656
Purpose	:	a perpetual non-exclusive right and easement for the transmission and distribution of electricity to be used for light and power and/or communications and control circuits

11. Sewer easement (20-feet wide), as shown on Map 34, as set forth by Land Court Order No. 41045, filed December 4, 1974.

12. Grant

In favor of	:	Annex Realty Corporation, a Delaware Corporation
Dated	:	May 29, 1974
Recording Date:		June 14, 1974
Recording No:		685341
Purpose	:	Sewer system

13. Right in the nature of an easement, in favor of the owners of Lot 438, their successors and assigns, to construct, maintain and repair driveways for vehicular and pedestrian ingress and egress, as set forth by Land Court Order No. 43154, filed October 30, 1975.

17. A 15-foot building setback line along South King Street and Ward Avenue, as shown on survey map prepared by James R. Thompson, Land Surveyor, with Walter P. Thompson, Inc., dated March 1, 1999, as disclosed by the document recorded February 13, 2008 as Document No. 3711221.

18. The following matters as shown on survey map prepared by James R. Thompson, Land Surveyor, with Walter P. Thompson, Inc., dated March 1, 1999, to-wit:

(A) Building and improvements cross onto setback area along King Street and Ward Avenue.

The above matter of the building and improvements crossing onto the setback area is permitted as a nonconforming feature pursuant to the Mauka Area Rules of the Kakaako Community Development District, Section 15-22-15, as amended, subject to the terms and provisions thereof.

(B) Automatic garage doors attached to building on Lot 438 encroach onto premises.

As disclosed by the document recorded February 13, 2008 as Document No. 3711221.

To: QUEEN LILIUOKALANI TRUST
FIDELITY NATIONAL TITLE & ESCROW OF HAWAII, INC.
DEG III, LLC, A DELAWARE LIMITED LIABILITY COMPANY

This is to certify that this map or plot and the survey on which it is based were made in accordance with the 2016 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys, jointly established and adopted by ALTA and NSPS, and includes Items 1, 2, 3, 4, 6(a), 6(b), 7(a), 7(c), 8, 9, 11, 13, 14, 16, 17, 18, 19 and 20 of Table A thereof. The fieldwork was completed on April 18, 2018 and again on December 3, 2020.

12/7/20
Date

This work was prepared by me or under my direct supervision

RYAN M. SUZUKI
LICENSED PROFESSIONAL LAND SURVEYOR
No. 10059
HAWAII, U.S.A.

4/30/22
Expiration Date

Ryan M. Suzuki
Licensed Professional Land Surveyor
Certificate Number 10059
Email: RyanS@RMTowill.com

RMTC Ref. Nos.: 1-21126-0-S; 1-23210-0-S; 1-23747-0-S
F.N.: 930 Ward ALTA 12-2020.Dwg
F.B. No.: 7970 & 8941

R. M. TOWILL CORPORATION
SINCE 1930

2024 North King Street, Suite 200
Honolulu, Hawaii 96819
Tel. No.: (808) 842-1133

APPENDIX B

City & County of Honolulu Surface Encroachment Agreement

DEPARTMENT OF PLANNING AND PERMITTING
CITYANDCOUNTYOFHONOLULU
650 SOUTH KING STREET HONOLULU, HAWAII 96813
PHONE: (808) 768-8000 FAX: (808) 768-6041
DPP WEB SITE: www.honoluludpp.org CITY WEB SITE: www.honolulu.gov

STATUS OF THE APPLICATION FOR AUTHORIZATION OF SURFACE ENCROACHMENT(S)

Application Number: **SEV2021-12-0080**
Application status: **Approved**
Date of action: **January 21, 2022**
Date of application: **December 8, 2021**
Address: **932 Ward Avenue**
Tax Map Key: **2-1-044: 055**
Applicant: **Sherman Wong**
Description: **Proposed irrigation system, 24-inch maximum height retaining wall, rock mulch, and various landscaping: ukiuki, coconut palm tree, kupukupu fern, and pili grass on the Ward Avenue and South King Street sidewalk area as shown on the submitted drawings.**

We hereby authorize the above surface encroachments subject to the following conditions:

Special Conditions:

1. The coconut palm tree, and various plants shall be kept well maintained and trimmed in a healthy condition, so as not to pose a potential hazard to, nor adversely impact, pedestrian and/or vehicular traffic. The maintenance and trimming shall allow clear views of City-posted traffic signs fronting the property, and keep the trees and plants free of all loose, dead, low-hanging branches/fronds, and nuts, with a minimum eight-foot height clearance over the existing passageway.
2. A trenching permit shall be obtained before commencing the excavation work to plant the coconut palm tree.
3. The sprinkler heads shall be the pop-up type or recessed flush with surrounding grades when not in use. Irrigation shall be done during non-peak hours. Spraying and overflowing onto the pedestrian and vehicular traffic areas shall be minimized.
4. The required building permit for the irrigation system shall be obtained from our department.
5. Any damages to the street and/or utilities caused by the landscaping and/or irrigation system shall be fully repaired to the City's satisfaction.
6. The rock mulch shall have a maximum diameter of one-inch and shall be maintained completely within the limits of the sidewalk area. Any displaced rock on the roadway or the concrete sidewalk shall be immediately removed.
7. The loose rock shall be level and even with all adjacent surfaces at all times.
8. The sidewalk area shall be maintained clean, accessible and safe at all times.

Standard Conditions:

1. The owner(s) shall remove the surface encroachment(s) at their expense if and when removal is requested by the City.
2. The owner(s) shall be responsible for the maintenance, repair, and any associated costs of the surface encroachments.
3. The owner(s) shall hold the City harmless against all liabilities, including injuries and deaths, arising from the surface encroachment(s).
4. The City shall not be liable for the replacement or restoration of the surface encroachment(s) if it is necessary for the City to destroy, remove, or alter the same in order to construct or reconstruct the sidewalk area or any utilities thereunder. The sidewalk area is defined as the area between the curb line or pavement of a roadway and the abutting property line, intended for pedestrian and utility use.
5. The owner(s) shall be responsible for the disclosure of this agreement to a succeeding owner or lessee (successor). Such disclosure shall be in the form of a supplement to this agreement, containing all provisions of this agreement and duly acknowledged and accepted by the successor, with a copy forwarded to the City.
6. Despite this authorization, if the surface encroachment(s) create problems and/or become an issue at a later time, removal may be necessary in the future.

The owner(s) must sign and return the original of this authorization, within thirty (30) days of the date of this action. Should this authorization not be returned in a timely manner, it may be revoked.

It is understood that this covers the above surface encroachment(s) only. The placement or construction of any additional surface encroachment(s) and/or the replacement or reconstruction of all existing surface encroachment(s) (structures) are not allowed.

It is also understood that this does not relieve the owner(s) from complying with all other applicable codes, rules, regulations, and/or permit procedures including, but not limited to, any building permit requirements.

A receipt for the $200 application filing fee is attached. Should you have any questions, please contact Lynel Rabago, of our Civil Engineering Branch, at 768-8297.

Dean Uchida
Director

Attachment

I have read this authorization and agree with and accept the conditions stated here in.

SIGNATURE OF OWNER	DATE 1/25/22	SIGNATURE OF OWNER	DATE
PRINT NAME SHERMAN WONG - LILIUOKALANI TRUST DIRECTOR DESIGN & CONSTRUCTION		PRINT NAME	
New Owner(s): (If Applicable)			
SIGNATURE OF OWNER	DATE	SIGNATURE OF OWNER	DATE
PRINT NAME		PRINT NAME	

APPENDIX C

Ala Moana-Kakaʻako Neighborhood Board No. 11
Community Action Committee Meeting Agenda
(October 7, 2021)

Ala Moana-Kakaako Neighborhood Board No. 11

COMMUNITY ACTION COMMITTEE MEETING AGENDA
THURSDAY, OCTOBER 7, 6:00 P.M. [VIRTUAL ONLY]

Video-Teleconference (Zoom):

https://us02web.zoom.us/j/81002633943?pwd=bk9NU0pFS2o4bGpaeDhYSEorR1UxUT09

Meeting ID: 810 0263 3943
Passcode (login via computer/mobile device): NB11
Passcode (for dial-in only): 121910
Join by Phone: +1-253-215-8782 or +1-346-248-7799
Find your local number: https://us02web.zoom.us/u/keGuGX4CZ0

Video-Teleconference: The Board will be making a good faith effort to provide the public with the opportunity to observe the meeting as it happens and an opportunity to provide oral testimony without a physical presence in the physical meeting room, in accordance with the Governor's Emergency Proclamation Related to the Covid-19 Response. Please ensure that your computer or phone is muted unless you are speaking. Please use the video-teleconference link, or watch the ʻŌlelo 49 broadcast. Written testimony may be also provided to the board via email using the contact information provided on the Neighborhood Commission website.

Rules of Speaking: Please indicate a desire to speak by (1) using the "Raise Hand" feature that is accessed via the "Reactions" button at the bottom control panel; (2) placing a comment in the chatbox; (3) activating your video camera and physically raising your hand; or (4) making a verbal request at the appropriate time. When recognized by the Chair, please keep your comments relevant and under three (3) minutes.

Note: The Committee may not take action on any agenda item. Recommendations shall be reported back to the next Ala Moana/Kakaʻako Neighborhood Board No. 11 regular monthly meeting for discussion and possible action.

Meeting materials are available online at: https://tinyurl.com/nb11home

1. Call to Order and Introductions

2. New Business
2.1 Discuss Renovation of 932 Ward Ave
2.2 Discuss Kakaʻako Makai development

3. Board Administration
3.1 Identification of new committee members
3.2 Approval of meeting minutes

4. Other Resident and Community Concerns

5. Announcements
5.1 Next Meeting – The next meeting is tentatively scheduled for Thursday, November 4, 2021.

6. Adjournment

A mailing list is maintained for interested persons and agencies to receive this board's agenda and minutes. Additions, corrections, and deletions to the mailing list may be directed to the Neighborhood Commission Office (NCO) at Kapālama Hale, 925 Dillingham Boulevard, Suite 160, Honolulu, Hawaii 96817; Telephone (808) 768-3710 Fax (808) 768-3711; or contact Neighborhood Assistant Spencer Johnson via email to Spencer.johnson@honolulu.gov. Agendas and minutes are also available at http://www.honolulu.gov/nco.

Any individual wishing to attend a Neighborhood Board meeting who has questions about accommodations for a physical disability or a special physical need should call the NCO at 768-3710 between 8:00 a.m. and 4:00 p.m. at least three (3) business days before the scheduled meeting.

All written testimony must be received in the Neighborhood Commission Office 48 hours prior to the meeting. If within 48 hours, written and/or oral testimony may be submitted directly to the board at the meeting. If submitting written testimony, please note the board and agenda item(s) your testimony concerns. Send to: Neighborhood Commission Office, 925 Dillingham Boulevard, Suite 160, Honolulu, Hawaii 96817. Fax: (808) 768-3711. Email: nbtestimony@honolulu.gov.

Last Updated: 22 September 2021

APPENDIX D

Ala Moana-Kakaʻako Neighborhood Board No. 11
Regular Meeting Agenda and Minutes
(October 26, 2021)

ALA MOANA-KAKA'AKO NEIGHBORHOOD BOARD NO. 11

c/o NEIGHBORHOOD COMMISSION • 925 DILLINGHAM BOULEVARD, SUITE 160 • HONOLULU, HAWAII, 96817
PHONE (808) 768-3710 • FAX (808) 768-3711 • INTERNET http:///www.honolulu.gov/nco

REGULAR MEETING AGENDA
TUESDAY, OCTOBER 26, 2021, 6:00 P.M.
***** VIRTUAL ONLY *****

Meeting Link: https://us06web.zoom.us/j/87647528794?pwd=aHVFWTJYVzFmeHd2dUgwVnBYL1RZZz09
Meeting ID: 876 4752 8794
Passcode: NB11 (870130 from phones)
Join by Phone: +1-253-215-8782 or +1-346-248-7799
Find your local number: https://us06web.zoom.us/u/kbctYhyWhv

Video-Teleconference: The Board will be making a good faith effort to provide the public with the opportunity to observe the meeting as it happens and an opportunity to provide oral testimony without a physical presence in the physical meeting room, in accordance with the Governor's Emergency Proclamation Related to the State's Covid-19 Delta Response. Please ensure that your computer or phone is muted unless you are speaking.
Rules of Speaking: Please indicate a desire to speak by (1) using the "Raise Hand" feature that is accessed via the "Reactions" button at the bottom control panel; (2) placing a comment in the chatbox; (3) activating your video camera and physically raising your hand; or (4) making a verbal request at the appropriate time. When recognized by the Chair, please keep your comments relevant and under three (3) minutes.
Note: The Board may take action on any agenda item. As required by the State Sunshine Law (HRS 92), specific issues not noted on this agenda cannot be voted on, unless added to the agenda. A two-thirds (2/3) vote (8) of this eleven (11)-member Board is needed to add an item to the agenda. Adding an item to the agenda, however, is **not** permitted if (1) the item to be added is of reasonably major importance and (2) action on the item by the board will affect a significant number of persons. Determination of whether a specific matter may be added to an agenda must be done on a case-by-case basis.
Meeting materials are available online at: https://tinyurl.com/nb11home

1. **Call to Order**: Chair Ryan Tam
   1.1 Roll call

2. **Public Safety Reports**
   2.1 Honolulu Fire Department (HFD)
   2.2 Honolulu Police Department (HPD)

3. **Filling of Vacancies (Proof of residency required, Oath of Office as needed)**
   3.1 Subdistrict 1 – Official boundary description: "Beginning at the junction of King Street and Kalākaua Avenue, southeast along Kalākaua Avenue to Kapi'olani Boulevard, thence west along Kapi'olani Boulevard to Ke'eaumoku Street, thence northeast along Ke'eaumoku Street to King Street, thence southeast along King Street to Kalākaua Avenue."

4. **Presentations (5 minute presentation + 5 minutes for question/answer)**
   4.1 932 Ward Avenue Renovation - Sherman Wong and Kau'i Arce, Liliuokalani Trust [6:15 p.m.]
   4.2 Ward Village Update - Kaiulani Sodaro, The Howard Hughes Corporation [6:25 p.m.]
   4.3 Straub Plan Review Use Updates - Isaiah Sato, R.M. Towill Corporation [6:35 p.m.]
   4.4 Keeaumoku Complete Streets Project Public Meeting - Franz Kraintz, City and County of Honolulu Department of Planning and Permitting [6:45 p.m.]

5. **Board Business [6:50 p.m.]**
   5.1 Approval of the September 28, 2021 Regular Meeting Minutes
   5.2 Attendance at other meetings
   5.3 Neighborhood updates
   5.4 OahuMPO Citizens Advisory Committee Update
   5.5 Chair's Report
   5.6 Treasurer's Report
   5.7 Selection of Secretary

6. **Old Business (Discussion/Action)**
   6.1 Discuss COVID-19 pandemic and response

7. **New Business (Discussion/Action) [7:00 p.m.]**
   - 7.1 Discuss City and State Reapportionment Plans
   - 7.2 Discuss Community Noise Issues around 1221 Kapiolani Boulevard
8. **Residents' and Community Concerns (3 minutes per speaker) [7:15 p.m.]**
   - 8.1 Mother Waldron Park Lighting
   - 8.2 Community Noise Issues around 956 Kawaiahao Street

9. **Elected Official Reports (3 minutes each) – [7:25 p.m.]**
   - 9.1 Mayor Rick Blangiardi's Representative - Makanani Salā, Executive Director, Mayor's Office of Culture and the Arts
   - 9.2 City Councilmember Carol Fukunaga (District 6)
   - 9.3 City Councilmember Calvin Say (District 5)
   - 9.4 City Council Chair Tommy Waters (District 4)
   - 9.5 State Representative Adrian Tam (District 22)
   - 9.6 State House Speaker Scott Saiki (District 26)
   - 9.7 State Senator Sharon Moriwaki (District 12)
   - 9.8 Governor David Ige's Representative – Cindy McMillan, Director of Communications
   - 9.9 U.S. Congressman Ed Case – Chad Wolke, staff

10. **Agency Reports (3 minutes each)**
    - 10.1 Hawaii Community Development Authority (HCDA) – Craig Nakamoto
    - 10.2 Honolulu Authority for Rapid Transportation (HART)
    - 10.3 Honolulu Board of Water Supply (BWS)

11. **Announcements**
    - 11.1 Covid-19 Vaccines: Find a vaccine provider near you at https://www.oneoahu.org/find-vaccine
    - 11.2 Keeaumoku Complete Streets Project: A virtual public meeting on initial design concepts will be held on November 16, 2021 from 6:00 p.m. to 8:00 p.m. Register at https://rebrand.ly/Keeaumoku.
    - 11.3 TheBus Service Changes: Effective Sunday, December 5, 2021, Route 8 will be extended into Makiki, Route 17 will become Route 102, and Route 15 will become Route 123. For questions, contact the Department of Transportation Services at 808-768-8372 or thebusstop@honolulu.gov.
    - 11.4 Honolulu Marathon: Road closures on Sunday, December 12, 2021 along Ala Moana Boulevard (Ewa at Atkinson Drive), Nimitz Highway (Koko Head of Smith Street), King Street (Nu'uanu Avenue to Kapi'olani Boulevard), and Pi'ikoi Street (Kapi'olani Boulevard to Ala Moana Boulevard) begin at various times beginning at 12:30 a.m. until approximately 8:00 a.m. https://www.honolulumarathon.org/key-information/traffic-advisory
    - 11.5 Ala Moana Boulevard Resurfacing: The State Department of Transportation has obtained Community Noise Variance for construction work along Ala Moana Boulevard (Ewa of Piikoi Street) that will occur 5 nights per week (Sunday-Thursday) from 7:00 p.m. until 5:30 a.m. the next day. Work should continue through the end of September 2022.
    - 11.6 Permit Reviews: Development proposals that require neighborhood board input are posted at: http://www.honoluludpp.org/ApplicationsForms/ZoningandLandUsePermits/NeighborhoodBoardMaterials.aspx.
    - 11.7 Next Meeting: The next regular meeting of the Ala Moana/Kaka'ako Neighborhood Board No. 11 is scheduled for Tuesday, November 23, 2021 at 6:00 p.m. online via zoom.
    - 11.8 Action Committee Meeting: The Community Action Committee Meeting for the Ala Moana/Kaka'ako Neighborhood Board No. 11 is scheduled for Thursday, November 4, 2021 at 6:00 p.m. online via zoom.
    - 11.9 'Ōlelo Broadcasts: Broadcasts of the Ala Moana-Kaka'ako Neighborhood Board No. 11 meetings are on 'Ōlelo 49 on the first and third Thursdays at 8:00 a.m. or 2:00 p.m., and every second Sunday at 6:00 p.m. The full schedule is at https://olelo.org/tv-schedule/) or full archive at https://www.honolulu.gov/cms-nco-menu/site-nco-sitearticles/1657-board-meeting-video-archive.html

12. **Adjournment [8:00 p.m.]**

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ALA MOANA-KAKA'AKO NEIGHBORHOOD BOARD NO. 11

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DRAFT REGULAR MEETING MINUTES
TUESDAY, OCTOBER 26, 2021, 6:00 P.M.
VIA ZOOM

CALL TO ORDER: Chair Ryan Tam called the meeting to order at 6:01 p.m. **Quorum was established with 10 members present.** (Note: This 11-member Board requires six (6) members to establish quorum and to take official Board action.

Board Members Present: Rodney Chang, Dyson Chee, Kim Coco Iwamoto, Ron Komine Jr., Ryan Tam, Jason Wong, Melissa Wong, Joshua Nam, Kathleen Lee, and Michael Zehner.

Board Members Absent: None.

Guests: Firefighter I Shannon Sasson (Honolulu Fire Department); Sergeant Hosaka (Honolulu Police Department);Mayor's Office of Culture and Arts (MOCA) Executive Director Makanani Sala (Mayor Blangiardi's Representative), Councilmember Carol Fukunaga, Council Member Calvin Say; Cindy McMillan (Governor David Ige's Representative), Council Chair Tommy Waters, House Speaker Scott Saiki, Dylan Leigh (State House Speaker Scott Saiki's Office); Craig Nakamoto (Hawaii Community Development Authority-HCDA); Sherman Wong and Kau'i Arce (Liliuokalani Trust); Kaiulani Sodaro (Howard Hughes Corporation); Isaiah Sato (R.M. Towill Corporation); Franz Kraintz (Department of Planning and Permitting-DPP); Kainoa Kaumeheiwa-Rego (Common Cause Hawaii); William Ammons, Johnnie Mae Perry, Isaac Yuen, Maheshi K., (Residents and public); and Naomi Hanohano (Neighborhood Commission Office). **There were 53 total attendees. Note: Names are not included if not legible on screen or is a phone number on zoom.**

PUBLIC SAFETY REPORTS
Honolulu Fire Department (HFD): Firefighter Sasson gave the fire statistics and Halloween safety tips which can be found at https://fire.honolulu.gov/.

Questions, comments, and concerns followed: Report: Board member Iwamoto asked, and Firefighter Sasson noted the statistics is only for the Ala Moana area. Chair Tam noted a copy of the report is in the Google Drive.

Honolulu Police Department (HPD): Sergeant Hosaka reported crime statistics for the Ala Moana/ Kakaako area and gave vehicle break in prevention tips which can be found at www.honolulupd.org.

Questions comments and concerns followed:

1. Homeless: Board member Komine noted his concern with a homeless camp on the "outskirts" of Ala Moana Beach Park noting he appreciates HPD efforts and has seen officers in the area but there seems to be a problem with an individual who does not want to seem to leave. Sergeant Hosaka noted he is familiar with the camp and the concerns are being addressed as "First Watch" Officers have an ongoing project to to clean up the area and prevent the "Residentially Challenged People" (RCP) from coming back.
2. Noise: Chair Tam asked if there are noise complaints from gyms or other facilities, can HPD do anything about it. Sergeant Hosaka noted HPD can do enforcement if the noise comes from an "amplified device" such as a loudspeaker. HPD noted noise complaints are handled by the Department of Health (DOH) that comes out to measure the noise and if it above a certain level, then HPD can cite.
3. Drum Players: Board member Komine asked, and Sergeant Hosaka noted the drum players in Ala Moana Beach Park does not fall under the category of an amplified device but anyone who wants to make a complaint must meet with HPD Officers. Komine also asked and Sergeant Hosaka noted that permits for the park falls under the jurisdiction of the Department of Parks and Recreation (DPR).
4. Bridge "Chop Shop": Board member Komine noted bringing this concern up at "every meeting" which has been there for years. Sergeant Hosaka noted he will let the plain clothes officers know about the concern.
5. Boom Box Law: Resident Maheshi asked how HPD enforces that law. Sergeant Hosaka noted is for vehicles that has loud systems, but HPD must observe the violation to cite the vehicle.
6. Gym Noise: Resident Isaac Yuen noted he submitted the complaint about the "gym noise" but has had difficulty because the gym will reduce the noise when HPD visits but turns it back up when they leave. Sergeant Hosaka noted the Sergeant who has been tasked with that complaint is "at his wit's end" and may just cite the business after numerous complaints and warnings.

FILLING OF VACANCIES: Sub district 1: Hearing no volunteers or nominations, this item was deferred.

PRESENTATIONS
932 Ward Avenue Renovation - Sherman Wong and Kaui Arce from the Liliuokalani Trust noted the trust bought the building which was formerly the Honolulu Club. Arce noted the trust is planning to renovate the building to create a Youth Center who will primarily service Kamali'i (local children) from the Honolulu area. The Center will create transformational programs for local youths which includes a focus on Arts/Sports/Ventures/Technology. The program will be called the Olino Pathways program which is a child centered holistic approach rooted in Hawaiian culture. Wong noted the project will mostly use the existing building and is taking advantage of different floor sizes and layouts which will fit the different programs and showed some renderings of the project. They are hoping to start the project in Summer 2022 and complete it by early 2024. Chair Tam noted the full presentation is available in the Google drive along with letters of support.

Ward Village Update – Kaiulani Sodaro from the Howard Hughes Corporation gave some community highlights and noted the Aalii Tower which opened earlier this month that has 751 units available and welcomed home 150 local families though the reserved housing program. Sodaro noted they have opened the Ulana Tower sales gallery for that offering which will have 697 reserved homes for local families which can be seen at www.ulanawardvillage.com . Sodaro gave an overview of their plans for public open space focusing specifically Victoria Ward Park and Auahi Street and gave a timeline of the project which is expected to last to 2025. Sodaro then noted the next phase of development will be call the Kalae Ward Village at the corner of Ward Avenue and Ala Moana Boulevard and they will start the HCDA process in the fourth quarter of 2021. Sodaro gave her contact information as Kaiulani.sodaro@howardhughes.com if anyone has any questions and noted that Craig Nakamoto of HCDA will notify the board of any upcoming meetings.

Questions comments and concerns followed:
1. Copy: Chair Tam asked if a copy of the presentation could be put in the Google drive.
2. School Impact Fee: Board member Nam asked and Sodaro noted it is a DOE requirement which each complex area is different, but it is broken down into a land contribution value and a construction contribution value.

Straub Plan Review Use Updates – Isaiah Sato from R.M. Towill Corporation gave a brief update of the plans which was shared at the September 2021 board meeting regarding the Plan Review use application for Straub Medical Center Redevelopment, 15-Year Master Plan relating to Council Resolution 21-219, CD1. Sato noted the current hospital was built in 1973 and needs to expand to accommodate more patients, provide space for more clinical services and parking. Sato shared some photos of the existing structure noting that Straub has been working on acquiring property around the existing hospital for the expansion. The 15-Year Master Plan will be done in four (4) phases: Phase One (1): Construct a new parking garage (Year 1-4), Phase Two (2) Construct a new hospital/clinic (Year 5-10), Phase Three (3): Construct a new porte cochere and landscape garden (Year 11-12) and Phase Four (4): Renovate existing hospital building and Strode (Year 13-15). Sato noted the plan shows a lot size of 5.09 acres, a floor area of 760,000 square feet, the maximum height limit of 240 feet with the hospital having 16 floors, the parking garage having 17 floors providing 1,916 spaces (on site) and 180 beds available for patients.

Questions comments and concerns followed: Resolution of Support: Chair Tam asked, and Sato noted they do not need a resolution but encourages everyone to attend the Council meeting to share their support.

Keeaumoku Complete Streets Project Public meeting – Franz Kraintz from DPP noted he attended the January 2021 Board meeting to speak about this project which is to address safety concerns along the Keeaumoku corridor. Kraintz noted the plan is to have a better mix of vehicles, pedestrians, and bicycles. After reaching out to the community, the design team has come up with two (2) options for the project. Kraintz noted the community meeting will be held on Tuesday, November 16, 2021 from 6:00 p.m. to 8:00 p.m. which will held virtually. To register for the meeting: https://rebrand.ly/keeaumoku.

Questions comments and concerns followed: Handouts: Board member Rodney Chang asked and Kraintz noted they are still working on the handouts and plans to make it available in advance of the meeting.

BOARD BUSINESS
Approval of the Tuesday, September 28, 2021 Regular Meeting Minutes. **Hearing no objections, The Board approved the September 28, 2021 regular meeting minutes as presented by UNANIMOUS CONSENT.**

Attendance of Board members at other meetings: None.

Neighborhood Updates: None.

Oahu Metropolitan Planning Organization Citizen's Advisory Committee (CAC): Chair Tam gave a brief report and noted if anyone is interested, they can go to the website: www.Oahumpo.org

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Chair's Report: Chair Tam noted the Waikiki Neighborhood Board No. 9 adopted the Ala Wai Promenade Resolution in support of the project.

Treasurer's Report: Treasurer Iwamoto reported a remaining balance of $482.49 Iwamoto noted asking Neighborhood Assistant Spencer Johnson about the Olelo video contract and is waiting to hear back.

Selection of Secretary: No one volunteered for this position.

OLD BUSINESS (DISCUSSION/ACTION)

Discuss COVID-19 pandemic and response: Chair Tam gave the update of the number Covid deaths in Hawaii since September 28, 2021 is 125 and encourages everybody to get vaccinated. You can find the complete report at: https://health.hawaii.gov/coronavirusdisease2019/current-situation-in-hawaii/

Questions comments and concerns followed: Looking Forward: Board member Chang noted looking forward to the day when Covid restrictions are lifted and would like elected officials to talk about it because it seems there is no end in sight.

NEW BUSINESS (DISCUSSION/ACTION)

Discuss City and State Reapportionment Plans 2021 – Kainoa Kaumeheiwa-Rego from Common Cause Hawaii gave a brief presentation of the planned State Reapportionment which can be found at https://elections.hawaii.gov/about-us/boards-and-commissions/reapportionment/. Kaumeheiwa-Rego noted link to the Honolulu Reapportionment Commission Website: https://www.honolulu.gov/elections/resources/reapportionment.html and her contact information is phone number 808-497-4629 and email kainoa@kaiwiula.com. Kaumeheiwa-Rego noted that reapportionment is done every 10 years following the US Decennial Census and the last reapportionment was done in 2011 following the 2010 census. Kaumeheiwa-Rego defined what reapportionment and redistricting are. Kaumeheiwa-Rego noted that redistricting matters are important because it affects political power, whether diverse communities are represented in legislative bodies which directly has an effect of what is taken up legislatively and it gives you the opportunity to choose who represents you. Kaumeheiwa-Rego noted the people should have a voice on how the district lines are drawn, presently the State Reapportionment Committee which is a bipartisan commission which has eight (8) members. Kaumeheiwa-Rego noted only permanent residents are counted in reapportionment excluding military members and college students who are not registered to vote in Hawaii or have a Hawaii State Driver's License, this exclusion significantly affects Oahu. Kaumeheiwa-Rego noted a case study from the 2011 where Oahu lost a Senate seat and Hawaii Island gained a Senate seat. The 2020 Census showed a population increase of 94,970 new residents. Kaumeheiwa-Rego noted the Senate seats remained the same for 2021. Kaumeheiwa-Rego noted because of time restraints she will make this information available to Chair Tam and also noted they are reaching out to all the Neighborhood Boards to give the public this information.

Questions comments and concerns followed: Flags: Board member Iwamoto asked if "flags" go up when lines are drawn to exclude "work force" residential buildings and pull in more "luxury" residential buildings in particular districts. Kaumeheiwa-Rego noted substantial changes in the Ala Moana/Kakaako area and suggested Iwamoto make her concerns known to the Commission.

Discuss Community Noise Issues around 1221 Kapiolani Boulevard – Board member Komine noted he spoke to the DOH noise complaint department who spoke to the individual about the noise and everything seems to be okay.

RESIDENTS' AND COMMUINITY CONCERNS

Community Noise issues around 956 Kawaiahao Street – Board member Chang noted receiving a concern about the noise issues in this area and noted the HPD Sergeant did a good job explaining what the problem is and what could be done about it. Chang added that maybe someone from the State contact the DOH and have them look at the noise situation from the gym at that address and use the decibel meter to measure the noise level. Resident Yuen noted he is the person who made the complaint and does not want to see businesses leave Kakaako but have better legislation to address such issues without getting HPD involved. Yuen noted with better guidelines, businesses will know what the requirements are. Chair Tam noted there are other businesses in the area that does have a noise problem but thanked Yuen for bringing the problem to the Board's attention.

Mother Waldron Park Lighting – Chair Tam noted receiving an email from a former Board member who informed there is not enough lighting in the park and families have to leave the park early. Chair Tam noted this may be a good Capitol Improvement Project (CIP) request.

McKinley High School Overgrowth (This was brought up earlier in the meeting): Former Board member William Ammon noted his concern with the terrible condition of the landscaping on the Pensacola Street side of McKinley High School. Ammon noted there are weeds and trash along the fence and sidewalk.

ELECTED OFFICIAL REPORTS

Mayor Rick Blangiardi: Culture and Arts Executive Director Makanani Sala reported on Wednesday, September 29, 2021 the parking stall markings were removed in front of the Moana Pacific Building and on Tuesday, October 5, 2021 there was a call from Randy to say that cars were ignoring the fact that the space was removed and were still parking there illegally. Director Sala noted in anyone sees cars parking illegally, please call HPD. Director Sala noted Mayor Blangiardi wants to reopen as much as possible knowing that people needs to be safe but still go on with their lives. The Department of Emergency Management (DEM) has rewritten rules and trying open "static" events then "interactive" events, there are tons of plans to reopen but it will depend upon how the City can work with the State agencies to get the approvals. No questions.

Councilmember Carol Fukunaga: Councilmember Fukunaga gave her report and took questions.

Questions comments and concerns followed:

1. Traffic Light: Chair Tam noted it would be great if the light could be restored to assure safe pedestrian crossing.
2. Dog Park: Board member Chang noted he brings this up every year and is looking forward to a dog park for the area. Councilmember Fukunaga noted working with DPR who established two (2) temporary parks at Mother Waldron Park but one (1) was converted to a pickle ball court. Councilmember Fukunaga noted receiving a request from a dog obedience training school for a dog park and her office is looking for locations in the Kakaako park area.

Councilmember Calvin Say: Councilmember Say noted the link to his October Newsletter along with several other links are in the chat and gave a summary. https://calvinsay.files.wordpress.com/2021/09/cm-say-october-2021-newsletter2.pdf.

Questions comments and concerns followed: Update: Chair Tam asked and Councilmember Say noted the owners of the Meadow Gold is waiting for financing to redevelop the property.

Council Chair Tommy Waters: Chair Waters gave his report. No questions.

State Representative Adrian Tam: Representative Tam gave his report. No questions.

State House Speaker Scott Saiki: Speaker Saiki gave his report. No questions.

Senator Sharon Moriwaki: Charles Izumoto gave Senator Moriwaki's report. No questions.

Governor David Ige: Communications Director Cindy McMillan gave the report and took questions.
The October Capitol Connection can be found at https://governor.hawaii.gov/wp-content/uploads/2021/09/FINAL-OCTOBER-Capitol-Connection-2021.pdf.

Questions comments and concerns followed: Noise: Board member Chang asked and Director McMillan noted there is a noise branch at DOH and she will find the contact information. (In the chat) Shawn Haruno, Acting supervisor 808-586-4700, email shawn.haruno@doh.hawaii.gov.

U.S. Congressman Ed Case: Derrick Clark gave Representative Case's Quarterly report. No questions.

AGENCY REPORTS

Hawaii Community Development Authority (HCDA): Craig Nakamoto gave the report and noted their next meeting will be on December 2, 2021 at 5:30 p.m. virtually. Please call 284-0255 if anyone needs help to register for the meeting.

Honolulu Authority for Rapid Transit (HART): Chair Tam noted the report was emailed and will present to the Board upon request.

Board of Water Supply (BWS): Chair Tam read the BWS report which stated no main breaks for the month of September 2021. Information on the new Water System Facilities Charge (WSFC) and water saving tips can be found at www.boardofwatersupply/com.

THANKFUL: Board member Chang noted November will be the last meeting for the board and if members could think about something they are thankful for and share it at the meeting.

ANNOUNCEMENTS

- Covid-19 Vaccines: Find a vaccine provider near you at https://www.oneoahu.org/find-vaccine.
- Keeaumoku Complete Streets Project: A virtual public meeting on initial design concepts will be held on November 16, 2021 from 6:00 p.m. to 8:00 p.m. Register at https://rebrand.ly/Keeaumoku.
- TheBus Service Changes: Effective Sunday, December 5, 2021, Route 8 will be extended into Makiki, Route 17 will become Route 102, and Route 15 will become Route 123. For questions, contact the Department of Transportation Services at 808-768-8372 or thebusstop@honolulu.gov.
- Honolulu Marathon: Road closures on Sunday, December 12, 2021 along Ala Moana Boulevard (Ewa at Atkinson Drive), Nimitz Highway (Koko Head of Smith Street), King Street (Nu'uanu Avenue to Kapi'olani Boulevard), and Pi'ikoi Street (Kapi'olani Boulevard to Ala Moana Boulevard) begin at various times beginning at 12:30 a.m. until approximately 8:00 a.m. https://www.honolulumarathon.org/key-information/traffic-advisory
- Ala Moana Boulevard Resurfacing: The State Department of Transportation has obtained Community Noise Variance for construction work along Ala Moana Boulevard (Ewa of Piikoi Street) that will occur 5 nights per week (Sunday-Thursday) from 7:00 p.m. until 5:30 a.m. the next day. Work should continue through the end of September 2022.
- Permit Reviews: Development proposals that require neighborhood board input are posted at: http://www.honoluludpp.org/ApplicationsForms/ZoningandLandUsePermits/NeighborhoodBoardMaterials.aspx.
- Next Meeting: The next regular meeting of the Ala Moana/Kaka'ako Neighborhood Board No. 11 is scheduled for Tuesday, November 23, 2021 at 6:00 p.m. online via zoom.
- Action Committee Meeting: The Community Action Committee Meeting for the Ala Moana/Kaka'ako Neighborhood Board No. 11 is scheduled for Thursday, November 4, 2021 at 6:00 p.m. online via zoom.
- 'Ōlelo Broadcasts: Broadcasts of the Ala Moana-Kaka'ako Neighborhood Board No. 11 meetings are on 'Ōlelo 49 on the first and third Thursdays at 8:00 a.m. or 2:00 p.m., and every second Sunday at 6:00 p.m. The full schedule is at https://olelo.org/tv-schedule/ or full archive at https://www.honolulu.gov/cms-nco-menu/site-nco-sitearticles/1657-board-meeting-video-archive.html

ADJOURNMENT – As there was no further business before the Board, Chair Tam adjourned the meeting at 8:04 p.m.

Submitted by: Naomi Hanohano, Neighborhood Assistant
Reviewed by: Dylan Whitsell, Deputy
Finalized by:

APPENDIX E

Letters of Support

THE QUEEN'S HEALTH SYSTEMS
1301 Punchbowl Street ▪ Honolulu, HI 96813 ▪ Ph: 808-691-5900 ▪ Fax: 808-7887 ▪ www.queens.org

NATIVE HAWAIIAN HEALTH
THE QUEEN'S HEALTH SYSTEMS

L. Kauʻionalani Nishizaki, MSW, LCSW
The Queen's Health Systems
1301 Punchbowl Street
Honolulu, HI 96813
Office: (808) 691-7336 Cell: (808) 391-2524
Email: lnishizaki@queens.orga

October 20, 2021

Ala Moana – Kakaako Neighborhood Board Committee No. 11
925 Dillingham Blvd. Suite 160
Honolulu, HI 96817

Aloha Honorable Neighborhood Board Committee,

I write on behalf ot the Liliʻuokalani Trust in support of the *Liliʻuokalani Center Project*, located on 932 Ward Avenue. This highly anticipated project supports the development of a state of the art youth development hub to benefit at-risk Native Hawaiian youth.

As a clinically trained social worker and therapist, I am keenly aware of the significant psychosocial, behavioral, and health needs among our most vulnerable Native Hawaiian youth. In my role as the co-lead for the Social Support/Recovery Committee under the umbrella of the *Native Hawaiian Pacific Islander(NHPI) Hawaiʻi COVID-19 Recovery Response Resiliency Coalition (3R),* I have seen the adverse impact of the COVID-19 pandemic on our Native Hawaiian Pacific Islander population (including families and children). And as the Director of Native Hawaiian Health (NHH) with the Queenʻs Health Systems (QHS), I have the privilege of supporting unique and innovated programs and services which specifically address critical health, behavioral health and psychosocial needs through holistic and culturally safe approaches to promote overall health and wellbeing.

This project is one such program, aligned with the vision of Liliʻuokalani Trust to break the cycle of poverty, one child at a time, through deepened, lengthened, and strengthened engagement with children and parents. The Liliʻuokalani Trust is a private operating foundation established to fullfill Queen Liliʻuokalaniʻs mission to care for and ensure wellbeing of the most vulnerable Native Hawaiian children and their ʻohana (families). The Trust has been involved with the Honolulu community for many years and has proven to be a positive community asset.

Kula No Nā Poʻe Hawaiʻi, a supporting agency of this project and longstanding partner of Liliʻuokalani Trust is a dear partner to QHS NHH Department. As an active member of the NHPI Hawaiʻi COVID-19 3R Coalition, Kula No Nā Poʻe Hawaiʻi has been committed to supporting our Hawaiian kupuna, ʻohana, and ʻōpio to recover from the impact of the COVID-19 pandemic.

THE QUEEN'S HEALTH SYSTEMS

1301 Punchbowl Street ▪ Honolulu, HI 96813 ▪ Ph: 808-691-5900 ▪ Fax: 808-7887 ▪ www.queens.org

Likewise, QHS NHH Department is committed to this effort. The Queen‘s Health System is a nonprofit corporation established in 1985 to provide expanded health care capabilities to the people of Hawaii and the Pacific Basin. The mission of QHS is to fulfill the intent of Queen Emma and King Kamehameha IV to provide in perpetuity quality health care services to improve the well-being of Native Hawaiians and all of the people of Hawai‘i. The Native Hawaiian Health department aims to achieve the Queen’s mission and strengthen the resilience, identity, and social connectedness of Native Hawaiians to enhance physical, mental, and spiritual health and wellbeing.

On behalf of Kau‘ilani Arce, Program Manager with Lili‘uokalani Trust and Kula No Nā Po‘e Hawai‘i, I strongly support the *Lili‘uokalani Center Project*, which will provide much needed space, support and resources as a beacon of light for our next generation of leaders.

Sincerely,

L. Kau‘ionalani Nishizaki, MSW, LCSW
Director, Native Hawaiian Health
The Queen’s Health Systems

“so long as sickness shall exist, there will be a duty imposed on us.” – King Kamehameha IV

UNIVERSITY OF HAWAI'I
CANCER CENTER
50 Years of Progress

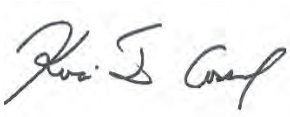
Friday, October 22, 2021

Honolulu Neighborhood Board Committee
Ala Moana-Kakaʻako Neighborhood Board No. 11
c/o Neighborhood Commissions Office
Kapalama Hale,
925 Dillingham Boulevard, Suite 160
Honolulu, Hawaii 96817

Aloha Honorable Neighborhood Board Committee,

The University of Hawaii Cancer Center as an active member of our many surrounding communities supports the Lili`uokalani Center Project located at 932 Ward Avenue. This project will convert the former Honolulu Club facilities to become a community resource center for those who live in the surrounding areas. As a state of the art youth development hub for Native Hawaiian youth, we believe it will be a beacon of light for Native Hawaiians and available to the community, providing much-needed resources. The Lili`uokalani Trust has been involved with the Honolulu community for many years and has proved to be a positive asset to the surrounding community. We are happy to see the progress of the Lili`uokalani Center and welcome it to our community. We look forward to supporting this endeavor. Please feel free to contact me directly, should you have any questions or concerns.

Sincerely,



Kevin Cassel, DrPH
Associate Professor Population Sciences in the Pacific
Director, Office of Community Outreach and Engagement
University of Hawaii Cancer Center
701 Ilalo St. Room 421
Honolulu, HI 96813
Phone; 808 564-5916
Email: kevin@cc.hawaii.edu

John A. Burns School of Medicine
Department of Psychiatry

UNIVERSITY of HAWAI'I®
MĀNOA

October 20, 2021

Aloha Honorable Neighborhood Board Committee,

As a part of the Department of Psychiatry, John A. Burns School of Medicine, University of Hawai'i at Mānoa, I support the Lili`uokalani Center project located at 932 Ward Avenue. We believe it will be a beacon of light for Native Hawaiians and provide much-needed resources for the community. The Lili`uokalani Trust has been involved with the Honolulu community for many years and has proved to be a positive asset to the surrounding community. We are happy to see the progress of the Lili`uokalani Center and welcome it to our community.

Thank you for supporting the mental health and well-being of our Native Hawaiian youth!

Sincerely,

Earl S. Hishinuma, Ph.D.
Professor, Associate Chair of Research

1356 Lusitana Street, 4th Floor
Honolulu, Hawai'i 96813
Telephone: (808) 586-2900, Fax: (808) 586-2940

UNIVERSITY OF HAWAIʻI AT MĀNOA

John A. Burns School of Medicine
Department of Native Hawaiian Health

October 25, 2021

Ala Moana - Kakaako Neighborhood Board No. 11
Neighborhood Commission Office
925 Dillingham Boulevard, Suite 160
Honolulu, Hawaii 96817

Re: Letter of Support for the Lili`uokalani Center project located at 932 Ward Avenue

Dear Neighborhood Board No. 11 Committee,

As Director of Community Engagement for the University of Hawaiʻi at Mānoa, John A. Burns School of Medicine, Department of Native Hawaiian Health (DNHH), I am honored to support the Liliʻuokalani Trust (LT) and Kula No Na Poʻe Hawaiʻi in the Lili`uokalani Center project located at 932 Ward Avenue, Honolulu, Hawaiʻi 96814. We believe the proposed strategies and activities of this project will provide much needed resources to the community, in particular for community members living in Ala Moana-Kakaʻako.

DNHH is located in the neighborhood of Ala Moana-Kakaʻako. The mission of DNHH is to be a center of excellence in education, research, and quality healthcare practices committed to the optimal health and wellness of Native Hawaiians, their families and communities, while embracing traditional Hawaiian values and practices. To accomplish this mission, we actively seek partnerships with others in the community who share our mission and vision.

LT has actively been involved in community engagement for decades. LT has a proven track record of working with community partners and coalitions, such as Kula No Na Po'e Hawaiʻi, to reduce health disparities across the State of Hawaiʻi. I am an enthusiastic supporter of LT's efforts that have led to healthier communities state-wide, and among populations with the highest burden of chronic disease in Hawaiʻi. DNHH has partnered with LT on a number of community health initiatives, and LT has been instrumental in providing direct services to Native Hawaiian families for decades. We are committed to ongoing collaboration and support of LT.

The proposed Liliʻuokalani Center on Ward Avenue has the potential to not only provide much needed services to Native Hawaiians, but to be a contributor to the health of the community at large. I am happy to see the progress of LT and their Liliʻuokalani Center. If you have any question or concerns, please do not hesitate to contact me.

Sincerely,

Shelley Soong

Shelley Soong, PhD
Director of Community Engagement, UH-JABSOM DNHH
Email: ssoong@hawaii.edu
Phone: 808-692-1052

HAWAIIAN COMMUNITY ASSETS

200 North Vineyard Boulevard, B140
Honolulu, HI 96817
Ph: 808-587-7886
Toll Free: 1-866-400-1116
www.hawaiiancommunity.net

October 21, 2021

Support Letter: Lili`uokalani Center

Aloha Honorable Neighborhood Board Committee,

As a part of Hawaiian Community Assets, our organization **strongly supports** the Lili`uokalani Center project located at 932 Ward Avenue.

We believe it will be a beacon of light for Native Hawaiians and provide much-needed resources for the community including culturally-relevant financial education delivered by our organization.

The Lili`uokalani Trust has been involved with the Honolulu community for many years and has proved to be a positive asset to the surrounding community.

We are happy to see the progress of the Lili`uokalani Center and welcome it to our community.

Please contact me directly at 808.587.7653 or jeff@hawaiiancommunity.net should you have any questions or would like more information.

Sincerely

Jeff Gilbreath
Executive Director

KUPU
LEARN·SERVE·RESTORE

Matthew Bauer
Chief Operations Officer
Kupu
677 Ala Moana Boulevard
Suite 1200 Honolulu HI 96813
October 18, 2021

Ryan Tam
Board Chair
Ala Moana-Kakaako
Neighborhood Board No. 11
925 Dillingham Boulevard, Suite
160 Honolulu, HI 96817

RE: Offering of Support for the Liliuokalani Center

Dear Chairman Tam,

I greatly appreciate the opportunity to offer support for the development of the Liliuokalani Center at 932 Ward Ave #7, Honolulu, HI 96814. Kupu is a 501(c)3 non-profit, of which its mission is to empower youth to serve their communities through character-building, service-learning, and environmental stewardship opportunities that encourage pono (integrity) with Ke Akua (God), self, and others. In addition to our main office being located within your neighborhood boundary, Kupu is also proud to have our Harry & Jeanette Weinberg Ho'okupu Center within it as well at Kewalo Beach Park. Within the Center, we primarily serve unengaged youth ages 16-24 years old who have dropped out and/or are unemployed. After 11 years of serving this population within urban Honolulu, we are very familiar with the benefits of having positive and engaging spaces similar to what the Liliuokalani Center will offer our neighborhood youth.

The transformation of Kewalo Beach Park over the past decade is a testament to what a place like the Liliuokalani Center can do for our community and its residents. Based on our humble experience, we know to be true that the benefits of a center that engages local youth in a constructive way has a wide range of positive effects beyond its primary beneficiaries. Countless local residents, community groups, and visitors have testified to the fact that the beach park is cleaner, more inviting, less prone to criminal activity, and that the facility's purpose is an excellent use of space in place of another unnecessary bar or restaurant that does little in addressing the area's greatest needs.

For over a decade, Kupu has worked alongside Liliuokalani Trust in serving Hawaii's most vulnerable youth. We strongly believe that the Ala Moana-Kakaako neighborhood would reap vast benefits of an organization boasting the history and experience of increasing community health and wellness such as theirs. We compassionately ask for the Board's full support in the Trust's efforts to expand their services for Hawaii's youth through the Liliuokalani Center, subsequently building a healthier and more resilient Hawaii.

Sincerely,

Matthew Bauer

October 20, 2021

Aloha Honorable Neighborhood Board Committee,

As a part of Under My Umbrella, Chef Hui and Pili Group, we support the Lili`uokalani Center project located at 932 Ward Avenue. We believe it will be a beacon of light for Native Hawaiians and provide much-needed resources for the community. The Lili`uokalani Trust has been involved with numerous Honolulu communites for many years and has always been a positive asset to the surrounding community. We have had the honor of working with them over the past two decades and are happy to see the progress of the Lili`uokalani Center and welcome it to our community.

Mahalo piha,

Amanda Corby Noguchi
President, Creative Director, Co-Founder

October 25, 2021

Dear Ala Moana-Kaka`ako Neighborhood Board No. 11 Committee,

My name is Leonard Nakamura and I am a retired police officer and live in the Ala Moana – Kaka`ako Neighborhood Board No. 11. I am writing this letter in support of Lili`uokalani Trust and the Lili`uokalani Center project located at 932 Ward Avenue. As a former police officer in Honolulu I am aware of the crime that occurs in the Ala Moana-Kaka`ako Neighborhood Board No. 11. The need for active community groups and services in our community is great. The Lili`uokalani Trust has been involved with the Honolulu community for many years and has proved to be a positive asset to the surrounding community, such as in the homestead communities of Papakolea. I believe the Lili`uokalani Center will provide much needed resources for the community at large, particularly in our neighborhood. If you have any questions you can contact me at 808-341-9519.

Thank you,

Leonard Nakamura

October 20, 2021

Aloha Honorable Neighborhood Board #11 Ala Moana/Kakaako Members:

We, Kula No Na Po`e Hawai`i o Papakōlea, Kewalo, is a community-based non-profit serving the Hawaiian Homestead communities in urban Honolulu express our strong support for the Lili`uokalani Center project located at 932 Ward Avenue . Additionally, we, the undersigned kupuna (elders), and community members of the Hawaiian Homestead Region of Papakōlea, strongly support the design and implementation Lili`uokalani Center project. We fervently support this project that will help our program participants and community residents. Therefore, we ask that Neighborhood Board #11 to lend its full support to the Lili`uokalani Center project located at 932 Ward Avenue. We believe it will be a beacon of light for Native Hawaiians and provide needed resources for not only our Papakōlea community, but also the community at large. The Lili`uokalani Trust has been involved with the Honolulu community for decades and have proved to be a positive asset to the surrounding community. We are happy to see the progress of the Lili`uokalani Center and welcome its new journey to our community.

Print Name	Signature	Address
Leshay Kekiholoki		41-823 Ala Kea Waimanalo 96795
K. Kahunanui		383 N. Kainalu Dr. Kailua 96734
J. Oliveira		PO Box 179464, Honolulu, HI 96817
Lance K Macalino	Lance Macalino	606 Auwaiolimu St Hon HI 96813
Kili Macalino	Kili Macalino	606 Auwaiolimu St. Hon. Hi 96813
Barron Macalino	B. Macalino	606 Auwaiolimu St. Hon. Hi. 96813
Belinda Macalino	B. Macalino	" "
Faith Kalamau	F. Kalamau	" "
Kahaku King	K. King	" "
Edwin Kalamau	E. Kalamau	1212 Kinau St. #505 Hon Hi 96817
Lehua Adrade	Lehua Andrade	91-1304 Umahewa St. Ewa Beach 96706
Vincent Andrade	Vincent Andrade	

October 20, 2021

Aloha Honorable Neighborhood Board #11 Ala Moana/Kakaako Members:

We, Kula No Na Po`e Hawai`i o Papakōlea, Kewalo, is a community-based non-profit serving the Hawaiian Homestead communities in urban Honolulu express our strong support for the Lili`uokalani Center project located at 932 Ward Avenue . Additionally, we, the undersigned kupuna (elders), and community members of the Hawaiian Homestead Region of Papakōlea, strongly support the design and implementation Lili`uokalani Center project. We fervently support this project that will help our program participants and community residents. Therefore, we ask that Neighborhood Board #11 to lend its full support to the Lili`uokalani Center project located at 932 Ward Avenue. We believe it will be a beacon of light for Native Hawaiians and provide needed resources for not only our Papakōlea community, but also the community at large. The Lili`uokalani Trust has been involved with the Honolulu community for decades and have proved to be a positive asset to the surrounding community. We are happy to see the progress of the Lili`uokalani Center and welcome its new journey to our community.

Print Name	Signature	Address
SAMUEL SOLATORIO		602 Auwaiolimu st Hon. 96813
CAPPY A. SOLATORIO		602 Auwaiolimu St. Hon. 96813
Kaleo Solatorio		621 Naale St Honolulu 96813
Lyn Puailihau		621 Naale St Honolulu Hi 96813
Gilbert Shea		621 Naale St Hon. Hi 96813
Kalei SOON		596 Auwaiolimu St. Hon. Hi 96813
Shane Matayoshi		596 Auwaiolimu St. Hon Hi 96813
FRED SOON		596 Auwaiolimu St Hon Hi 96813
KeKiahi Johnson		596 Auwaiolimu St. Hon Hi 96813
Janna Hanakahi Gibson		603 Naale St. Hon 96813
Christopher Gibson		603 Naale St. Hon 96813
Joseph Nahinu		608 Naale St. Hon 96813

We, the undersigned kupuna (elders), and community members of the Hawaiian Homestead Region of Papakōlea, strongly support the design and implementation Lili`uokalani Center project.

LANAKI FOLEY		P.O. BOX 223 KIKAI, MOLOKAI HAWAII
Clinton Kauo		2143 Anianiku St Hon Hi 96813
Wendell Halemanu	Wendell Halemanu	2143 Anianiku St Hon HI 96813
WILLIAM BUSH	WILLIAM BUSH	2136 Anianiku St Hon. 96813
Kirk Masuda		2150 Anianiku St Hon 96813
Tatiana Masuda		2150 Anianiku St Hon. 96813
Shuzo Masuda		2150 Anianiku St Hon. 96813
Phillip's Masuda		2150. Anianiku St Hon. 96813.
Terrence Kelly		609 Naale St. Honolulu HI 96813
Bella Kelly		" " " " " "
Kyung Ae Kim		" " " " " "
Chung Sil Kim		" " " " " "
Taylee Kelly		
Ermory Higa		
Jason Higa		
Sherry Kaneali'i		
Shayna Kaneali'i		
Edith Yim		
Kiki Litsey		

We, the undersigned kupuna (elders), and community members of the Hawaiian Homestead Region of Papakōlea, strongly support the design and implementation Lili`uokalani Center project.

MR.MRS Mervin Kaoluhi	Mr. Mrs Mervin Kaoluhi	2233 Anianiku st. Hon, Hi 96813
WILLIAM NAKAMAAHA	William Nakamaaha	2130 ANIANIKU ST HON HI 96813
Rachel Kaiama	Rachel Kaiama	2257 Kapahu St. Hon Hi 96813
Kailikea Wago	Kail W	614 Auwaiolimu St. Hon Hi 96813
Gerred Wago	Gerred W	614 Auwaiolimu St. Hon Hi 96813
Nancy Wago	[signature]	614 Auwaiolimu St. Hon Hi 96813
LYN BELL	[signature]	626 AUWAIOLIMU ST HON HI 96813
Kaapuni Kama	K. Kama	745 Iaukea St. Hon 96813
B. Puni Kekauoha	[signature]	" "
Jeremiah Kama	Jeremiah Kama	" "
Meghan Kenney	[signature]	2529 Pali Hwy Hon HI 96817
Lea Palimoo	[signature]	2165 Anianiku St Hon 96813
Danny Palimoo Sr.	[signature]	2168 Anianiku St Hon. 96813
CARROLL APIO	Carroll Apio	2042 HAALELEA PL HON 96813
ALVERNA TAKASHIMA	Alverna Takashima	2042 HAALELEA PL HON 96813
Tamar deFries	[signature]	2031 Haalelea Place Hon 96813
Hiram deFries Sammitman	[signature]	2031 Haalelea Place Hon 96813
Jed Sammitman	Jed Sammitman	2031 Haalelea Place Hon 96813
Aulii Hirahara	[signature]	2034 Haalelea Pl. Hon. 96813

 10/20/2021

We, the undersigned kupuna (elders), and community members of the Hawaiian Homestead Region of Papakōlea, strongly support the design and implementation Lili`uokalani Center project.

Nicole K Onishi	Nicole K Onishi	620 Auwaiolimu St Hon 96813
Kamaka Kaaihue-Kekoa		2240 Aniani Ku St Hon 96813
Tiare Kaaihue-Kekoa		2240 Aniani Ku St Hon 96813
Cassie Kaaihue-Kekoa		2240 Aniani Ku St Hon 96813
Sanoe Sixton		2240 Aniani-Ku St Hon 96813
Christian Kaaihue		2240 Aniani Ku St Hon 96813
Brandon Hopeau		2136 Kapahu st Hon Hi. 96813
Auli`i Hopeau		" " " "
Jolynne Papaia		2048 Haalelea Pl. Hon, Hi 96813
Keone Papaia		2048 Haalelea Pl. Hon. Hi 96813
Mana'olana Papaia		" " " " " "
George Hoopii	George Hoopii	2048 Haalelea Pl. Hon, Hi 96813
Nicole Akana		2035 Haalelea Pl. Hon, Hi 96813
Keola Akana		" " " " "
Kamala Akana		" " " " "
Mack Kalumoku		2206 Kapahu ST Hon Hi 96813
Kehau Geronia		" " " " "
DW Kamana		2049 Kapahu St Hon. Hi 96813
Barbara Kamana		2049 Kapahu St Hon. Hi 96813

We, the undersigned kupuna (elders), and community members of the Hawaiian Homestead Region of Papakōlea, strongly support the design and implementation Lili`uokalani Center project.

Elaine Kalaluhi	Elaine Kalaluhi	2166 Anianiku St. Hon Hi 96813
Randall Kalaluhi	Randall Kalaluhi	" "
Hailama Kalaluhi	Hailama Kalaluhi	" "
Tracey Kalaluhi	T. Kalaluhi	" "
Ulysses Nahina		608 Naale St. 96813 Hon HI
Pono A. Heen	[signature]	2233 Tantalus Dr. 96813 Hono. Hi
Alan & Yolanda	Yolanda N.D. Brown	608 Naale St, Hon. Hi ~~[illegible]~~ 96813
DON PERRY	[signature] / WAYNE MOLINA	2165 ANIANIKU ST 96813 Hon Hi
Randi Vincent	[signature]	615 Na'ale St.
Rusty Vincent	[signature]	" "
Rylee Vincent	[signature]	" "
Jadon Arola	[signature]	" "
JASON Vincent	Jason Vincent	" "
William Bush	William Bush	2136 Anianiku St.
Charlotte Bush	Charlotte Bush	"
William Bush Jr	William Bush JR.	"
Amanda Roccoro	[signature]	2046 Makanani Dr. Hon, HI 96817
Tasha-marie Kolo	[signature]	2307 Tantalus Dr. HON. HI 96813
Keis Makaanaana	[signature]	2130 ANIANIKU ST HON HI 96813

We, the undersigned kupuna (elders), and community members of the Hawaiian Homestead Region of Papakōlea, strongly support the design and implementation Lili`uokalani Center project.

Winifred Asing	W Asing	2135 Aniaaniku St
Jasm Wallace	J. Wallace	" " "
Robert Stender	R Stender	2129 Aniaaniku St.
Marie Stender	Marie Stender	
Leonard Costa	Leonard Costa	
Jewel K. Costa	Jewel K Costa	
Jayson Costa	J Costa	
Sweetie Tangalin	Sweetie Tangalin.	
Stuart Kalau		632 Auwaolimu St
Marlene Matsuda		2117 Aniaaniku St
Lyn Kalau	Lyn Kalau	632 Auwaolimu St
Llewella K Rogers	Llewella K Rogers	620 Auwaidimu St.
Barry K. Rogers	Barry Rogers	" " "
Lorraine S.N. Oda	Lorraine Oda	" " "
Angela A K Rogers	Angela AKR	" " "
Tauras K Kanahele	Tauras K Kanahele	" " "
Kashawa Julian	Kashawa Julian	" " "
Kylee Rogers	Kylee Rogers	" " "
Healii Rogers	Healii R Rogers	" " "

We, the undersigned kupuna (elders), and community members of the Hawaiian Homestead Region of Papakōlea, strongly support the design and implementation Lili`uokalani Center project.

Print	Sign	Address
Sarah Rey		541 Lauiki St Honolulu HI 96826
Catherine Jan		541 Lauiki St. Honolulu HI 96826
Sophie Hansen		541 Lauiki St. Honolulu HI 96826
Raymond Pinter		1521 Gulick Ave Honolulu, HI 96819
Jade Gonzalez		Park Shore Hotel
Grace McMichael		Park Shore Hotel
Isabella Bailey		91-1092 olowa st. Ewa Beach HI
Galia Corona Beyan		1 Aloha Tower Dr #2376813
Shawn Yamashiro		417 Hilani St 96813
Jon Yamashiro		417 Hilani St 96813
Jon "Kama" Yamashiro		417 Hilani St 96813
Kalei Soon		596 Auwaiolimu St. 96813
Fred Soon		596 Auwaiolimu St. 96813
Kekiahi Johnson		596 Auwaiolimu St. 96813
Shane Kapea		41-723 Kaumoana Pl. Waimanalo 96795
Tuasivi 'Ohana (Kawelo)		216A Tantalus Dr. Hon. Hi 96813
Pelekai		606 Auwaiolimus Hon HI 96813
Tiana Akau		917 Punehana St. 96826 Honolulu, HI
Mansa Shoda		3510 Nuuanu Pali Dr. Hon. Hi 96817

We, the undersigned kupuna (elders), and community members of the Hawaiian Homestead Region of Papakōlea, strongly support the design and implementation Lili`uokalani Center project.

Dean Hirahara	[signature]	2034 Haalelea Pl. Hon., HI 96813
Lianna Melendez	[signature]	1414 Heulu Street Apt A 96822
Conrad Vierra	[signature]	"
Desiree Melendez	[signature]	2289 Tantalus Drive 96813
Carl Melendez	[signature]	
Layne Richards	[signature]	2252 Moreira St Honolulu 96813
Kahi Brooks Richards	[signature]	"
Hāweo Richards	Hāweo Richards	"
Hālona Richards	[signature]	"
Livia Mortensen	[signature]	1137 Wilder Ave. Honolulu 96813
Taryn Sircable	[signature]	"
Michael Tui		2303 Kaululaau St 96813
Hanakeā Tui		" St
Helen Alana	Maylani Alana	2268 Tantalus Dr. Hon 96813
[signature]	Tanya Alana	
[signature]	Samuella	521-Laukea St
Kapua-Hew Len-Lii	[signature]	555 Laukea St 96813
Malani Hew-Len Lii	[signature]	555 Laukea St 96813
Haaheo Manini Hew Len	[signature]	521 Laukea St 96813

We, the undersigned kupuna (elders), and community members of the Hawaiian Homestead Region of Papakōlea, strongly support the design and implementation Lili`uokalani Center project.

Amy Takaki	[signature]	75-231 Kapanoe Pl.
Amanda Barlan	[signature]	951039 Hoalumi St Mililani, HI 96789
Tevin Ulii	[signature]	2353 Kaululaau Street Hon. HI 96813
Loiani Ulii	[signature]	" "
Macey Kamauu	[signature]	" "
Andrea Schmidt	[signature]	2135 Leilani St. Hon HI
Ailsa Cooper	[signature]	1577 Onipaa St. Honolulu, HI 96819
Meaghan King	[signature]	5225 Shields Str Honolulu 96818
SARAH BELLIAN	[signature]	1145 MANU'LANI ST KAILUA
Kapua Hew Len	[signature]	555 iaukea St Hon. HI. 96813
Mom Hew-len	[signature]	555 iaukea St. Hon. HI. 96813
Kelli Murakami	[signature]	1290 Kika St. Kailua, 96734
Logan Murakami	[signature]	
Charyse Matayoshi	[signature]	546 Auwaiolimu St Hon 96813
Makealani Austin	[signature]	955 Valley View Dr. Hon. HI. 96819
Clement Mahiai	Clement Mahiai	1584 Thurston Ave #106
Peter Austin	[signature]	955 Valley View Dr. Honolulu HI 96819

We, the undersigned kupuna (elders), and community members of the Hawaiian Homestead Region of Papakōlea, strongly support the design and implementation Lili`uokalani Center project.

Jamie Swam		2268 Tantalus Dr 96813
Chris Swam		2268 Tantalus Dr 96813
Puka Palenapa	547 Wilder #4	96814
Allen Alana		2274 Tantalus Dr 96813
Molly Alana		2274 Tantalus Dr 96813

APPENDIX F

Documentation from Meetings with Neighboring Properties

QLT-HPH Partnership Re-Connect
Joint Ward Corridor Redevelopment Plans
Friday, May 7, 2021
10:00 – 11:30am

Join Zoom Meeting

https://hph-org.zoom.us/j/99635998741?pwd=REUwYW4waTE2NDBqRW5PNHdSYlpWQT09

Meeting ID: 996 3599 8741

Passcode: 385691

10:00	Welcome Introductions	Mike/Nalei
10:10	Straub Medical Center Redevelopment	Art Gladstone, CEO O‘ahu Operations & EVP Strategy Warren Chaiko, SVP Construction & Real Estate
10:30	QLT Overview QLT “Lili‘uokalani Center”	Dawn Harflinger, CEO Alan Arakaki, VP Real Estate Sherman Wong, Dir Design & Construction
10:50	Discussion	Group
11:30	Adjourn	

October 25, 2021

MEETING MINUTES
RE: Project Information Tour – 932 Ward Avenue Renovation
10/25/21 @ 3:15 PM

Attendees:
Deacon Keith Cabiles, Roman Catholic Diocese of Honolulu (Neighbor)
Tracy Malmos, Royal Court – Resident Manager (Neighbor)
Dorothy Martinez, Royal Court – Board Member (Neighbor)
Sherman Wong, Lili'uokalani Trust (Owner)
Lani Smithson, Kiewit Building Group (Contractor)

Ground Floor - Attendees met at the main entry on the ground floor. Attendees were provided a description of first floor renovations. No revisions proposed to existing driveways and parking entrance along Ward Avenue. Coordination of landscaping maintenance was discussed with Royal Court attendees.

Eight Floor (Roof Top) – Attendees were escorted to the rooftop level. The existing outdoor basketball court on the south half of the roof deck is proposed to be a covered gymnasium. The new gymnasium's south wall will be constructed along the property line parallel with the Royal Court's concrete wall and separated by a few inches. There was existing blistering of paint and evidence of past concrete spall repairs on the Royal Court wall. LT will coordinate proper preparation and flashing detailing to ensure protection of the cavity between the two walls.

The west wall of the new gymnasium will be constructed along the property line shared with the cemetery belonging to the Roman Catholic Diocese. LT/Kiewit will coordinate construction methods with the Roman Catholic Diocese to ensure adequate protection of existing graves adjacent to the work area. Kiewit may also require pedestrian and vehicular access from the cemetery parcel and will coordinate with the Roman Catholic Diocese when construction begins.

Ms. Martinez mentioned existing air conditioners and exhaust fans located on rooftop can sometimes be disruptive to the residents located on the higher floors of the Royal Court. LT will work with the design team to ensure proper mitigation is implemented to reduce any nuisance from all new equipment. LT will incorporate a comprehensive maintenance program to sustain energy efficiency and quiet operation of all equipment.

Floors 2 thru 7 – Interior Renovations were discussed and no issues were identified that affect the adjacent neighbors. Attendees were pleased to hear of the youth programs proposed for the existing building and supportive of the project.

APPENDIX G

Design Advisory Board Review Meeting Notes

HAWAII COMMUNITY DEVELOPMENT AUTHORITY

547 Queen Street, Honolulu, Hawaii 96813
Telephone: (808) 594-0300 Fax: (808) 587-0299
Web site: http://dbedt.hawaii.gov/hcda/

DAVID Y. IGE
GOVERNOR

SUSAN TODANI
CHAIRPERSON

DEEPAK NEUPANE, P.E., AIA
EXECUTIVE DIRECTOR

KAK 21-028

January 18, 2022

Liliuokalani Trust Project
HCDA Design Advisory Board ("DAB") Review
Meeting Notes

Project Name:	Liliuokalani Center
Site Address:	932 Ward Avenue, Honolulu Hawaii 96813
Tax Map Key (TMK):	2-1-044:005
Date of Meeting:	December 2, 2021
Meeting Location:	Microsoft Teams Virtual Meeting
Attendees:	Kevin Sakoda, HCDA DAB Member Hazel Go, HCDA DAB Member Kevin Wilcock, HCDA DAB Member Carson Schultz, Kakaako Director of Planning and Development Sherman Wong, Liliuokalani Trust, Director of Design and Construction Joe Marshall, Flansburg Architect Kaui Arce, Liliuokalani Trust Program Manager Debbie Akau – Liliuokalani Trust Project Manager Kimi Yuen – PBR Hawaii Grace Wolff- PBR Hawaii Matt Higa – Ki Concepts LLC Jordan Takahashi Alex Diaz Naomi Levine David Croteau Will Merrill Susan Tamura Mark Hakoda Renee Reed

The following are comments and recommendations that were made regarding the overall design of the proposed project as presented to the DAB.

Kevin Wilcock:

- Member Wilcock questioned the location of the loading elevator at the corner, which is a prominent location.
  Response: The location of the elevator anchors the core corner. The elevator will accommodate large groups of students; not just freight. The building is a post tension structure, where the design team is trying to minimize demolition, while activating the public areas. There are three stairways within the building that are not easily accessible. The elevator will provide identifiable access to the upper levels. In addition, the central location will help move kids quickly. The elevator will have translucent panels that allow passengers to view the outside.
  Recommendation: Use the elevator as an art piece.

- Member Wilcock asked about the placement and strategy of using wood panels on the exterior.
  Response: Using wood is inspired by keeping a balance with glass. Real wood is problematic; a plastic laminate will be used for resiliency. The wood will look like koa but will be easy to clean.

- Will the name of the center (at the entry) be located in the front wood paneled area?
  Response: To be determined in consultation with the Liliuokalani Trust.

- Member Wilcock asked why the creative block box is not clear for views?
  Response: It is cost prohibitive to provide balconies and views. The building is divided by floors where the 1st through 4th floors will be used for classes, and the 5th and 6th floors will be the creative media spaces. The block boxes fit adjacent to the recording studios, performing arts, and production spaces. A theater consultant confirmed that the architecture is suitably designed to the programs.

- Member Wilcock asked if there were any sustainability considerations, such as Green Building, Well Program, LEED.
  Response: Due to the building's nonconformities (built in the 1980s) , it's difficult to retrofit sustainable elements. Where applicable, the design will incorporate sustainable elements, including building materials (glass coating), and provide a balance of economical and sustainable elements. Plans may include provisions for a future photovoltaic system ("PV"), but the uses (rooftop recreation space and gym for the kids) preclude a large PV system. Irrigation is proposed, because collecting water is problematic due to structural considerations. Landscape design will be based on design considerations for dry areas. The landscape plan proposes to convert impervious surfaces to grass areas and planting.

- Have you looked at battery storage?
  Response: Liliuokalani Trust will look into battery storage. Generally, the design will meet current silver LEED certification. Specialty systems will need further study and might not fit into the budget.

- ***Recommendation***: Long-term bike storage on the second floor is important; short term is okay, but the Project should provide long-term bicycle parking.

Hazel Go

- The proposed design is transformative. Member Go appreciates the thought that went into the design.

- Member Go asked if it is possible to create outdoor space in the upper lanai areas? She suggested activating the corner of King and Ward; accessible exterior balconies that open up to the neighborhood.
  Recommendation: Activate the upper lanai area into accessible space.

- Has the team considered incorporating stairs for circulation?
  Response: The design team looked into providing stairs, but it was costly and did not add a lot of benefit to the circulation of the building. Note that all existing stairs only provide egress out to the first floor.

- Member Go questioned why the landscape plan is inconsistent with Mauka Area Rules.
  Response: The Project has a legal nonconforming status, and therefore is not subject to the Mauka Area Rules Street Tree Plan. The landscape design represents and pays homage to the Queen - the Project's plant selection is based on her meles, including Kaulana na pua and Ka Waiapo. Use of hala, band of pili grass and rock mulch represent her mele. Her favorite flower was from the hala tree, yellow was the color of her ring, and purple was her favorite color. In addition, the landscape plan includes coconut palms, which were significant to Queen Liliuokalani. Coconut palms are also consistent with the palms at the nearby Neal Blaisdell Center.

Kevin Sakoda

- Member Sakoda stated that the building will primarily be used by 100-180 middle school/high school kids between the hours of 2:00 p.m. to 6:00 p.m. Is there an opportunity for an additional customer segment (kupuna in the morning) and would there be a need for a more accessible design to accommodate them? Could there be additional users, including third-party users of the theater, etc.?

- Member Sakoda proposed the following:
  - "Style, Functionality, and Low Maintenance" should drive the design considerations for the sake of the customer.

Recommendation: Consider cost-effective design & materials to keep maintenance costs low. Considerations should include: interior and exterior cleaning (windows, ledges, screens, and facades), gutters/standing water and use of corrosive materials.

- Design for the safety of the students: The arrival and departure of kids includes 100-180 students during peak times via the City Bus, Liliuokalani Trust Bus, walk, and bike. The site plan should account for the arrival and departure of students during peak period – can the drop-off area accommodate the number of students?
  Recommendation: Design the physical structure in conjunction with security technology (fob, ID access cards, camera, tracking) to keep the children safe. Use design considerations to control the garage security/access.

Kevin Wilcock. Member Wilcock asked that these additional comments be considered, as he was unable to provide these comments due to the time constraint of the DAB meeting:

1. Café seems to be tucked away and not in a prominent location. Don't know if the café is just meant for use by folks in the building or is it also accessible to the general public. It appears the exterior walls of the café are clad in that simulated wood panel and maybe the design team should consider storefront to activate the sidewalk/public realm?
2. Not a design comment, I noticed that the Fire Command Room looks to be located in the basement, my recent experience is that the room needs access to the exterior public right of way.
3. Another non-design comment, I suggest the design team reach out to TRB – Traffic Review Branch, regarding on-site truck turn around to access loading spaces and trash pickup. TRB has been requiring trucks to enter and exit loading and trash areas forward facing, no backing up onto the street. This has come up on recent projects.
4. The corner of South King and Ward can be quite noisy during commute hours, design team might consider some form of screening of outdoor area at corner? The fountain may not be able to provide enough "white noise"?
5. I would like to clarify Recommendation on bike storage, the long-term bicycle storage on the second level of the garage is difficult to access, I have actually used the racks located on second level of the garage when the Honolulu Club occupied the building. Recommendation is to have ALL short term and long-term bike storage at ground level.
6. Seems like a missed opportunity not to have the cardio/ fitness spaces open to exterior lanais. Could the Rec Lobby be more of an indoor/outdoor space, maybe with folding glass partition?
7. Would be nice to have a two-story atrium / glass pop-up with communicating stair to connect fitness floor with fitness roof? Could bring light into middle of the space?
8. Building sections would help to have in the drawing set.

9. I did like the 3d fly around animation, quite well done.

In general, this project is a good example of a sustainable, adaptive re-use of an older, underutilized structure, bringing new life to the neighborhood and much needed services to the youth within our community!

APPENDIX H

Window Calculations

21.March.2022
By Leah Jo Hemling
lhemling@guardian.com

HAWAII PROJECT

Make-up Name	Visible Light				Solar Energy					Thermal Properties		Light to Solar Gain (LSG)
	Transmittance	Reflectance		Color Rendering Index (R_a)	Transmittance	Reflectance	Solar Heat Gain Coefficient (SHGC)	Shading Coefficient (sc)	Relative Heat Gain (RHG)	U-Value		
	Visible (τ_v %)	ρ_v % out	ρ_v % in		Solar (τ_e %)	ρ_e % out				Winter Night (Btu/hr·ft²·F)	Summer Day (Btu/hr·ft²·F)	
1. Ground Level - SN 68 UltraClear lami	**70**	**11**	**13**	**98**	**35**	**42**	**0.39**	**0.44**	**93**	**0.29**	**0.27**	**1.8**
2. Typical Upper Levels - SN 68 Clear lami	**66**	**11**	**12**	**94**	**30**	**33**	**0.37**	**0.43**	**89**	**0.29**	**0.27**	**1.8**
3. Upper Levels STC 40s - SN 68 double lami	**63**	**11**	**12**	**92**	**27**	**22**	**0.36**	**0.41**	**87**	**0.31**	**0.31**	**1.8**
4. SN 68 Clear double lami with Sash	**56**	**14**	**17**	**89**	**23**	**23**	**0.32**	**0.36**	**75**	**0.21**	**0.20**	**1.8**

Calculation Standard: NFRC 2010

1. Ground Level - SN 68 UltraClear lami

Outdoors

GLASS 1	Guardian UltraClear® Glass (North America) Thickness = 1/4" (6mm)	#1 ----- #2 SunGuard® SN 68 (North America)
GAP 1	100% Air, 1/2" (12.7mm)	
GLASS 2	Guardian UltraClear® Glass (North America) Thickness = 1/4" (6mm)	#3 ----- #4 -----
INTERLAYER 1	0.030" (0.76mm) Saflex® R Clear PVB	
GLASS 3	Guardian UltraClear® Glass (North America) Thickness = 1/4" (6mm)	#5 ----- #6 -----

Total Unit (Nominal) = 1 9/32 in Slope = 90° Window Height = 1 meter

Estimated Nominal Glazing Weight: 8.79 lb/ft²

Indoors

2. Typical Upper Levels - SN 68 Clear lami

Outdoors

GLASS 1	Guardian Clear Glass (North America) Thickness = 1/4" (6mm)	#1 ----- #2 SunGuard® SN 68 (North America)
GAP 1	100% Air, 1/2" (12.7mm)	
GLASS 2	Guardian Clear Glass (North America) Thickness = 1/4" (6mm)	#3 ----- #4 -----
INTERLAYER 1	0.030" (0.76mm) Saflex® R Clear PVB	
GLASS 3	Guardian Clear Glass (North America) Thickness = 1/4" (6mm)	#5 ----- #6 -----

Total Unit (Nominal) = 1 9/32 in Slope = 90° Window Height = 1 meter

Estimated Nominal Glazing Weight: 8.79 lb/ft²

Indoors

3. Upper Levels STC 40s - SN 68 double lami

Outdoors

GLASS 1	Guardian Clear Glass (North America) Thickness = 1/4" (6mm)	#1 ----- #2 -----
INTERLAYER 1	0.030" (0.76mm) Saflex® R Clear PVB	
GLASS 2	Guardian Clear Glass (North America) Thickness = 1/4" (6mm)	#3 ----- #4 SunGuard® SN 68 (North America)
GAP 1	100% Air, 3/8" (9.5mm)	
GLASS 3	Guardian Clear Glass (North America) Thickness = 5/16" (8mm)	#5 ----- #6 -----
INTERLAYER 2	0.030" (0.76mm) Saflex® R Clear PVB	
GLASS 4	Guardian Clear Glass (North America) Thickness = 5/16" (8mm)	#7 ----- #8 -----

Total Unit (Nominal) = 1 9/16 in Slope = 90° Window Height = 1 meter

Estimated Nominal Glazing Weight: 13.72 lb/ft²

Indoors

4. SN 68 Clear double lami with Sash

Outdoors

GLASS 1	Guardian Clear Glass (North America) Thickness = 1/4" (6mm)	#1 ----- #2 -----
INTERLAYER 1	0.030" (0.76mm) Saflex® R Clear PVB	
GLASS 2	Guardian Clear Glass (North America) Thickness = 1/4" (6mm)	#3 ----- #4 SunGuard® SN 68 (North America)
GAP 1	100% Air, 1/2" (12.7mm)	
GLASS 3	Guardian Clear Glass (North America) Thickness = 5/16" (8mm)	#5 ----- #6 -----
INTERLAYER 2	0.030" (0.76mm) Saflex® R Clear PVB	
GLASS 4	Guardian Clear Glass (North America) Thickness = 5/16" (8mm)	#7 ----- #8 -----
GAP 2	100% Air, 3.9"	
GLASS 5	Guardian Clear Glass (North America) Thickness = 1/2" (12mm)	#9 ----- #10 -----

Total Unit (Nominal) = 6 3/32 in Slope = 90° Window Height = 1 meter

Estimated Nominal Glazing Weight: 19.85 lb/ft²

Indoors

Important Notes

Calculations and terms in this report are based on NFRC 2010. The performance values shown above represent nominal values for the center of glass with no spacer system or framing.

Laminated products:
The Performance Calculator allows the user to model a wide variety of laminated glass makeups using different float glass substrates, coatings and interlayer material, including those makeups where the coating faces the interlayer. It is the user's responsibility to assess whether the laminated glass makeup meets relevant regional standards and complies with applicable laminated glass safety regulations.

In addition, when the laminated glass makeup includes a coating facing the interlayer material, there may be a loss of thermal insulation performance and a color change compared to non-embedded coated class.

Non-specular products (translucent or diffuse):
The performance measurement for non-specular (translucent or diffuse) materials such as translucent interlayers or acid etched glass surface, or surface with ceramic frit is limited by the current experimental technologies. Since measurements capture physically only a part of the resulting radiation, calculated performance results provided herein and based on such measurements are not compliant with any standard (including EN 410) and may only be used as a general reference. Actual values may vary significantly based upon exact fabrication process, as well as type, thickness and color of used non-specular material.

Please note that the Thermal Stress Guideline is only a general guide to the thermal safety of a glazing, and it is not a replacement for detailed thermal stress analysis.

Explanation of Terms

Visible Light Transmittance (Tv, %) is the percentage of incident light in the wavelength range of 380 nm to 780 nm that is transmitted by the glass.

Ultraviolet (UV) Transmittance (Tuv, %) is the percentage of the incident solar radiation transmitted by the glazing in the 300 nm to 380 nm range.

Solar Energy Direct Transmittance (Te, %) is the percentage of incident solar energy in the wavelength range of 300 nm to 2500

nm that is directly transmitted by the glass.

Visible Light Reflectance Outdoors/Indoor (Rv out/in, %) is the percentage of incident visible light directly reflected by the glass.

Solar Direct Reflectance Outdoors/Indoors (Re out/in, %) is the percentage of incident solar energy directly reflected by the glass.

Solar Energy Absorptance (Ae, %) is the percentage of the sun's energy that is absorbed by glass.

U-Value is the glazing parameter that characterizes the heat transfer through the central part of the glazing, i.e. without edge effects, and expresses the steady-state density of heat transfer rate per temperature difference between the environmental temperatures on each side. US Standard units are Btu/hr·ft²·F and SI / Metric units are W/m2 K.

Relative Heat Gain (RHG) is the total net heat gain to the indoors due to both the air-to-air thermal conductance and the solar heat gain. US Standard units are Btu/hr.ft² and SI / Metric units are W/m².

Shading Coefficient (sc) is Solar Factor divided by 0.87. It is a measure of the solar heat gain referenced to 3 mm clear glass which has the designated value of 1.00.

Solar Heat Gain Coefficient (SHGC) is the sum of the solar direct transmittance and the secondary heat transfer factor of the glazing towards the inside, the latter resulting from heat transfer by convection and longwave IR-radiation of that part of the incident solar radiation which has been absorbed by the glazing.

Light-to-Solar Gain (LSG) is the ratio of visible light gain to solar gain. LSG = (Visible Transmittance) / (SHGC)

Color Rendering Index in transmission, D65 (R_a) is the change in color of an object as a result of the light being transmitted by the glass.

Weighted Sound Reduction Index (Rw) is a single-number quantity which characterizes the airborne sound insulation of a material or building element over a range of frequencies.

Sound Transmission Class (STC) is a single-number quantity which characterizes the airborne sound insulation of a material or building element over a range of frequencies.

Disclaimer

This performance analysis is provided for the limited purpose of assisting the user in evaluating the performance of the glass products identified on this report.

Spectral data for products manufactured by Guardian reflect nominal values derived from typical production samples or CE Initial Type Testing and subject to variations due to manufacturing and calculation tolerances. Spectral data for products not manufactured by Guardian were derived from the LBNL International Glazing Database and have not been independently verified by Guardian. Guardian recommends a full-size mock-up be approved.

The values provided herein are generated according to established engineering practices and applicable calculation standards. Many factors may affect glazing characteristics, including glass size, building orientation, shading, wind speed, type of installation, production process and others. The applicability and results of the analysis are directly related to user inputs and any changes in actual conditions can have a significant effect on the results. It is the responsibility of the users of the analysis to ensure that the intended application is appropriate and complies with all relevant laws, regulations, standards, codes of practices, processing guidelines and other requirements. Guardian makes no guarantee that any glazing modeled herein is available from Guardian or any other manufacturer. The user has the responsibility to check with the manufacturer regarding availability of any glass type or make-up.

While Guardian has made a good faith effort to verify the reliability of the tools used for this analysis, they may contain unknown programming errors that could result in inaccurate results. The user assumes all risk relating to the results provided and is solely responsible for selection of appropriate products for user's application. Guardian makes no express or implied warranty of any kind with respect to the tools used by Guardian and this analysis. There are no warranties of merchantability, non-infringement or fitness for a particular purpose with respect to the tools used by Guardian and this analysis and no warranty shall be implied by operation of law or otherwise. The only warranties applicable to Guardian products are those separately provided in writing for each product. In no event shall Guardian be liable for direct, indirect, special, consequential or incidental damages of any kind relating to or resulting from use of Guardian tools and analyses.

Program Version: 4.1.0.9269
Database Version: 20220309

APPENDIX I

SHPD Determination Letter and
Archaeological Literature Review and Field Inspection

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING
601 KAMOKILA BLVD., STE 555
KAPOLEI, HI 96707

August 9, 2022

IN REPLY REFER TO:
Project No: 2021PR00914
Doc. No.: 2208SCH04
Archaeology

Sherman Wong, Director
Lili‘uokalani Trust
1100 Alakea Street, Suite 1100
Honolulu, HI 96813
Email: swong@onipaa.org

Dean Uchida, Director
Department of Planning & Permitting
City and County of Honolulu
650 N. King Street
Honolulu, HI 96813
c/o Perry Tamayo
ptamayo@honolulu.gov

Dear Sherman Wong and Dean Uchida:

SUBJECT: **Chapter 6E-42 Historic Preservation Review –**
Building Permit Applications: A2022-08-0124, 2022/IBP06278, and 2022/IBPO3670
Honolulu Club Building
Address: 932 Ward Avenue, Honolulu
Honolulu Ahupua‘a, Honolulu (Kona) District, Island of O‘ahu
TMK: (1) 2-1-044:005

This letter provides the State Historic Preservation Division’s (SHPD’s) review of the subject permit applications associated with the Honolulu Club Building project. The submittal included a Hawaii Community Development Authority (HCDA) cover letter dated June 20, 2022 (Ref. No.: KAK 21-028), USGS map, TMK map, photographs, and a HRS 6E Submittal Form. The submittal also included a supporting document titled *Archaeological Literature Review and Field Inspection to Support Consultation with SHPD for the Honolulu Club Building at 932 Ward Avenue Project, Honolulu Ahupua‘a, Honolulu (Kona) District, O‘ahu TMK: [1] 2-1-044:005* (Farley and McDermott, June 2022). A Literature Review and Field Inspection (LRFI), HRS §6E Submittal Form, and HCDA cover letter were previously submitted to the SHPD on August 3, 2021. The LRFI and HRS §6E Submittal Form have been revised to include an updated project description and discussion of recent consultation among the SHPD, the project team, and Cultural Surveys Hawai‘i, Inc. (CSH). The SHPD received the additional information on June 23, 2022.

The project area is located at the Honolulu Club Building at 932 Ward Avenue, Honolulu. The project area is approximately 0.7513 acre. The Lili‘uokalani Trust plans to renovate the seven-story Honolulu Club Building. The project comprises a complete renovation of the building, which may include installation of a new freight elevator; however, the potential freight elevator installation would be above and within an existing basement. Additionally, the removal of the existing hardscape (paving, sidewalks, curbs) and removal of shorter trees and bushes with

smaller root balls is planned at the intersection of King Street and Ward Avenue, at the northeast corner of the project area. Lastly, a tower crane will need to be installed to accommodate the new gym that will be built on the roof. This will require a deep excavation to install the large 25 ft. by 25 ft. by 7 ft. deep concrete footing for the tower crane.

A review of SHPD's records and the LRFI report (Farley and McDermott, June 2022) show that at least 30 archaeological studies have been conducted in the vicinity of the project area. These archaeological studies have identified historic properties including fishponds, historic trash pits, the Kewalo Wetlands, ditches, pit features, and human burials. No surface archaeological historic properties were identified during the field inspection.

The USDA (Foote et. al 1972) identifies the soils as Fill land, mixed (FL) areas. According to the SHPD's geographical information system (GIS) the project parcel has been extensively developed. The current basement floor is approximately 9 feet below street level and extends across the entire building footprint. The depth of the basement makes it unlikely that intact subsurface cultural deposits or human remains are present. Extensive excavations for the crane will be conducted within the former alignment of Ward Avenue, within an area previously disturbed for utility installation. Low potential exists for the project to encounter subsurface historic properties not already disturbed by previous development.

Based on the information provided, SHPD's determination is **no historic properties affected** for the current project pursuant to HAR §13- 284- 7(a)(1). Pursuant to HAR §13-284-7(e), when the SHPD agrees that the action will not affect any significant historic properties, this is the SHPD's written concurrence and historic preservation review ends. The HRS 6E historic preservation review process is ended. The permit issuance process may proceed.

Please attach to permit: In the unlikely event that subsurface historic resources, including human skeletal remains, structural remains, cultural deposits, artifacts, sand deposits, or sink holes are identified during the demolition and/or construction work, cease work in the immediate vicinity of the find, protect the find from additional disturbance, and contact the State Historic Preservation Division, at (808) 692-8015.

The document titled *Archaeological Literature Review and Field Inspection to Support Consultation with SHPD for the Honolulu Club Building at 932 Ward Avenue Project, Honolulu Ahupua'a, Honolulu (Kona) District, O'ahu TMK: [1] 2-1-044:005* (Farley and McDermott, June 2022) serves to facilitate project planning and supports the historic preservation review process. Please send one hard copy of the document clearly marked FINAL, along with a copy of this review letter and a text-searchable PDF version of the document to the Kapolei SHPD office, attention SHPD Library. Please send a text-searchable PDF copy of the literature review and field inspection to SHPD via HICRIS to Project No. 2021PR00914 using the Supplemental Attachment option and a text-searchable PDF copy to Lehua.K.Soares@hawaii.gov.

Please contact Samantha Hemenway, O'ahu Island Archaeologist, at Samantha.Hemenway@hawaii.gov or at (808) 692-8011 or for questions regarding this letter.

Aloha,

Alan Downer

Alan S. Downer, PhD
Administrator, State Historic Preservation Division
Deputy State Historic Preservation Officer

cc: Craig Nakamoto, craig.k.nakamoto@hawaii.gov
Matt McDermott, mmcdermott@culturalsurveys.com
Mark Hokoda, mark.h.hakoda@hawaii.gov
Susan Tamura, susan.j.tamura@hawaii.gov
Lani Smithson, lani.smithson@kiewit.com

HAWAII COMMUNITY DEVELOPMENT AUTHORITY

547 Queen Street, Honolulu, Hawaii 96817
Telephone: (808) 594-0300 Fax: (808) 587-0299
Web site: http://dbedt.hawaii.gov/hcda/

DAVID Y. IGE
GOVERNOR

SUSAN TODANI
CHAIRPERSON

CRAIG K. NAKAMOTO
EXECUTIVE DIRECTOR

Ref. No.: KAK 21-028

June 20, 2022

Dr. Alan Downer, Administrator
State Historic Preservation Division
601 Kamokila Boulevard, Room 555
Kapolei, Hawaii 96707

Dear Dr. Downer:

Re: Honolulu Club Building at 932 Ward Avenue Project,
Honolulu Ahupuaa, Honolulu District, Oahu,
TMK: [1] 2-1-044:005

This letter submits to the State Historic Preservation Division (SHPD) an updated HRS §6E submittal form and archaeological literature review and field inspection (LRFI) for the Honolulu Club Building at 932 Ward Avenue Project, Honolulu Ahupua'a, Honolulu (Kona) District, O'ahu, TMK: [1] 2-1-044:005, prepared by Cultural Surveys Hawai'i, Inc. (CSH). The documents provided are intended to support Lili'uokalani Trust's (the project proponent) and the Hawai'i Community Development Authority's (HCDA, the project agency) consultation with the SHPD regarding the project's necessary historic preservation review steps pursuant to HRS §6E-42 and Hawai'i Administrative Rules (HAR) §13-284-3.

An LRFI, HRS §6E submittal form, and HCDA cover letter were previously submitted to the SHPD on 3 August 2021. As new elements of the proposed project's design will require additional ground disturbance (tower crane footing excavation) that was not described in the initial submittal, the LRFI and HRS §6E form have been revised to include an updated project description and discussion of recent consultation among the SHPD, the project team, and CSH. This letter seeks SHPD's concurrence, pursuant to HAR §13-284-5(b), that no significant historic properties are likely to be present that could be affected by the project.

The Honolulu Club Building at 932 Ward Avenue Project encompasses 0.751 acre of privately owned land in urban Honolulu. The project area is generally bounded by Ward Avenue on the east, King Street on the north, the King Street Catholic Cemetery on the west, and the Royal Court Condos on the south. Parcel 005 also includes a small strip of land that extends *makai* (seaward) along the east side of the Royal Court Condos. The Lili'uokalani Trust plans to renovate the seven-story Honolulu Club Building at 932 Ward Avenue.

The proposed project comprises a complete renovation of the building, which might include installation of a new freight elevator; however, the potential freight elevator installation would be over and within an existing basement. If needed to service the basement floor, this freight elevator could involve ground disturbance below the basement floor for installation of the

elevator pit. Based on the basement floor's depth below the surrounding ground surface (approximately 9 feet [ft] below surface), this sub-basement floor ground disturbance would be below the surrounding water table and beneath soils/sediments that could contain archaeological deposits. Current plans include ground disturbance for landscaping at the intersection of King Street and Ward Avenue, at the northeast corner of the project area. This ground disturbance will include removal of the existing hardscape (paving, sidewalks, curbs) and removal of shorter trees and bushes with smaller root balls. In addition, a tower crane will need to be installed to accommodate the new gym that will be built on the roof. This will require a deep excavation to install the large 25-ft by 25-ft by 7-ft-deep concrete footing for the tower crane on the Ward Avenue side of the parcel.

The development is a privately-funded project on private land that requires historic preservation review under HRS §6E-42 and HAR §13-284. The project's first historic preservation review trigger is the need for HCDA approvals. The project is not subject to environmental review under HRS §343, and no environmental assessment or environmental impact statement is required. There is no federal involvement that would trigger federal historic preservation review.

No surface archaeological historic properties were identified during a 22 April 2021 field inspection conducted by CSH, and no historic properties have been identified previously within the project area. The presence of a basement approximately 9 ft below street level, across the entire building footprint, makes it unlikely that intact subsurface cultural deposits or human remains are present. Furthermore, the currently proposed ground disturbance for landscaping is quite minimal and likely would not extend below modern fill deposits. Excavation for the tower crane will be more extensive but will be conducted within the former alignment of Ward Avenue, within an area previously disturbed for utility installation (abandoned 1920s sewer line). Accordingly, the LRFI supports a project effect determination of "no historic properties affected" pursuant to HAR §13-284-7(a)(1).

Pursuant to HAR §13-284-5(b), the HCDA submits this letter and the attached documentation to obtain the SHPD's concurrence that an AIS is not warranted for the project, and that the potential to affect archaeological historic properties is low enough that no archaeological monitoring program during project construction is warranted. Recent consultation with the SHPD (27 May 2022 phone call between Lani Smithson of Kiewit Building Group, Inc. and Dr. Susan Lebo of SHPD; and 6 June 2022 phone call between Matt McDermott of CSH and Dr. Lebo) has confirmed that "no historic properties affected" is an appropriate project effect determination and that an AIS is not warranted. We would appreciate if the SHPD would provide a response letter to the HCDA, granting the SHPD's formal written concurrence.

We would appreciate if the SHPD would provide a response letter to the HCDA, confirming the SHPD's concurrence. If the SHPD does not concur, we ask that the SHPD provide guidance regarding the appropriate historic preservation review steps for this project.

The HCDA delegates authority to Mr. Matt McDermott of CSH, who can be reached at email: mmcdermott@culturalsurveys.com; or by phone: (808) 262-9972, to consult with the SHPD regarding the project's historic preservation review process. Should you have any questions, please contact Mark Hakoda of our Planning Office at 808-594-0333 or via email at mark.h.hakoda@hawaii.gov.

Sincerely,

Craig K. Nakamoto
Executive Director

CN/MH:rlr

c: Dr. Susan Lebo, Archaeology Branch Chief, SHPD
Sherman Wong, Director of Design and Construction, Liliuokalani Trust
Matt McDermott, Project Manager, CSH

State Historic Preservation Division
HRS 6E Submittal Form

Per §6E, Hawai‘i Revised Statutes, if the Project requires review by the State Historic Preservation Division (SHPD), please review and fill out this form and submit all requested information to SHPD. Please submit this form and project documentation **electronically** to:

dlnr.intake.shpd@hawaii.gov

If you are unable to submit electronically, please contact SHPD at (808) 692-8015. Mahalo.

The submission date of this form is:

1. APPLICANT (select one)

☑ Property Owner ☐ Government Agency

2. AGENCY (select one)

☐ Planning Department ☐ Department of Public Works ☑ Other (specify): Hawaii Community

Type of Permit Applied For: HCDA Development Permit

3. APPLICANT CONTACT

3.1) Name: Sherman Wong 3.2) Title: Director, Design and Construction, Lili‘uokalani Trust

3.3) Street Address: 1100 Alakea Street, Suite 1100

3.4) County: Honolulu 3.5) State: HI 3.6) Zip Code: 968813

3.7) Phone: (808) 466-7924 3.8) Email: swong@onipaa.org

4. PROJECT DATA

4.1) Permit Number (if applicable):

4.2) TMK [e.g. (3) 1-2-003:004]: [1] 2-1-044:005

4.3) Street Address: 932 Ward Avenue

4.4) County: Honolulu 4.5) State: HI 4.6) Zip Code: 96814

4.7) Total Property Acreage: 0.751 acre

4.8) Project Area (acreage, square feet): 0.751 acre

4.9) List any previous SHPD correspondence (LOG Number & DOC Number, if applicable):

LOG NO. DOC NO.

5. PROJECT INFORMATION

5.1) Does the Project involve a Historic Property? A Historic Property is any building, structure, object,

district, area, or site, including heiau and underwater site, **which is over 50 years old** (*HRS §6E-2*).

☐ Yes ☑ No

5.2) The date(s) of construction for the historic property (building, structure, object, district, area, or site, including heiau and underwater site) is

5.3) Is the Property listed on the Hawai‘i and or National Register of Historic Places? To check: http://dlnr.hawaii.gov/shpd/

☐ Yes ☑ No

5.4) Detailed Project Description and Scope of Work:

The Lili‘uokalani Trust plans to renovate the seven-story Honolulu Club Building at 932 Ward Avenue. The project comprises a complete renovation of the building, which may include installation of a new freight elevator; however, the potential freight elevator installation would be over and within

5.5) Description of **previous** ground disturbance (e.g. previous grading and grubbing):

Previous ground disturbance in the project area includes construction of the seven-story Honolulu Club building ca. 1980, including a basement approximately 9 ft below street level across the entire building footprint, as well as the installation of a sewer line on the Ward Avenue side of the parcel in the 1920s.

5.6) Description of **proposed** ground disturbance (e.g. # of trenches, Length x Width x Depth):

If needed to service the basement floor, the freight elevator could involve ground disturbance below the sub-basement floor (i.e., more than 9 ft below surface). Current plans definitely include ground disturbance for landscaping at the intersection of King Street and Ward Avenue, at the northeast corner of the project area. This ground disturbance will include removal of the existing hardscape (paving,

5.7) The Agency shall ensure whether historic properties are present in the project area, and, if so, it shall ensure that these properties are properly identified and inventoried. Identify all known historic properties:

No historic properties have been identified in the project area.

5.8) Once a historic property is identified, then an assessment of significance shall occur.

Integrity (check all that apply):

☐ Location ☐ Design ☐ Setting ☐ Materials ☐ Workmanship ☐ Feeling ☐ Association

Criteria (check all that apply):

☐ a – associated with events that have made an important contribution to the broad patterns of our history
☐ b – associated with the lives of persons important in our past
☐ c – embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; or possess high artistic value
☐ d – have yielded, or is likely to yield, information important for research on prehistory or history
☐ e – have an important value to the Native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out or still carried out, at the property or due to associations with traditional beliefs, events, or oral accounts - - these associations being important to the group’s history and cultural identity

5.9) The effects or impacts of a project on significant historic properties shall be determined by the agency.

Effect Determination (select one):

☑ No Historic Properties Affected
☐ Effect, with Agreed Upon Mitigation Commitments (§6E-42, HRS)
☐ Effect, with Proposed Mitigation Commitments (§6E-8, HRS)

5.10) This project is (check all that apply, if applicable):

☐ an activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency;

☐ carried out with Federal financial assistance; and or

☐ requiring a Federal permit, license or approval.

If any of these boxes are checked, then the Project may also be subject to compliance with Section 106 of the National Historic Preservation Act (NHPA).

6. PROJECT SUBMITTALS

6.1) Please submit a copy of the Tax Map Key (TMK) map

6.2) Please submit a copy of the property map showing the project area and indicate if the project area is smaller than the property area.

6.3) Please submit a permit set of drawings. A permit set is a set of drawings prepared and signed by a licensed architect or engineer and is at least 65% complete.

Not yet available

6.4) Are you submitting a survey?

☑ Yes ☐ No

Specify Survey: Updated Archaeological Literature Review and Field Inspection to Support Consultation

6.5) Did SHPD request the survey?

☐ Yes ☑ No

If 'Yes', then please provide the date, SHPD LOG NO, and DOC NO:

Date: LOG NO. DOC NO.

6.6) **SURVEY REVIEW FEES**. Fee for Review of Reports and Plans (§§13-275-4 and 284-4). A filing fee will be charged for all reports and plans submitted to our office for review. Please go to:

http://dlnr.hawaii.gov/shpd/about/branches/archaeology/filing-fee-schedule/

A check payable to the Hawaii Historic Preservation Special Fund should accompany all reports or plans submitted.

6.7) Please submit color photos/images of the Historic Property (any building, structure, object, district, area, or site, including heiau and underwater site) that will be affected by the Project.

The following are the minimum number and type of color photographs required:

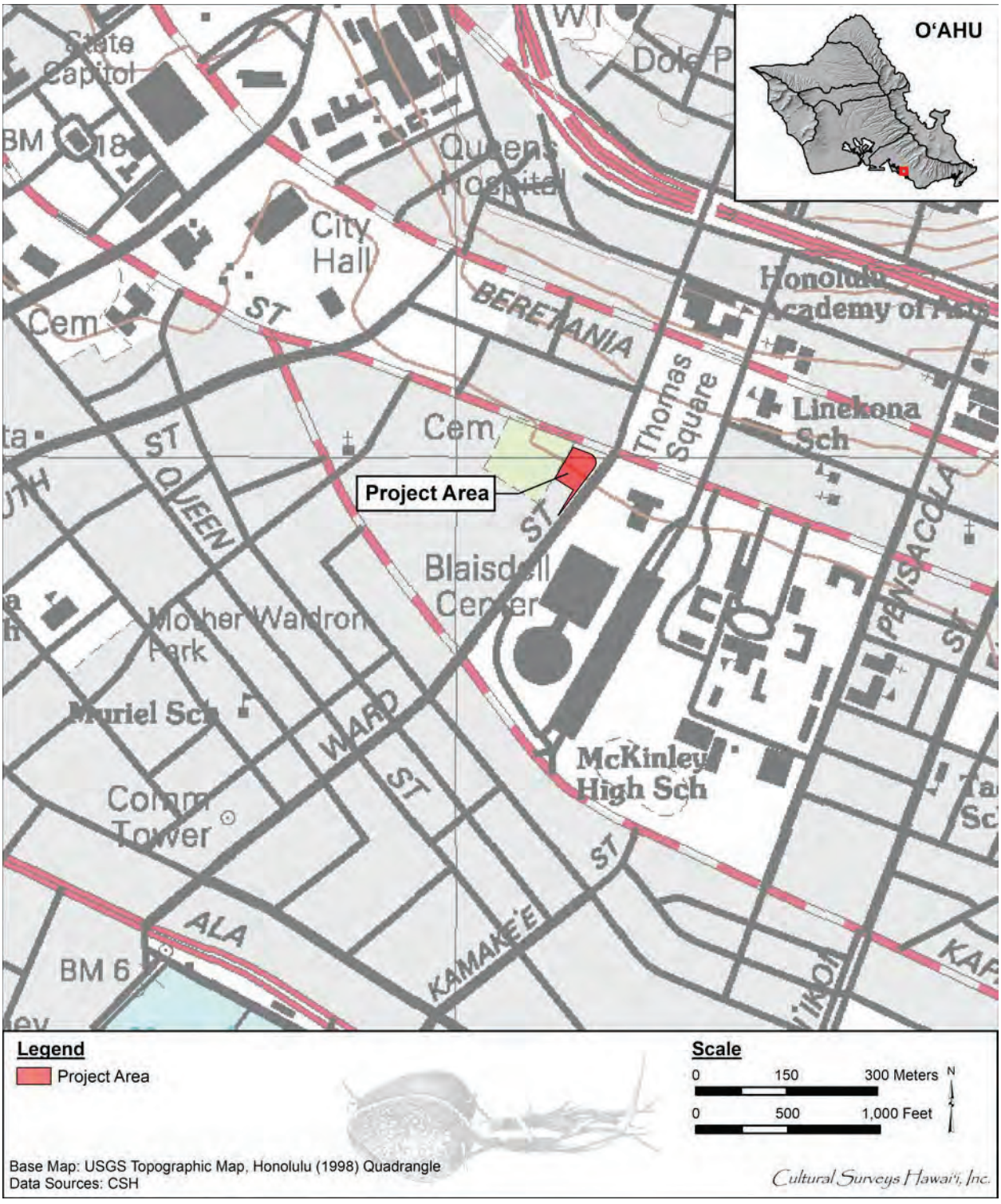
Quantity	Description
1-2	Street view(s) of the resource and surrounding area
1-2	Over view of exterior work area
1	exterior photo of the North elevation (if applicable)
1	exterior photo of the South elevation (if applicable)
1	exterior photo of the East elevation (if applicable)
1	exterior photo of the West elevation (if applicable)
1-2	interior photos(s) of areas affected (if applicable)

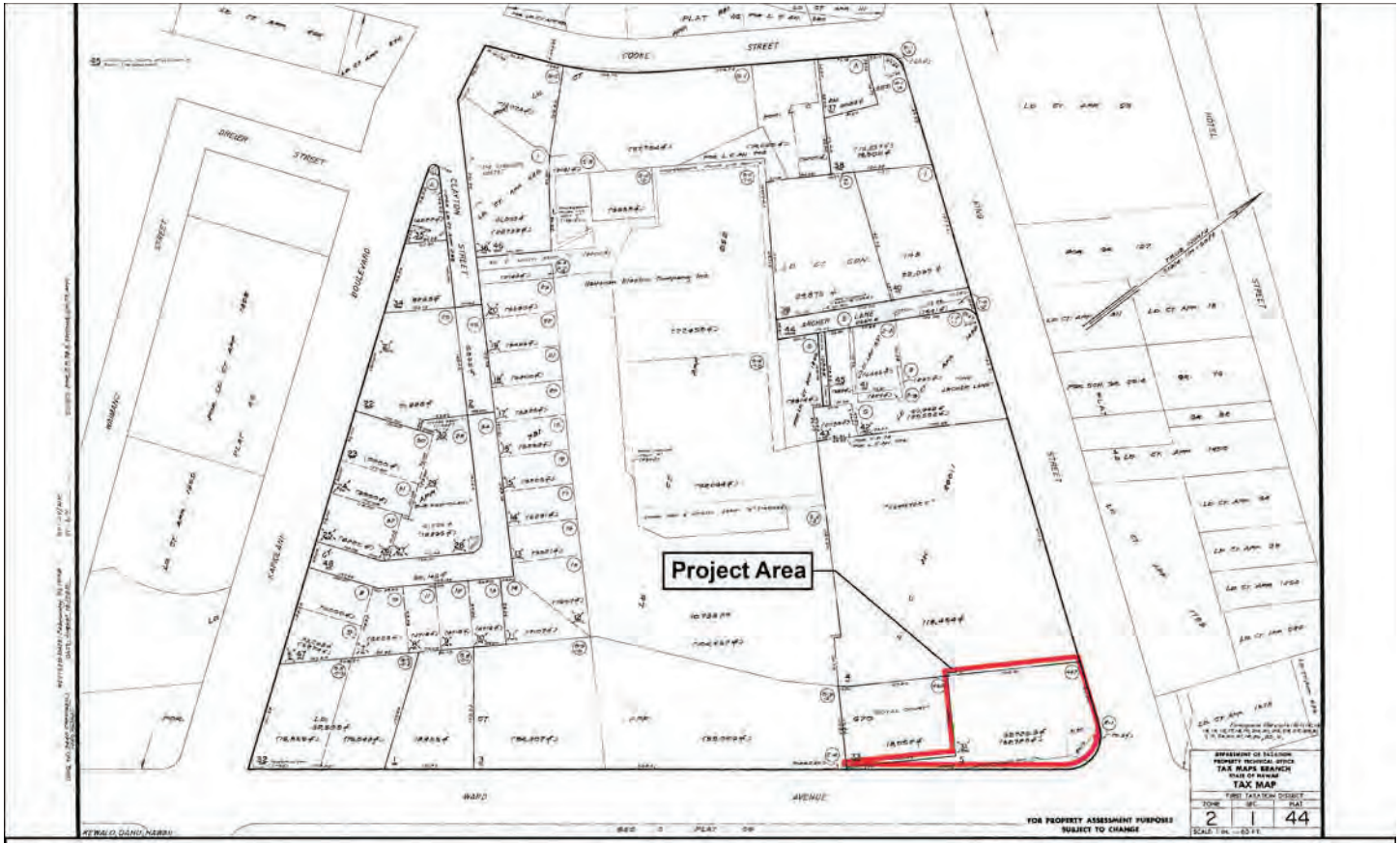
CHECKLIST

☑ **SHPD FORM 6E** (this form)

☑ **PROJECT SUBMITTALS** (any requested documentation for items 6.1 - 6.7 of this form)

☐ **FILING FEE FORM** (if applicable)


O'AHU
Project Area
State Capitol
City Hall
Queen's Hospital
Cem
BERETANIA ST
Thomas Square
Linekona Sch
QUEEN ST
Blaisdell Center
Mother Waldron Park
Muriel Sch
WARD ST
McKinley High Sch
Comm Tower
ALA
KAMAKE'E
PENSACOLA ST
BM 6
Legend
Project Area
Scale
0 150 300 Meters
0 500 1,000 Feet
N
Base Map: USGS Topographic Map, Honolulu (1998) Quadrangle
Data Sources: CSH
Cultural Surveys Hawai'i, Inc.



Legend

Project Area

Scale

0 30 60 Meters

0 100 200 Feet

Base Map: Tax Map Key [1] 2-1-44
Data Sources: CSH

Cultural Surveys Hawai'i, Inc.

Legend

Project Area

Scale

0 25 50 Meters

0 75 150 Feet

N

Base Map: Google Earth Aerial Imagery (2019)
Data Sources: CSH

Cultural Surveys Hawai'i, Inc.

Updated
Archaeological Literature Review and Field Inspection to Support Consultation with SHPD for the Honolulu Club Building at 932 Ward Avenue Project, Honolulu Ahupua‘a, Honolulu (Kona) District, O‘ahu TMK: [1] 2-1-044:005

Prepared for
Lili‘uokalani Trust

Prepared by
Gina M. Farley, M.A.
and
Matt McDermott, M.A.

Cultural Surveys Hawai‘i, Inc.
Kailua, Hawai‘i
(Job Code: HONOLULU 105)

June 2022

O‘ahu Island	Maui Island	Hawai‘i Island	Kaua‘i Island
P.O. Box 1114	1860 Main Street	399 Hualani St.	2970 Kele St.
Kailua, HI 96734	Wailuku, HI 96793	Suite 124	Suite 114
Ph: (808) 262-9972	Ph: (808) 242-9882	Hilo, HI 96720	Līhu‘e, HI 96766
Fax: (808) 262-4950	Fax: (808) 244-1994	Ph. (866) 956-6478	Ph. (808) 245-9374

Management Summary

Reference	Updated Archaeological Literature Review and Field Inspection to Support Consultation with SHPD for the Honolulu Club Building at 932 Ward Avenue Project, Honolulu Ahupua‘a, Honolulu (Kona) District, O‘ahu TMK: [1] 2-1-044:005 (Farley and McDermott 2022)
Date	June 2022
Project Number	Cultural Surveys Hawai‘i, Inc. (CSH), Job Code: HONOLULU 105
Investigation Permit Number	CSH completed the fieldwork component of this study under archaeological fieldwork permit number 21-10, issued by the Hawai‘i State Historic Preservation Division (SHPD) per Hawai‘i Administrative Rules (HAR) §13-282.
Agencies	SHPD; Hawai‘i Community Development Authority (HCDA)
Project Proponent	Lili‘uokalani Trust
Project Funding	Lili‘uokalani Trust
Project Location	The proposed project is at 932 Ward Avenue in Honolulu Ahupua‘a, Honolulu (Kona) District, O‘ahu TMK: [1] 2-1-044:005. The project area is generally bounded by King Street to the north, Ward Avenue to the east, the Royal Court Condos to the south, and the King Street Catholic Cemetery to the west. Parcel 005 also includes a small strip of land that extends *makai* (seaward) along the east side of the Royal Court Condos. The project area is depicted on a portion of the 1998 Honolulu U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (Figure 1), a tax map plat (Figure 2), and a 2019 aerial photograph (Figure 3).
Project Land Jurisdiction	Private, Lili‘uokalani Trust
Project Acreage	0.7513 acre (0.304 hectare)
Project Description and Ground Disturbance	The Lili‘uokalani Trust plans to renovate the seven-story Honolulu Club Building at 932 Ward Avenue. The project comprises a complete renovation of the building, which may include installation of a new freight elevator; however, the potential freight elevator installation would be over and within an existing basement. This basement floor, which is approximately 9 feet (ft) below street level, extends across the entire building footprint. Hence, if needed to service the basement floor, this freight elevator could involve ground disturbance below the basement floor for installation of the elevator pit. Based on the basement floor’s depth below the surrounding ground surface, this sub-basement floor ground disturbance would be below the surrounding water table and beneath soils/sediments that could contain archaeological deposits. Current plans definitely include ground disturbance for landscaping at the

	intersection of King Street and Ward Avenue, at the northeast corner of the project area. This ground disturbance will include removal of the existing hardscape (paving, sidewalks, curbs) and removal of shorter trees and bushes with smaller root balls. In addition, a tower crane will need to be installed to accommodate the new gym that will be built on the roof. This will require a deep excavation to install the large 25-ft by 25-ft by 7-ft-deep concrete footing for the tower crane (Figure 4 and Figure 5).
Historic Preservation Regulatory Context	This is a “private” project requiring historic preservation review under Hawai‘i Revised Statutes (HRS) §6E-42 and HAR §13-284. There is no federal involvement that would trigger compliance with federal historic preservation review legislation (e.g., Section 106 of the National Historic Preservation Act). HRS §6E-42 compliance will be triggered by the project’s need for HCDA approvals.
Document Purpose	This investigation was designed—through historical, cultural, and archaeological background research and a field inspection of the project area—to determine the likelihood that historic properties may be affected by the proposed project and, based on findings, to consider cultural resource management recommendations. This document is intended to facilitate the project’s planning and to support the project’s historic preservation compliance. This investigation does not fulfill the requirements of an archaeological inventory survey (AIS) investigation, per HAR §13-276. This information also supports consultation with the SHPD regarding the project’s necessary historic preservation review steps pursuant to HAR §13-284.
Built Environment	As documented during the field inspection, the project area is within urban Honolulu (Figure 7 through Figure 16). Although quite close to the government center of Honolulu, the immediate vicinity is somewhat open because of the King Street Catholic Cemetery abutting the project area on the west and the large, open Thomas Square Park on the opposite side of the Ward Avenue-King Street intersection (see Figure 3). The project area currently comprises the seven-story Honolulu Club Building and its landscaped margins. According to the City and County of Honolulu Department of Budget and Fiscal Services Real Property Assessment Division website, the Honolulu Club Building was constructed in 1980. As it is less than 50 years old, it is not a potential architectural historic property.
Natural Environment	The project area is approximately 0.75 km inland from the natural coastline (approximately the *makai* side of Ala Moana Boulevard), is between 6 and 9 ft above sea level, and is approximately 5 ft above the water table (Ferrall 1976). Land within the project area is flat, and no streams or other natural drainages are in the vicinity. Annual rainfall averages 764 mm (30.1 inches) (Giambelluca et al. 2013), which is

	regarded as marginal for non-irrigated agriculture. Vegetation within the project area consists of landscaped margins with ornamental palm trees. According to the U.S. Department of Agriculture (USDA) Soil Survey Geographic (SSURGO) database (2001) and soil survey data gathered by Foote et al. (1972), the project area's soils consist of Makiki clay loam, 0 to 2 percent slopes (MkA) (Figure 17). The Makiki series is described as follows: > This series consists of well-drained soils on alluvial fans and terraces in the city of Honolulu on the island of Oahu. These soils formed in alluvium mixed with volcanic ash and cinders. They are nearly level […] > These soils are used almost entirely for urban purposes. [Foote et al. 1972:91]
Background Research Methods	Background research included a review of previous archaeological studies on file at the SHPD; review of documents at Hamilton Library at the University of Hawai‘i at Mānoa, the Hawai‘i State Archives, the Mission Houses Museum Library, the Hawai‘i Public Library, and the Bishop Museum Archives; study of historical photographs at the Hawai‘i State Archives and the Bishop Museum Archives; and study of historical maps at the Survey Office of the Department of Land and Natural Resources (DLNR). Historical maps and photographs from the CSH library were also consulted. In addition, Māhele records were examined from the Waihona ‘Aina database (Waihona ‘Aina 2000). This research provided the environmental, cultural, historical, and archaeological background for the project area. Historical maps and aerial photographs (Figure 18 through Figure 35) provide a cultural context and chronology of the changing landscape of the project area and surrounding vicinity.
Pre- and Early Post-Contact Background Research	The alignment of King Street on the *mauka* (inland) side of the project area was the major traditional Hawaiian trail leading east across the south shore of Kona (Honolulu) District on O‘ahu (see Figure 18). Early nineteenth century maps (see Figure 19 and Figure 20) show the general character of the area with scattered houses, fishponds, and salt pans *makai* of the project area, but a very low density of habitation and minimal agriculture in the dusty plain *mauka* of the project area. With the growth of urban Honolulu near the coast east of Nu‘uanu Stream, a number of early cemeteries were established on the "dry ground" east of town, including the King Street Catholic Cemetery that abuts the project area on the west side (see Figure 22 and Figure 23). The King Street Catholic Cemetery is of note for its proximity to the current project area, its age (believed to have been given to the church in 1827; the date of the oldest headstone within the cemetery today is 1841), and because it was clearly larger than the present-day boundaries. A brief

	review of this cemetery is provided in Appendix A, which cites a 1902 account that the cemetery was “about 500 feet long on King Street by 400 ft. deep,” which may be compared to the present-day estimate of 350 ft along King Street and a maximum of 340 ft along its north-south orientation. Prior archaeological studies (discussed further below) have reported church cemetery-related outlier burials outside the present cemetery boundaries.
Land Commission Awards (LCAs)	The distribution of Land Commission Awards (LCAs) in the vicinity of the project area is presented in Figure 22, with data for the five nearest LCAs summarized in Table 1. The present project area was part of LCA 200:1 to Kaina (Royal Patent [RP] 85); no land use information is available for this award. South-adjacent to LCA 200:1 was LCA 10605*O to Pi‘ikoi (RP 5716), which also lacks land use information (Waihona ‘Aina 2000). Immediately east of LCA 200:1 was LCA 274 to Booth (RP 306). This claim was for three fishponds and a portion of plain land (Waihona ‘Aina 2000); this would later become part of the Victoria Ward “Old Plantation” estate. The three fishponds included the “Long Pond” in the southern neck of the parcel, as well as unnamed fishponds in the central portion. LCA documentation also noted fishponds south, southeast, and southwest of the parcel (Waihona ‘Aina 2000). At the northeast corner of LCA 274 was LCA 213 (RP 584) to Vowles. According to LCA documentation, this land was “occupied by foreigners since 1825” and had a “large adobie house and other buildings with a fence” (Waihona ‘Aina 2000). LCA 569 to Puniwai, a fenced house lot, was approximately 225 m west of LCA 200:1. According to LCA documentation, Puniwai had lived there since 1834, prior to which it was “all weed-grown.” In addition, there were “salt beds” *makai* of the parcel (Waihona ‘Aina 2000).
Mid-19th Century to the Present	By the 1840s, the vicinity of the major thoroughfare of present-day King Street (known variously as the “Alanui Ali‘i” and “Alanui Halepule”) was being developed for the residences of Hawaiians (such as Kekuinau and Ho‘onaulu) and *haole* (foreigners such as Joseph Booth and James Vowles) (Waihona ‘Aina 2000). The early establishment of Thomas Square (State Inventory of Historic Places [SIHP] # 50-80-14-9990) in 1843 (see Figure 22 through Figure 25) attests to the City’s early expansion along the King Street alignment. The 1855 LaPasse map (see Figure 21) indicates that residences were common in the vicinity of the project area by that time, primarily *mauka* of King Street. However, no residences are depicted as within the project area, and fishponds are still present *makai* of the project area. Late nineteenth and early twentieth century maps (see Figure 22 through Figure 26) show how urban expansion continued *mauka* of King Street, in

	part because of the marshy nature of the ground *makai* of King Street, where the project area was located. King Street would take its present name by 1887 (see Figure 23), and Ward Avenue is present along the eastern boundary of the project area by 1912; however, the *mauka* portion of Ward Avenue was still known as Kapi‘olani Street at that time (see Figure 22 through Figure 25). Although the present project area was part of LCA 200:1 to Kaina, various maps as early as 1884 (see Figure 22 through Figure 24) indicate the current project area later became part of the Ward lands. The 1897 Monsarrat map (see Figure 24) reflects more broadly the change in landownership of the project area vicinity from Hawaiian to *haole* (e.g., Cooke, Atherton, Castle, Hustace). By 1927, a building or structure labelled “COCONUT HUT HAWAIIAN CURIOS” is within the *mauka* portion of the project area (see Figure 27). It is “PALM THATCHED” and is also depicted on 1933, 1943, and 1950 maps (see Figure 29 through Figure 31). The 1950 map also depicts additional buildings/structures within the project area (see Figure 31). These include a store room/office (“STORE RM & OFF.”), a storage facility (“ST’GE”), and a “TAVERN” with a “KITCHEN.” The tavern has a concrete floor (“CONC. FL.”). Like the “COCONUT HUT HAWAIIAN CURIOS,” the store room/office and the tavern also have palm-thatched roofs. According to the City and County of Honolulu Department of Budget and Fiscal Services Real Property Assessment Division website, the Honolulu Club Building currently within the project area was constructed in 1980. The Honolulu Club was a fitness and social networking club that ceased operations in 2020.
Summary of Prior Archaeological Studies in the Vicinity	Previous archaeological studies near the project area are shown on Figure 36, and the locations of previously identified historic properties are shown on Figure 37. The archaeological studies and their results, including SIHP numbers, are summarized in Table 2. Archaeological historic properties in the vicinity of the project area are summarized in Table 3. No prior archaeological studies have been conducted within the project area, and no archaeological historic properties have been identified within the project area. Prior studies have been conducted north- and east-adjacent to the project area, along King Street (LeSuer and Cleghorn 2004; Groza et al. 2016) and Ward Avenue (Enanoria et al. 2016), respectively. Two of these (LeSuer and Cleghorn 2004; Groza et al. 2016) are literature review and field inspection (LRFI) studies that did not involve subsurface testing. The third (Enanoria et al. 2016) is an archaeological monitoring project; no archaeological historic properties were identified. Profiles 5 and 6 from the Enanoria et al. (2016) report are adjacent to the current project area, within Ward Avenue. The stratigraphy at Profile 6, closest to

	the ground disturbing (landscaping) activities planned for the current project, consists of two fill layers (Strata Ia and Ib) overlying naturally deposited volcanic cinder (Stratum II); the cinder was encountered at 70 cmbs (Figure 38, Figure 39, and Table 4). Notably, three prior studies in the vicinity of the current project area (Anderson 1997; Anderson and Aronson 1997; Perzinski et al. 2006) have collectively documented over 30 burials related to the King Street Catholic Cemetery, which abuts the west side of the project area. The burials were identified as far as approximately 12 m west of the current cemetery boundary (Anderson and Aronson 1997) and 2 m south of the current boundary (Perzinski et al. 2006). These “extramural” burial finds all were collectively designated as SIHP # 50-80-14-5455.
Background Summary and Predictive Model	Traditional Hawaiian archaeological deposits within the project area cannot be ruled out, as the King Street alignment was likely a major Hawaiian trail for centuries prior to Western Contact. It is also possible that human skeletal remains associated with the King Street Catholic Cemetery extend east of the present perimeter of the cemetery into the current project area.
Fieldwork Effort	The field inspection was conducted on 22 April 2021 by CSH archaeologists Gina Farley, M.A., and Matt McDermott, M.A (see Figure 7 through Figure 16). It took approximately 0.2 person-day to complete. The archaeologists were met by Project Manager Nick Hastings, who arranged for entrance into the existing building’s basement, which is approximately 9 ft below street level (see Figure 13 through Figure 16). Mr. Hastings pointed out the possible location for the freight elevator, which may extend into the basement (see Figure 14), which would require excavation of the elevator pit beneath the current basement floor. The archaeologists inspected and photographed the basement, which extends across the entire building footprint. The archaeologists also inspected and photographed the exterior of the building and its landscaped margins, with particular attention given to the northeast corner of the project area, by the intersection of King Street and Ward Avenue (see Figure 10), where landscaping activities are planned. The western side of the building, which abuts the King Street Catholic Cemetery, was also carefully inspected and photographed (see Figure 7 and Figure 8). No potential surface archaeological historic properties were identified within the project area during the field inspection. As the existing building was constructed in 1980, it is less than 50 years old and is therefore not considered an architectural historic property.
Consultation	On 25 May 2022, Lani Smithson of Kiewit Building Group, Inc. sent an email to Ms. Lehua Soares and Dr. Susan Lebo of the SHPD Archaeology Branch. The email explained that the project team realized that new elements of the proposed project’s design will require use of a tower

	crane, with associated soil borings, thus necessitating revisions to the documents previously submitted to the SHPD on 3 August 2021. The email further explained that the newly proposed excavation for a tower crane will be within the former alignment of Ward Avenue, within an area previously disturbed for utility installation, and requested the excavation and soil borings be allowed to proceed without an AIS. This was followed by additional email correspondence between Mr. Smithson and Ms. Soares on 25 and 27 May 2022. In this correspondence, at Ms. Soares' request, Mr. Smithson provided additional explanation for the need for a tower crane—namely, the development of the gym design on the building's roof. Mr. Smithson also spoke with Dr. Lebo on the phone on 27 May 2022. During this call, Dr. Lebo agreed that an AIS would not be necessary due to the location of the tower crane within a previously disturbed area. On 6 June 2022, Matt McDermott of CSH spoke on the phone with Dr. Lebo. Dr. Lebo confirmed her previous phone conversation with Mr. Smithson and agreed that "no historic properties affected" is still an appropriate project effect determination. Mr. McDermott informed Dr. Lebo that a revised LRFI and supporting documents, updated with the additionally proposed ground disturbance for the tower crane and recent consultation with the SHPD, will be submitted to the SHPD.
Likelihood of Archaeological Historic Properties To Be Present	No surface archaeological historic properties were identified during the field inspection. Background research indicates that Traditional Hawaiian archaeological deposits within the project area cannot be ruled out, as the King Street alignment was likely a major Hawaiian trail for centuries prior to Western Contact. It is also possible that human skeletal remains associated with the King Street Catholic Cemetery extend east of the present perimeter of the cemetery into the current project area. However, the presence of a basement approximately 9 ft below street level across the entire building footprint makes it unlikely that intact subsurface cultural deposits or human remains are present. The currently proposed ground disturbance for landscaping is quite minimal and likely would not extend below modern fill deposits. Excavation for the tower crane will be more extensive but will be conducted within the former alignment of Ward Avenue, within an area previously disturbed for utility installation (abandoned 1920s sewer line) (see Figure 4 through Figure 6). Furthermore, this ground disturbance is on the east side of the building, farthest away from the cemetery grounds. Hence, it is unlikely that archaeological historic properties would be affected by the project.
Historic Preservation Review Steps	Based on the findings of the current study, no further historic preservation review steps are warranted. Hence, the current study supports a project effect determination of "no historic properties affected" pursuant to HAR § 13-284-7(a)(1). If potential archaeological historic properties (including potential burial sites) are found during project construction, work will stop immediately,

	and the SHPD will be notified pursuant to HAR §13-280-3 (for potential non-burial site archaeological historic properties) and, if appropriate, HAR §13-300-40 (for potential burial sites).

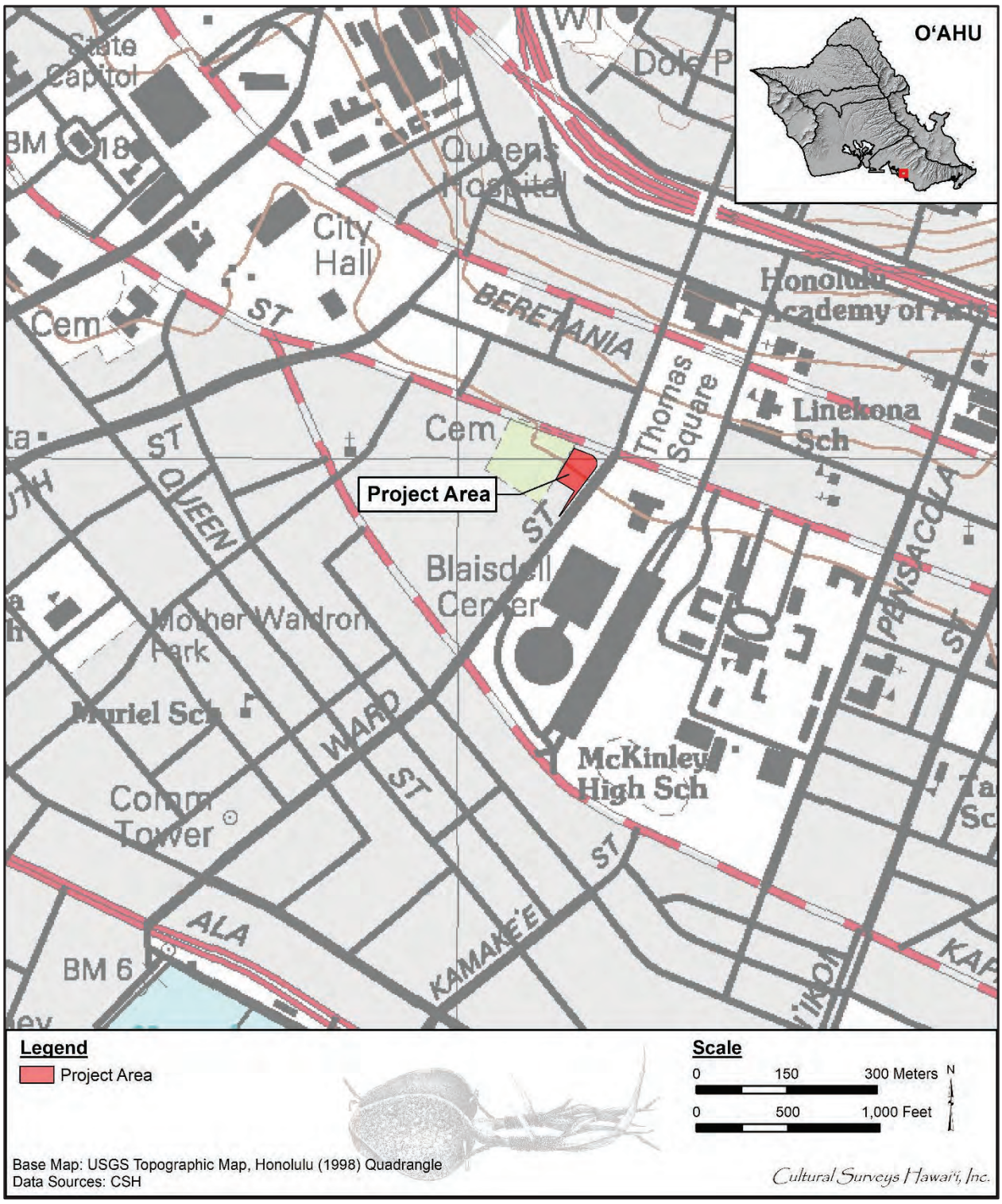


Figure 1. A portion of the 1998 Honolulu U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle, showing the project area

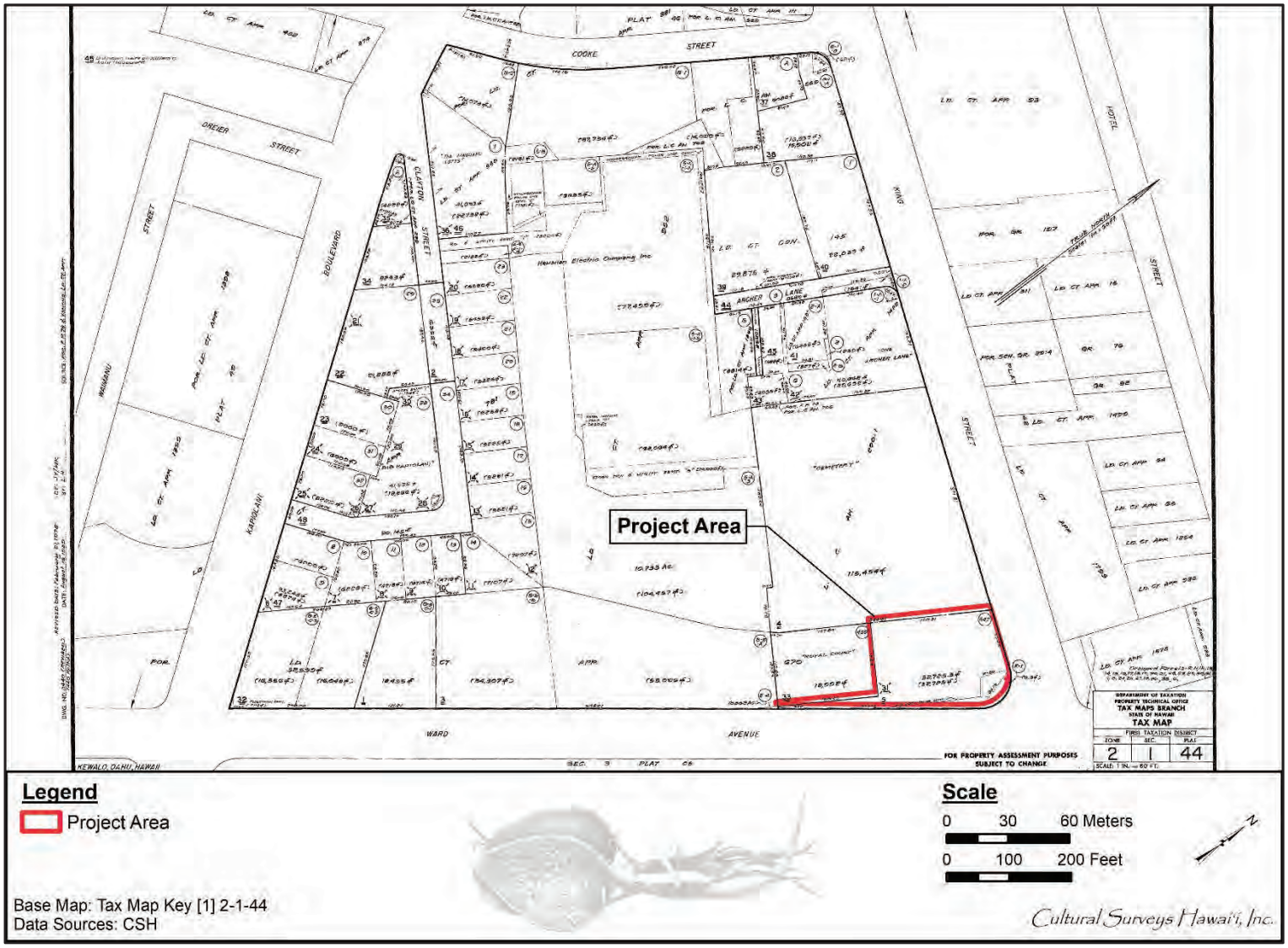


Figure 2. Tax Map Key (TMK) [1] 2-1-044, showing the project area (Hawai‘i TMK Service 2014)

Figure 3. Aerial photograph (Google Earth 2019) with overlay of the project area; green arrows indicate the location and direction of field inspection photographs shown in Figure 7 through Figure 16

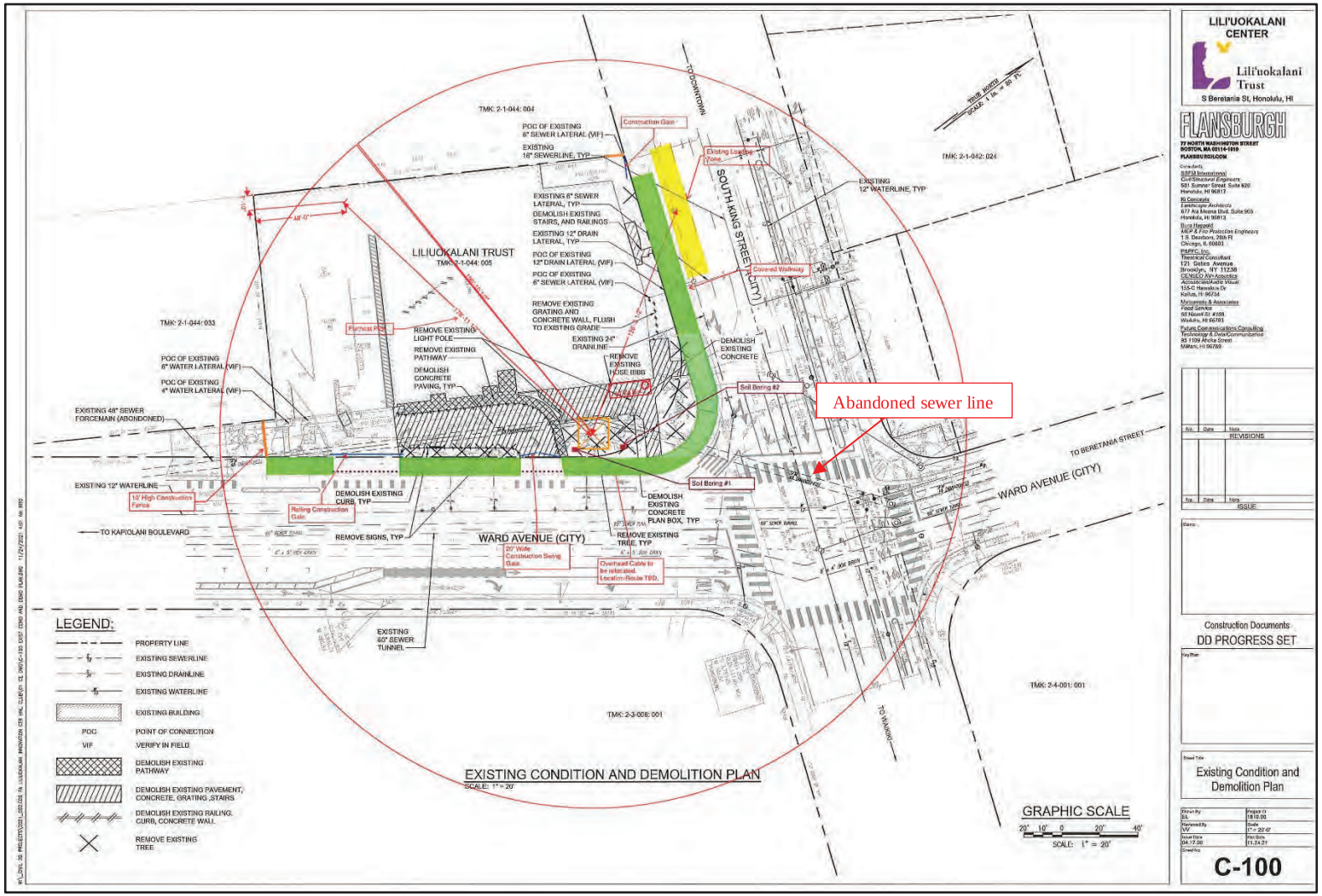


Figure 4. Client-supplied Existing Condition and Demolition Plan, showing the locations of the tower crane (orange square) and two soil borings (small purple squares on either side of the tower crane); note the abandoned 1920s sewer line (dashed line at 45° angle) extending through the tower crane location (see below for a close-up)

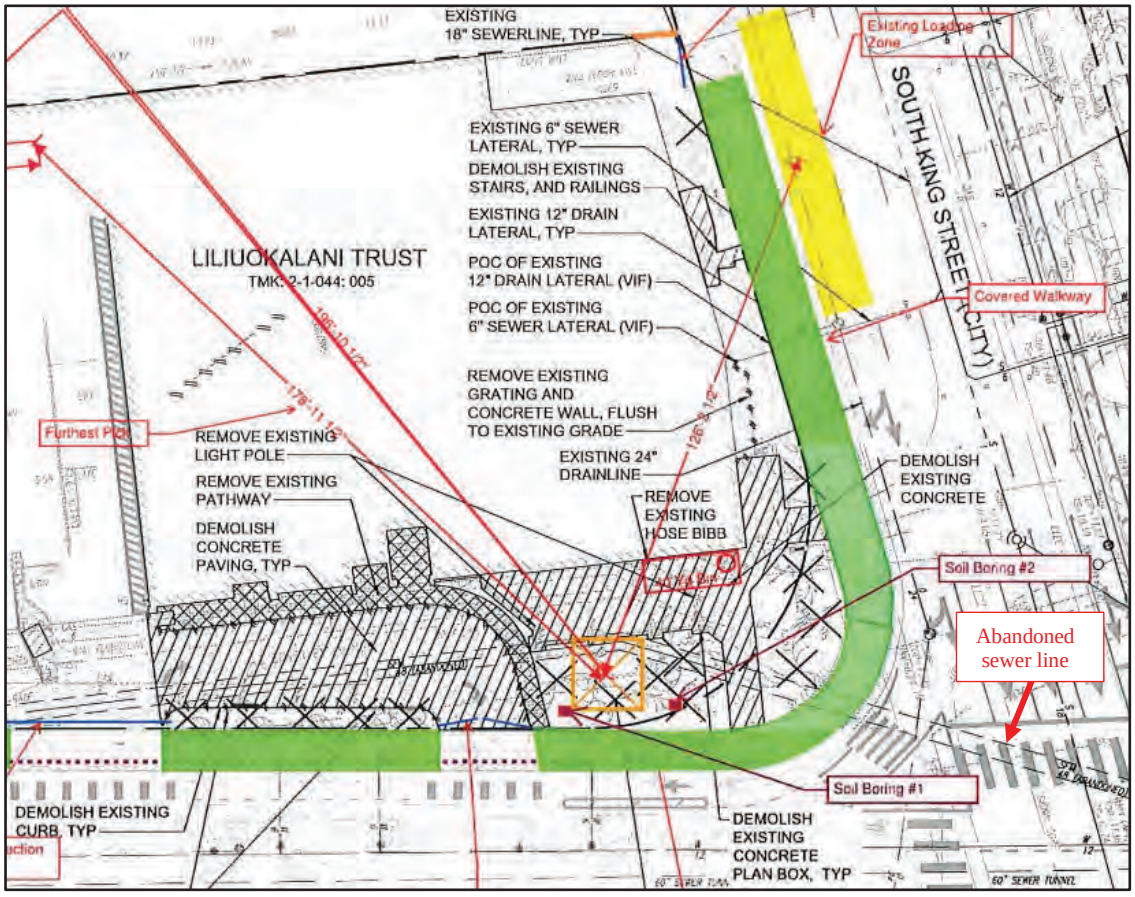


Figure 5. Portion of client-supplied Existing Condition and Demolition Plan, showing a close-up of the locations of the tower crane (orange square), two soil borings (small purple squares on either side of the tower crane), and an abandoned 1920s sewer line (dashed line extending through the tower crane location at 45° angle)

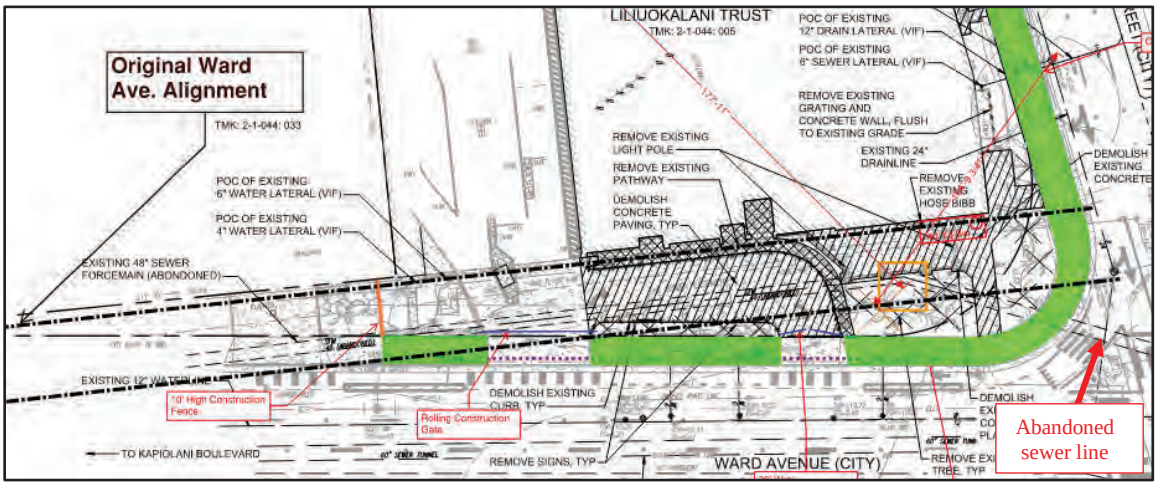


Figure 6. Portion of client-supplied Existing Condition and Demolition Plan with overlay of former Ward Avenue alignment in relation to the tower crane location

Figure 7. Taken from the northwest corner of the project area, view to south; shows the King Street Catholic Cemetery adjacent to the west side of the Honolulu Club Building

Figure 8. Taken from the southwest corner of the project area, view to northeast; shows the King Street Catholic Cemetery adjacent to the west side of the Honolulu Club Building

Figure 9. The *mauka* side of the Honolulu Club Building, along King Street, view to southeast; Ward Avenue-King Street intersection in background (location of planned ground disturbance for landscaping)

Figure 10. Taken from the northeast corner of the project area, view to south; shows the location of the planned ground disturbance for landscaping at the intersection of Ward Avenue and King Street

Figure 11. Diamond Head side of the Honolulu Club Building, along Ward Avenue, view to southwest

Figure 12. Taken from the southeast corner of the project area, view to northeast; Royal Court Condos on left, and Ward Avenue on right

Figure 13. Driveway into the Honolulu Club Building basement, approximately 9 ft below street level, view to northwest

Figure 14. Location where the freight elevator may extend into the basement, approximately 9 ft below street level, adjacent to the west building wall, view to northwest

Figure 15. Western portion of the Honolulu Club Building basement, approximately 9 ft below street level, view to north

Figure 16. Eastern portion of the Honolulu Club Building basement, approximately 9 ft below street level, view to south

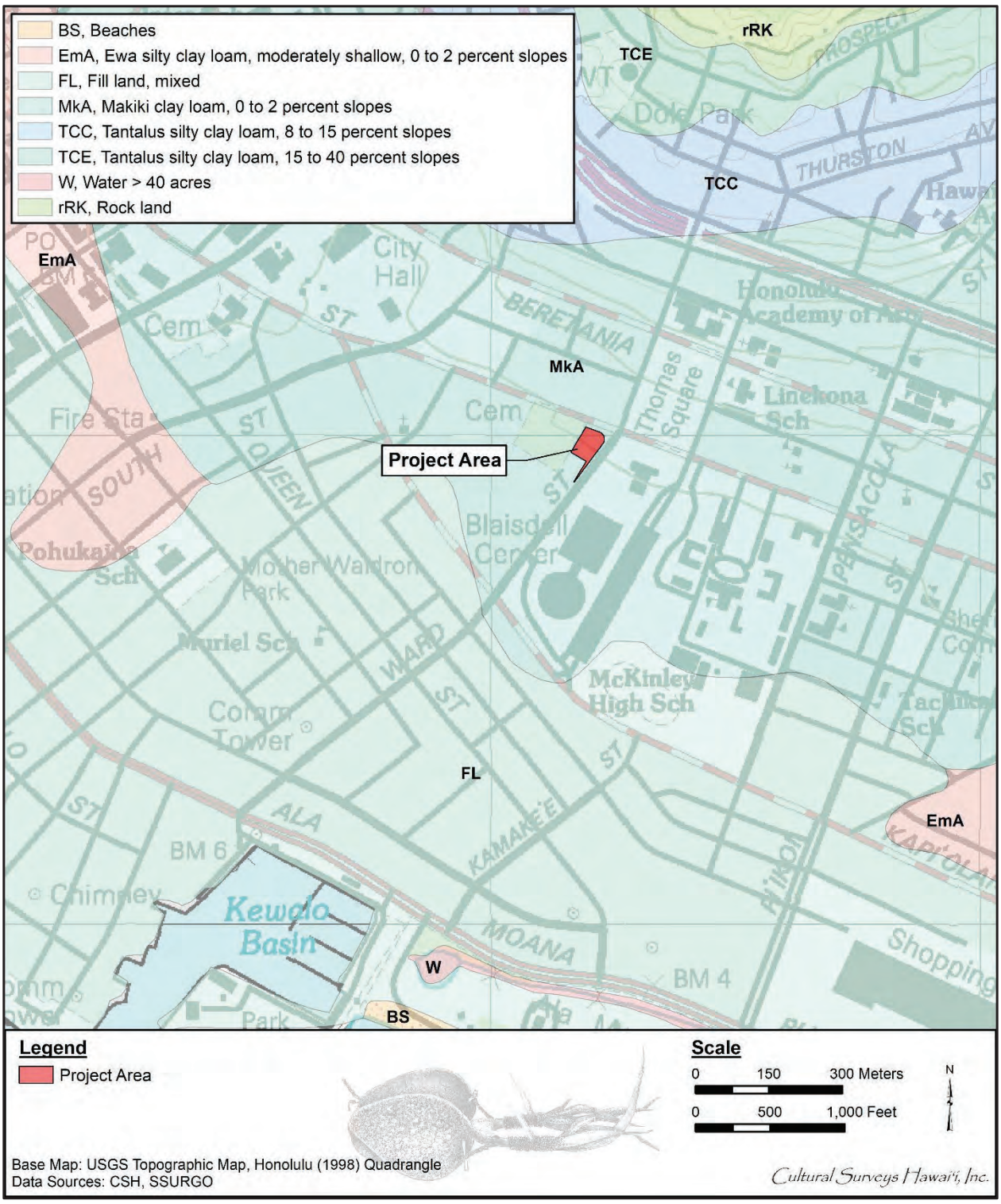


Figure 17. A portion of the 1998 USGS 7.5-minute topographic quadrangle with overlay of *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii* (Foote et al. 1972), indicating soil types within and surrounding the project area (USDA SSURGO 2001)

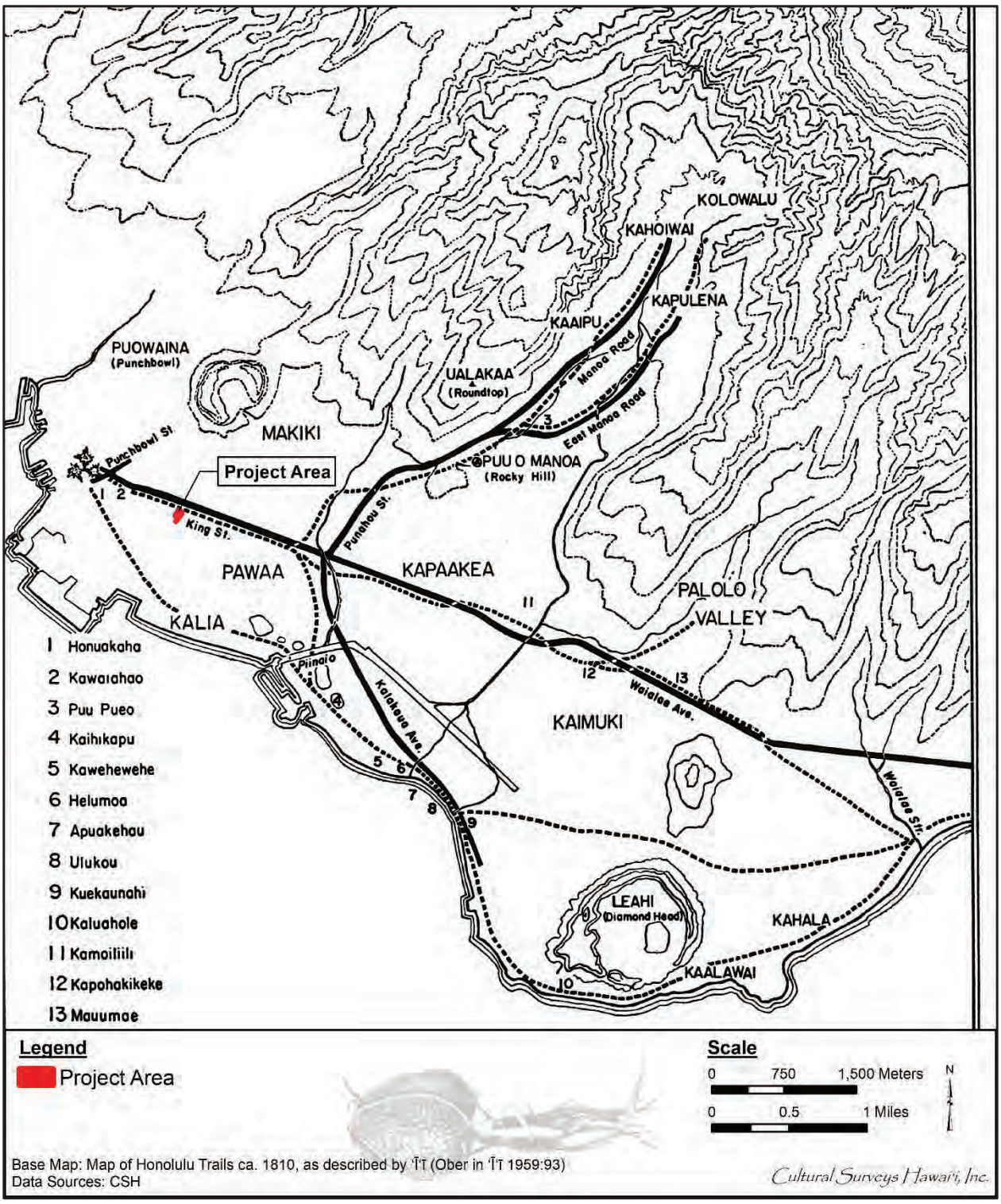


Figure 18. Map of Honolulu Trails ca. 1810, as described by ‘Ī‘ī (Ober in ‘Ī‘ī 1959:93), showing a major east-west thoroughfare (present-day King Street) just *mauka* of the project area

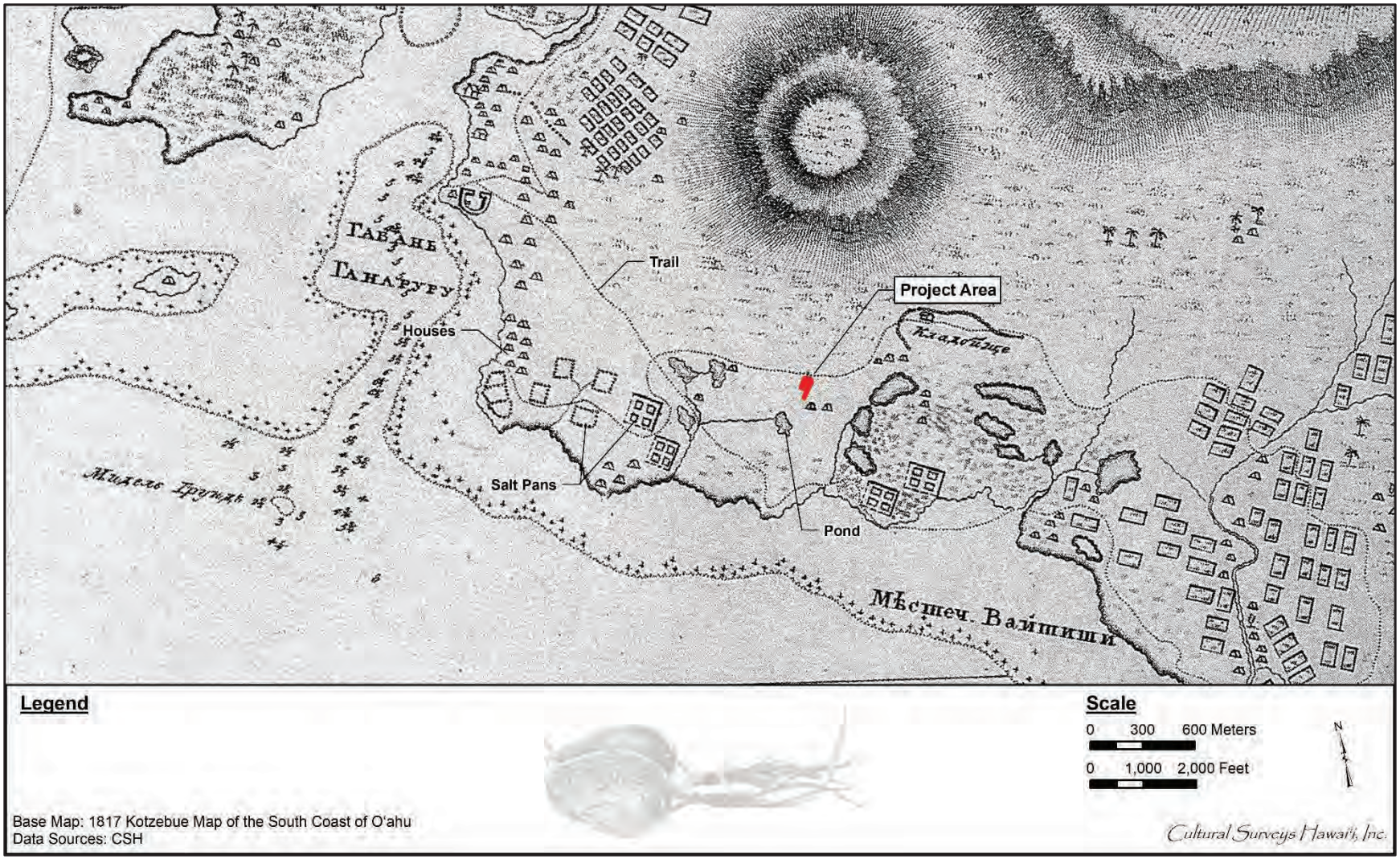


Figure 19. 1817 Kotzebue Map of the South Coast of O‘ahu, showing a major east-west thoroughfare (present-day King Street) just *mauka* of the project area

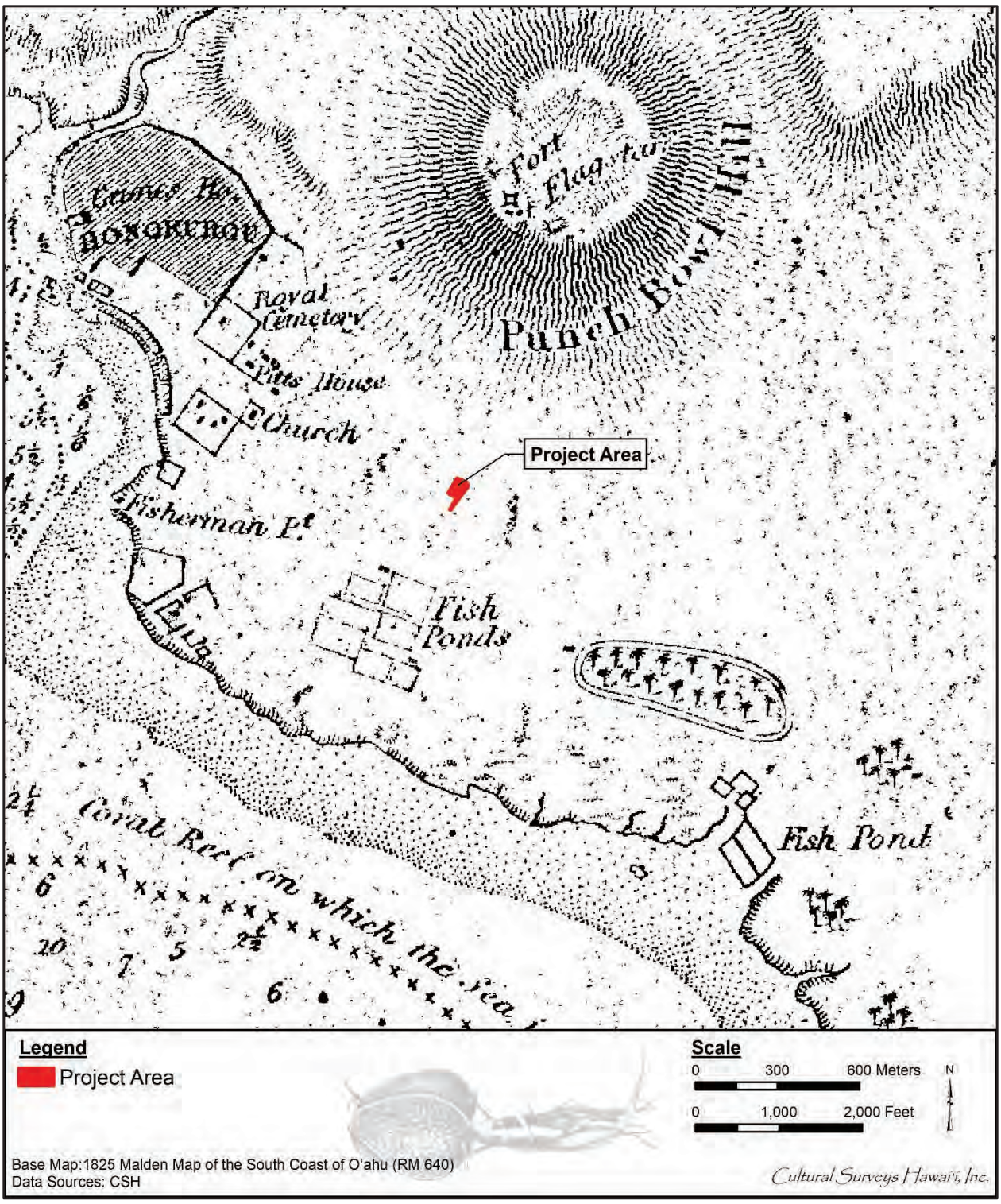


Figure 20. Portion of the 1825 Malden Map of the South Coast of O‘ahu (RM 640), showing fishponds *makai* of the project area

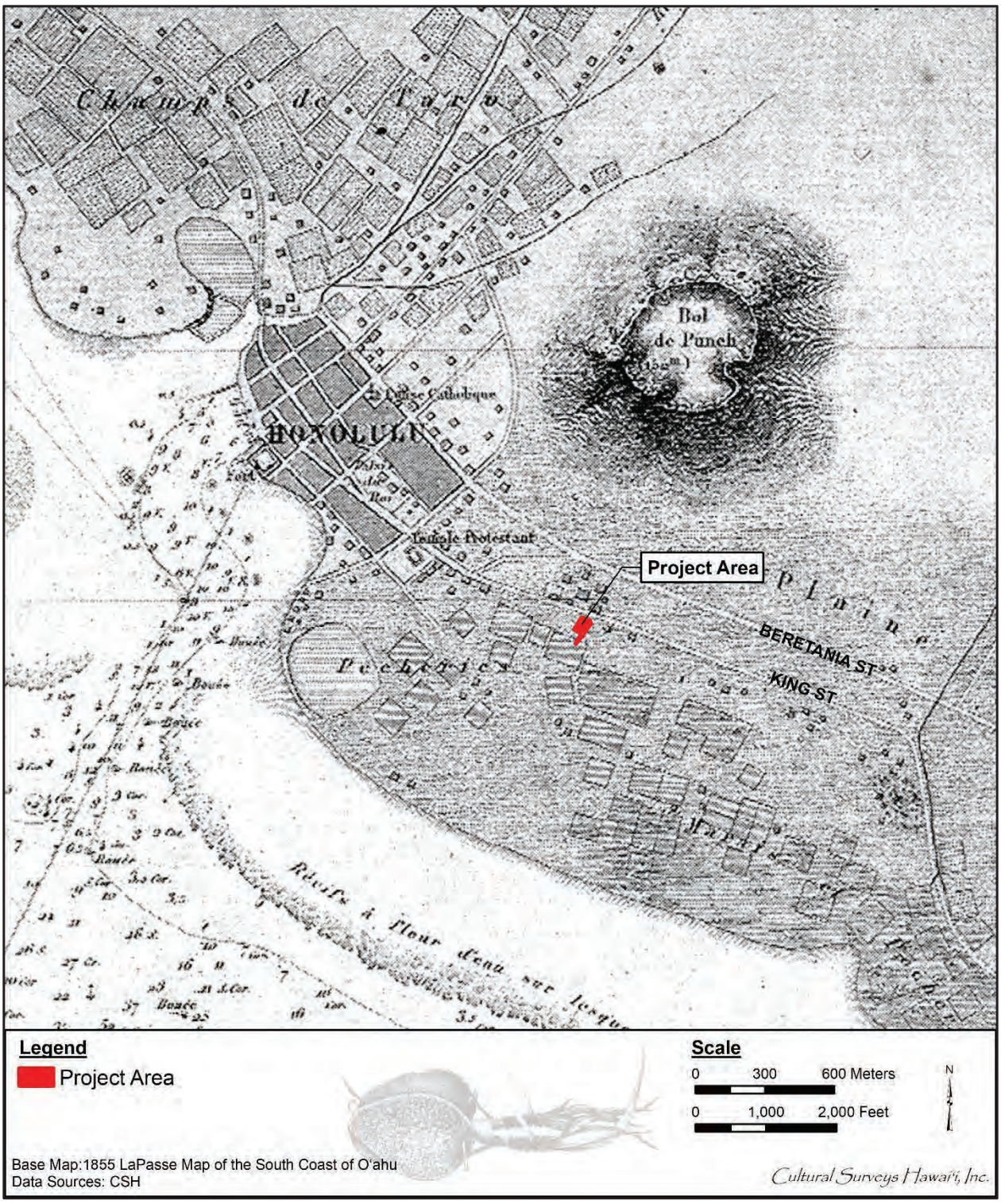


Figure 21. Portion of the 1855 LaPasse Map of the South Coast of O‘ahu, showing a major east-west thoroughfare (present-day King Street) just *mauka* of the project area and fishponds *makai* of the project area

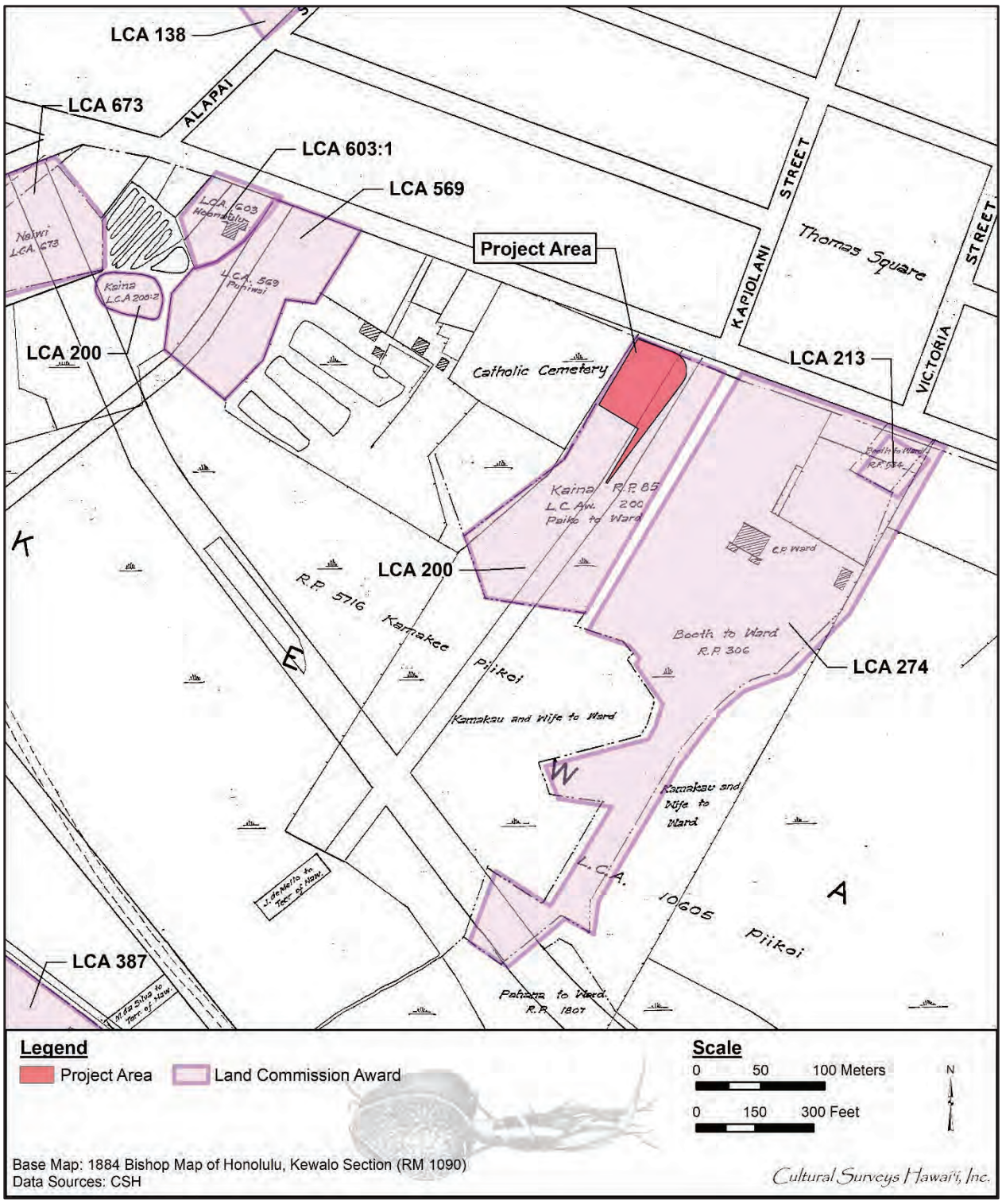


Figure 22. Portion of the 1884 Bishop Map of Honolulu, Kewalo Section (RM 1090), showing LCAs in the vicinity of the project area and the King Street Catholic Cemetery just west of the project area

Table 1. LCAs within and in the immediate vicinity of the project area

LCA	Claimant	Location	Land Use
LCA 200:1 / RP 85	Kaina	Current project area and adjacent lands to the east and south	No land use info provided
LCA 213 / RP 584	Vowles, James	East of the project area	“[O]ccupied by foreigners since 1825”; “large adobie house and other buildings with a fence”
LCA 274 / RP 306	Booth, Joseph	East of the project area	Claim for three fishponds and a portion of plain land; this parcel corresponds with the future Victoria Ward “Old Plantation” estate
LCA 569	Puniwai	West of the project area	Fenced house lot
LCA 10605*O / RP 5716	Pi‘ikoi, Kamake‘e	South of the project area	No land use info provided

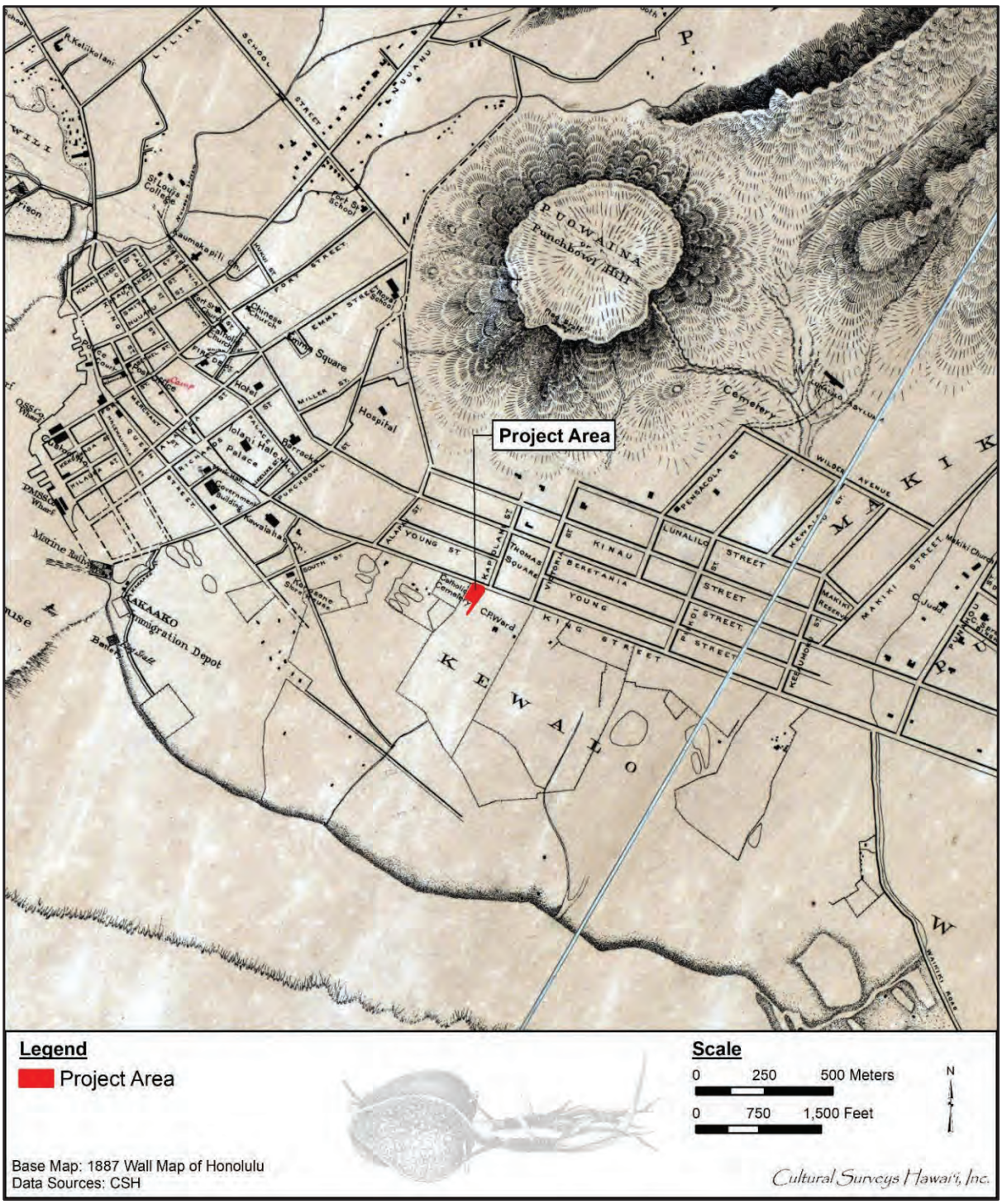


Figure 23. Portion of the 1887 Wall Map of Honolulu, showing the project area within Ward land, adjacent to the King Street Catholic Cemetery

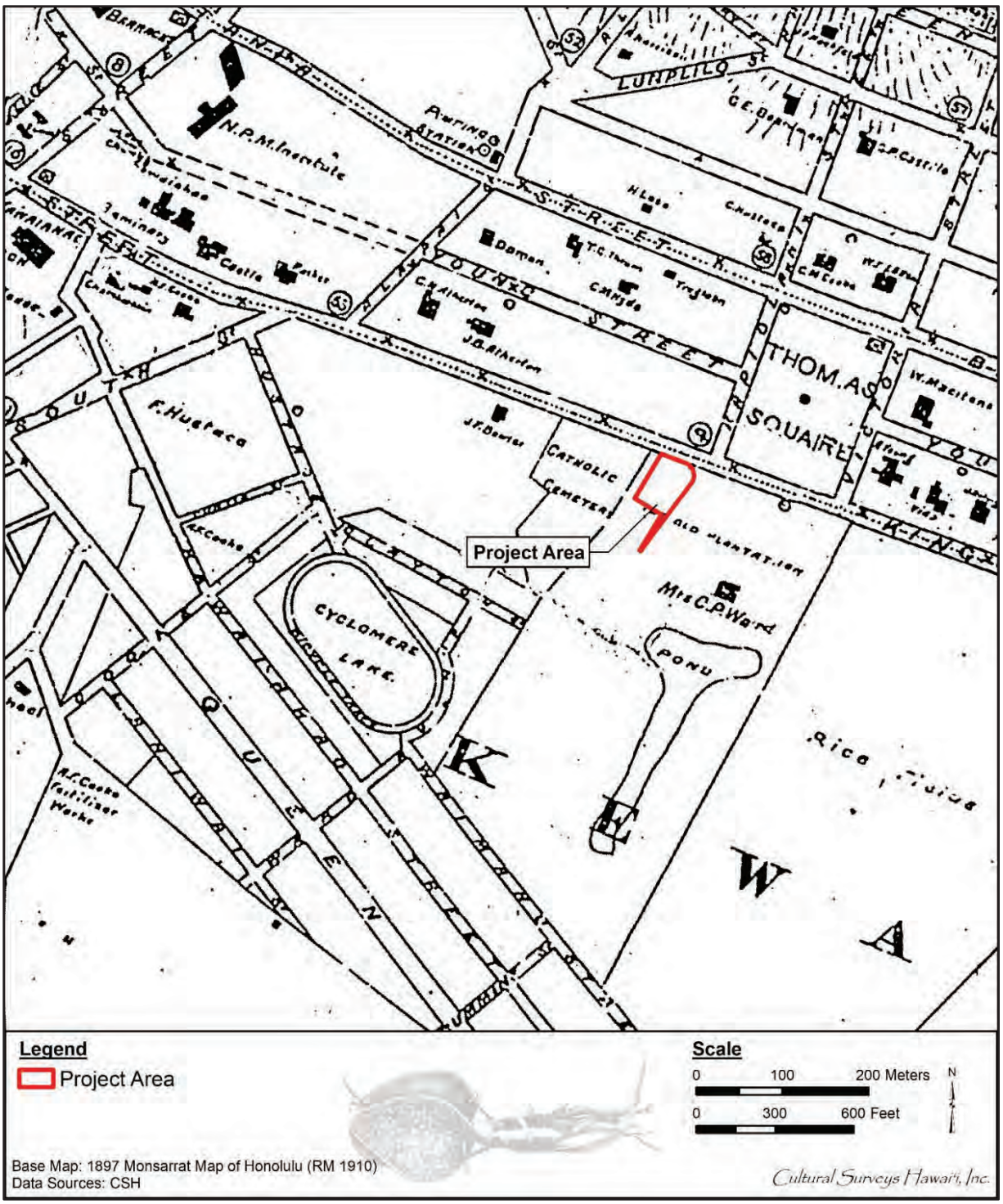


Figure 24. Portion of the 1897 Monsarrat Map of Honolulu (RM 1910), showing urban development both *mauka* and *makai* of the project area; the long lagoon (“POND”) of the Ward Old Planation is south of the project area, and the King Street Catholic Cemetery is just west of the project area

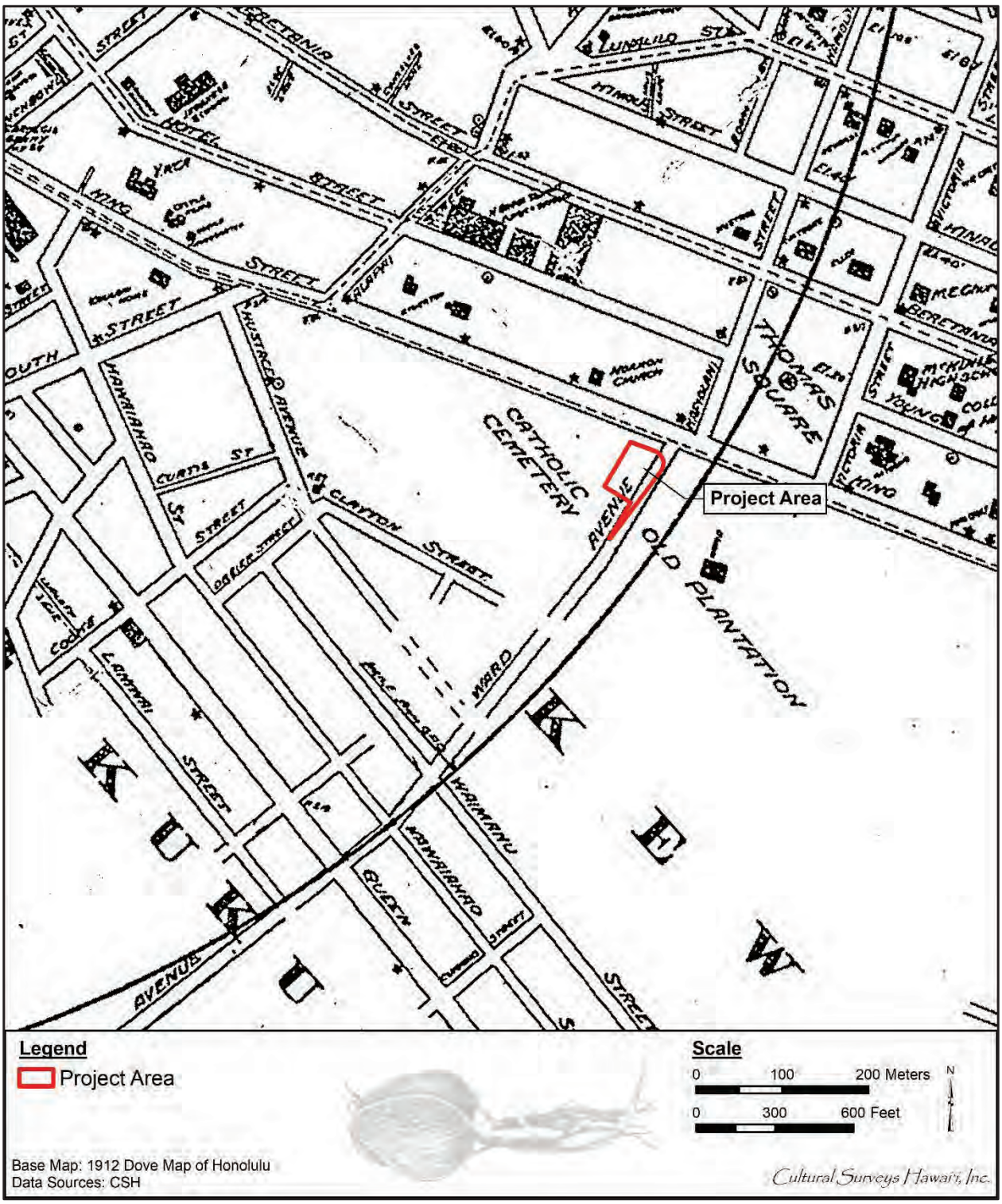


Figure 25. Portion of the 1912 Dove Map of Honolulu, showing Ward Avenue along the eastern boundary of the project area; note: the northern portion of Ward Avenue is still called Kapi‘olani Street

Figure 26. Portion of the 1919 U.S. Army War Department Fire Control Map, Honolulu Quadrangle, showing the project area

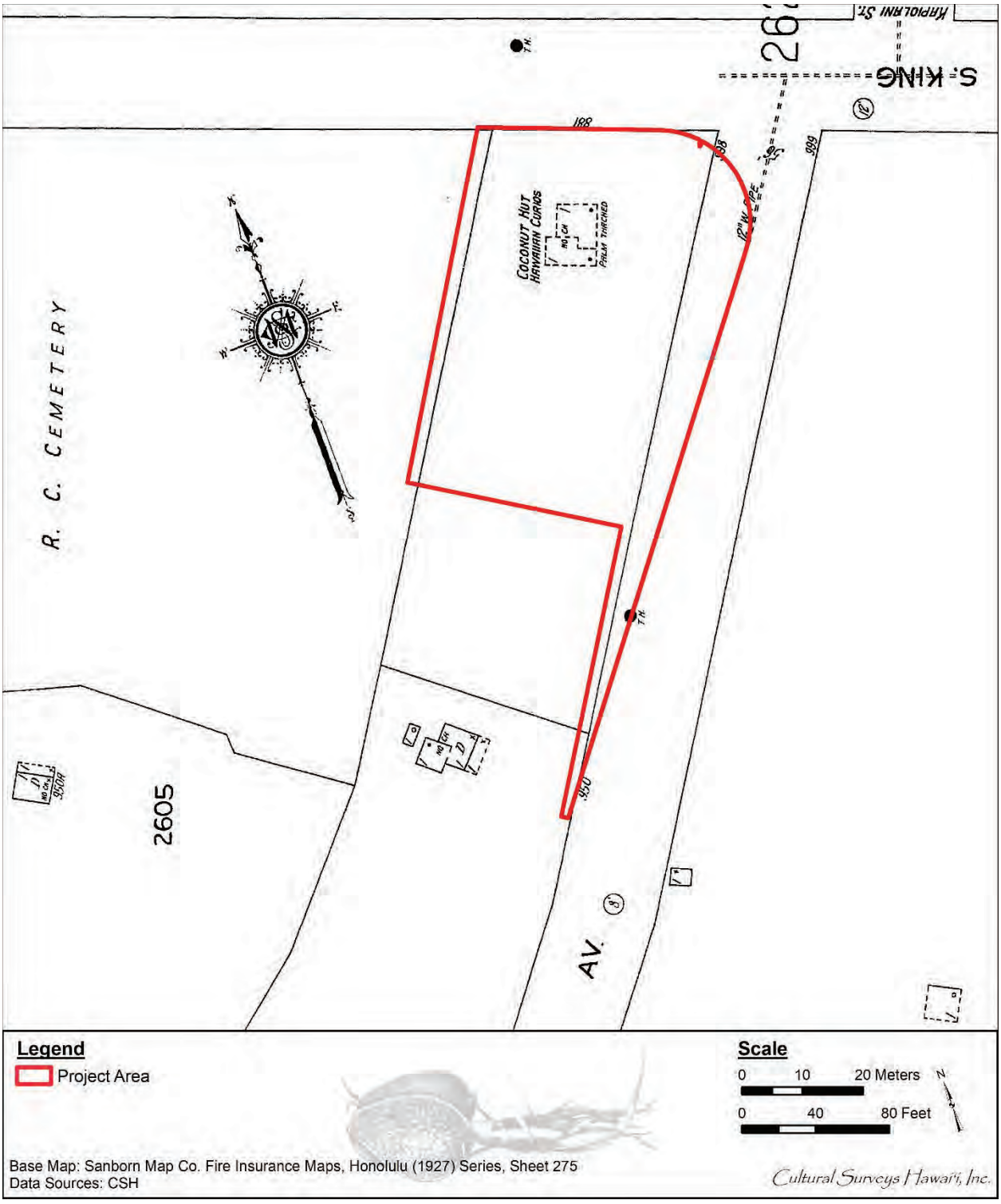


Figure 27. 1927 Sanborn Map Company Fire Insurance Map, Honolulu Series, Sheet 275, showing a single building/structure (“COCONUT HUT HAWAIIAN CURIOS”) within the project area

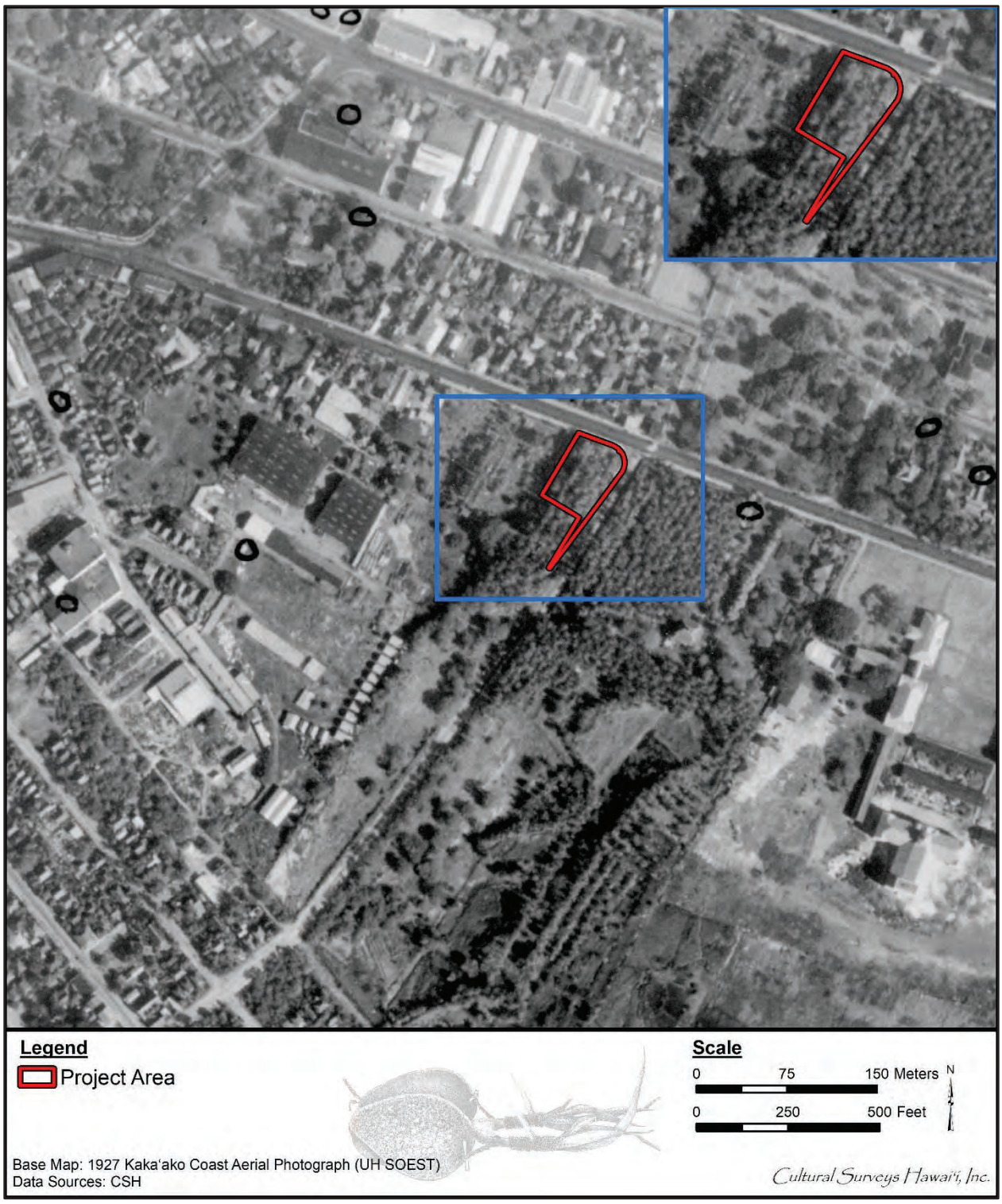


Figure 28. 1927 Kaka‘ako Coast Aerial Photograph (UH SOEST), showing the project area

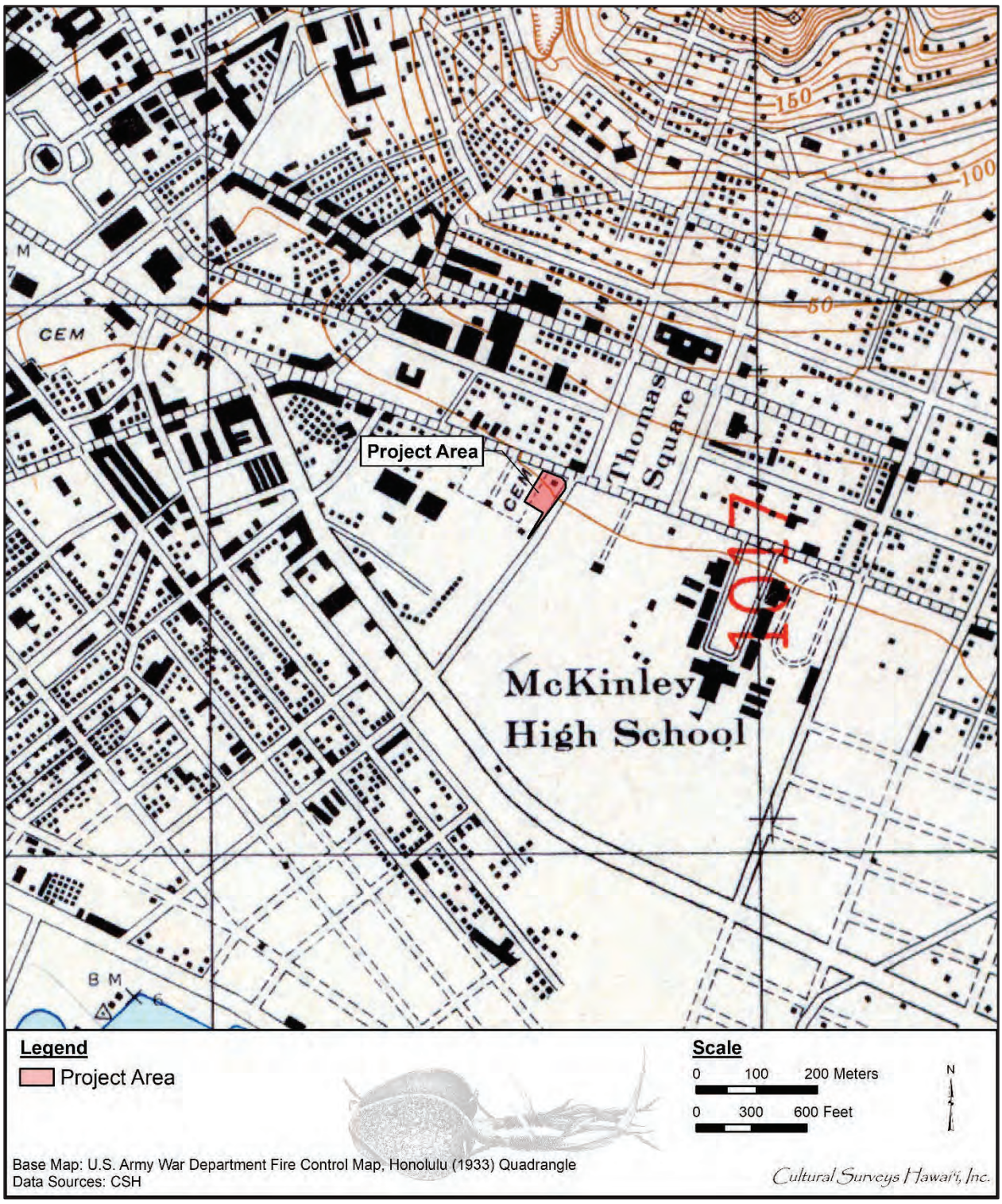


Figure 29. 1933 U.S. Army War Department Fire Control Map, Honolulu Quadrangle, showing a building/structure within the *mauka* portion of the project area

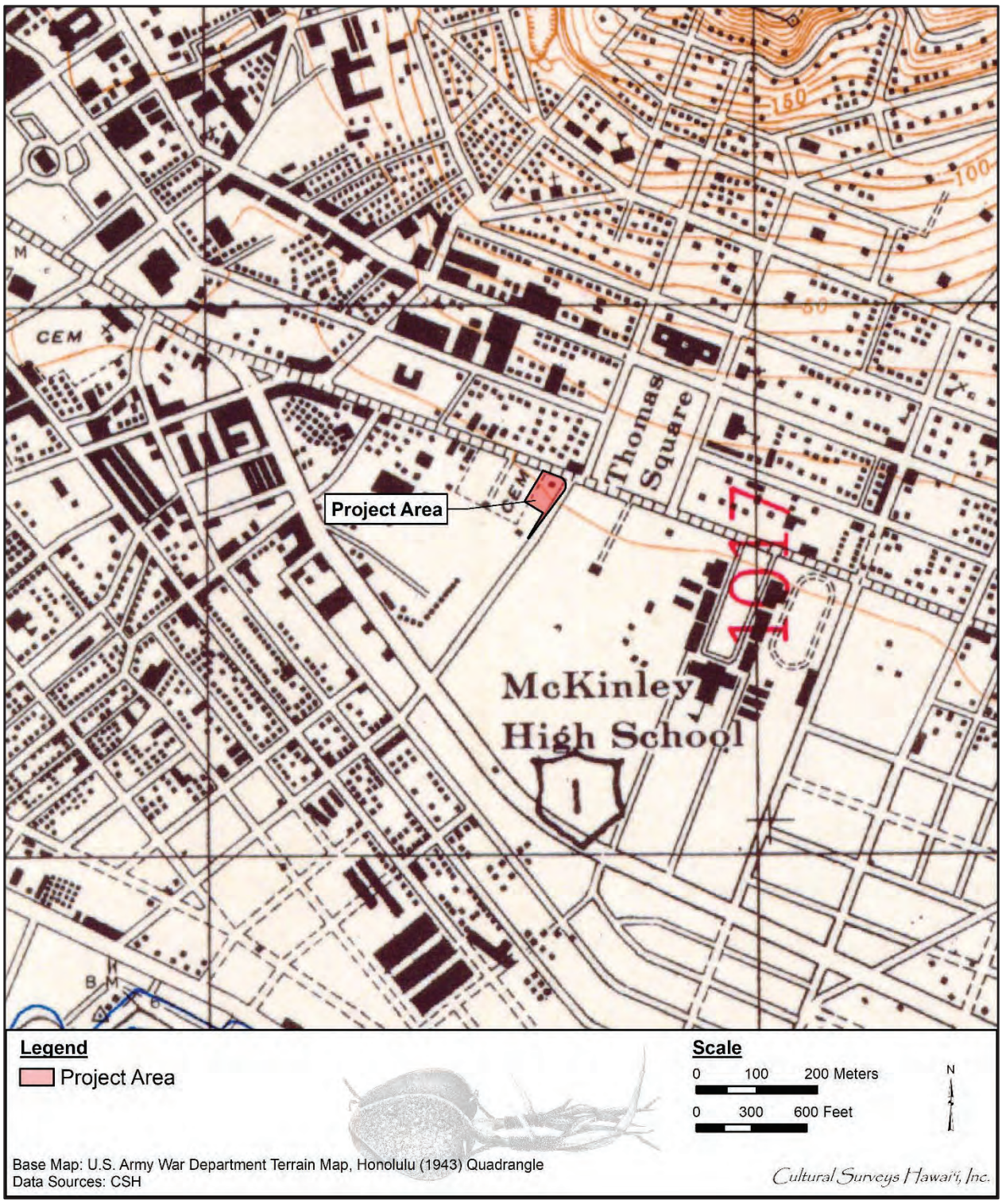


Figure 30. 1943 U.S. Army War Department Terrain Map, Honolulu Quadrangle, showing a building/structure within the *mauka* portion of the project area

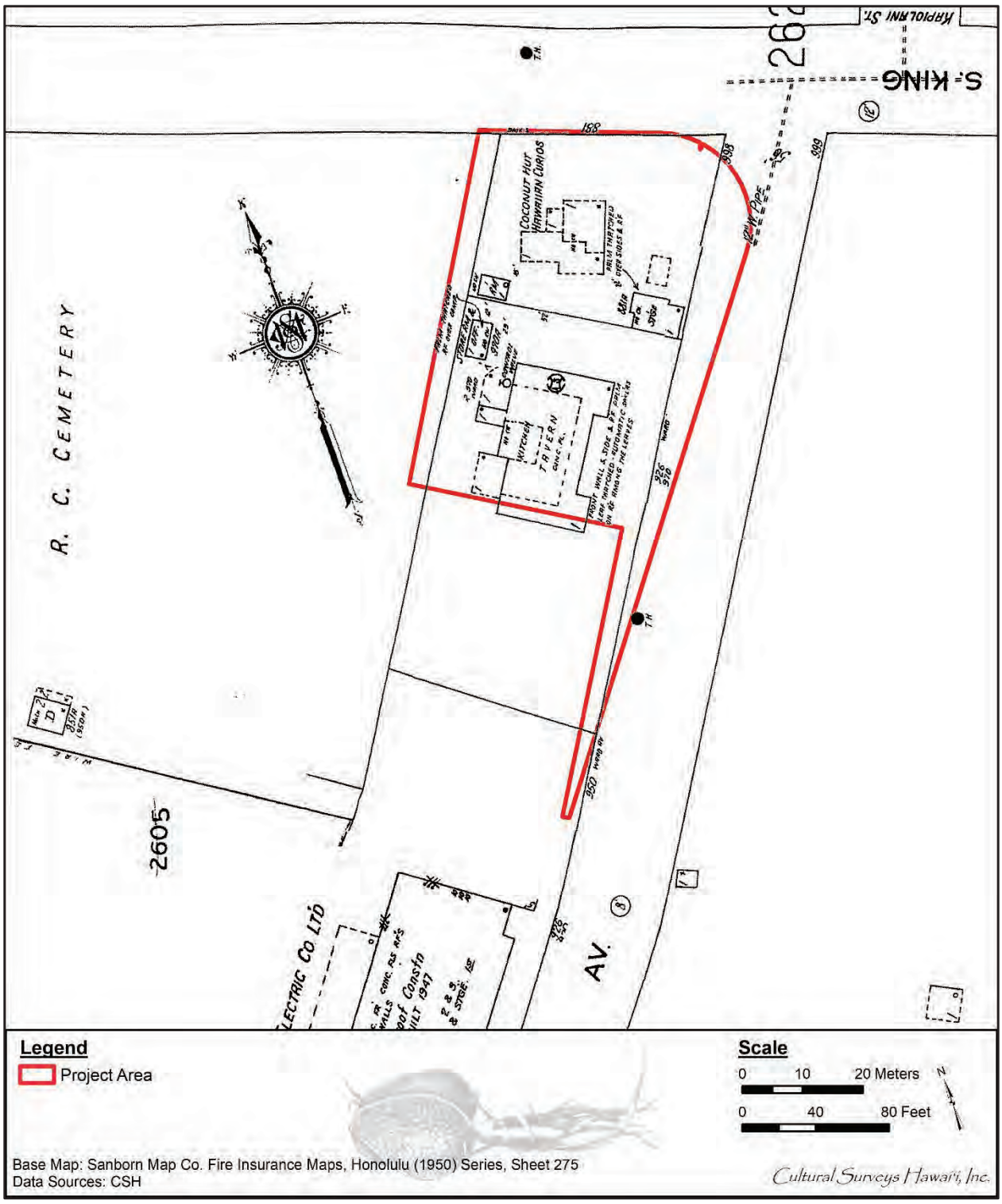


Figure 31. 1950 Sanborn Map Company Fire Insurance Map, Honolulu Series, Sheet 275, showing additional buildings/structures within the project area, including a store room/office (“STORE RM. & OFF.”), storage area (“ST’GE”), and “TAVERN”

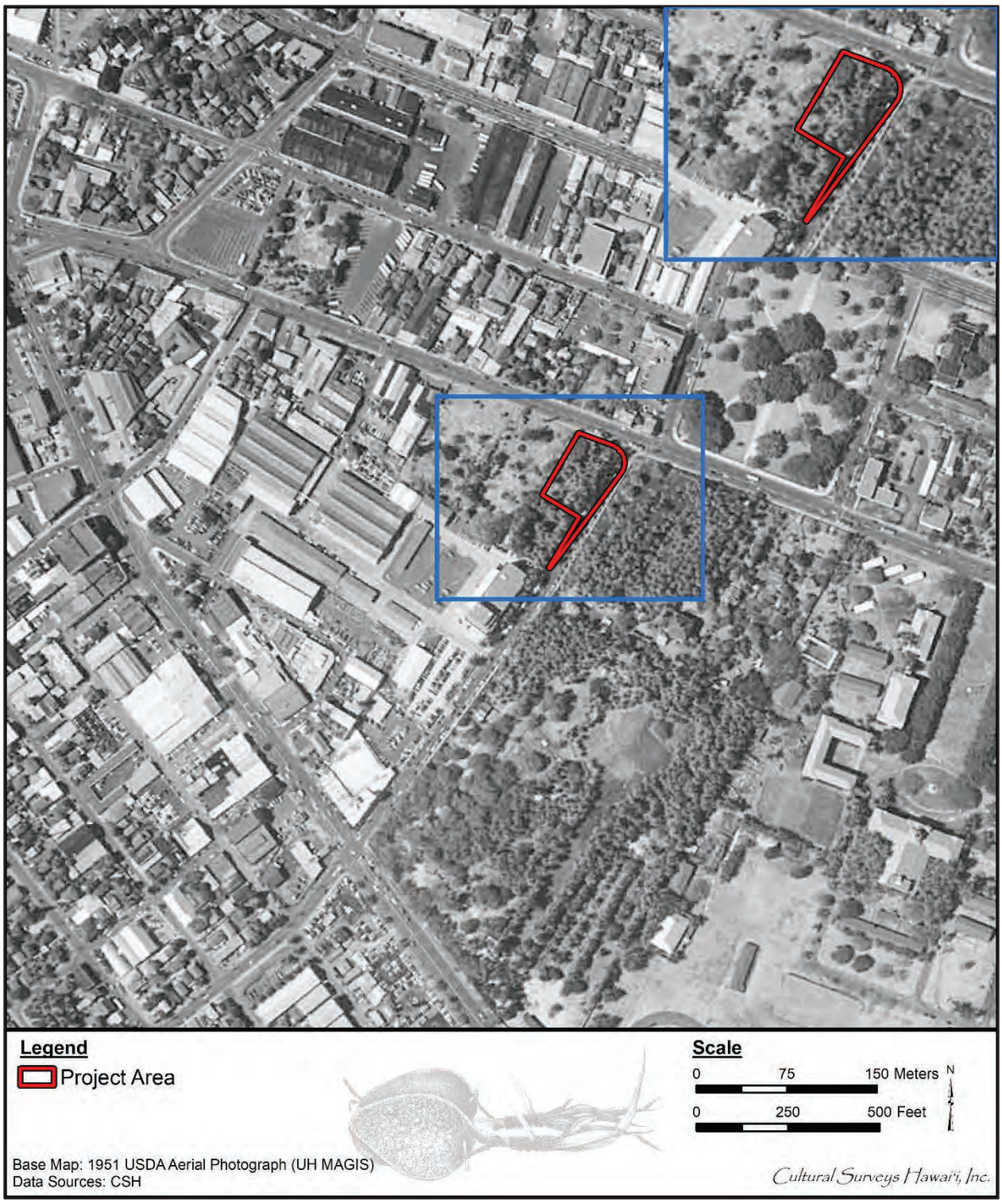


Figure 32. 1951 USDA Aerial Photograph (UH MAGIS), showing the project area

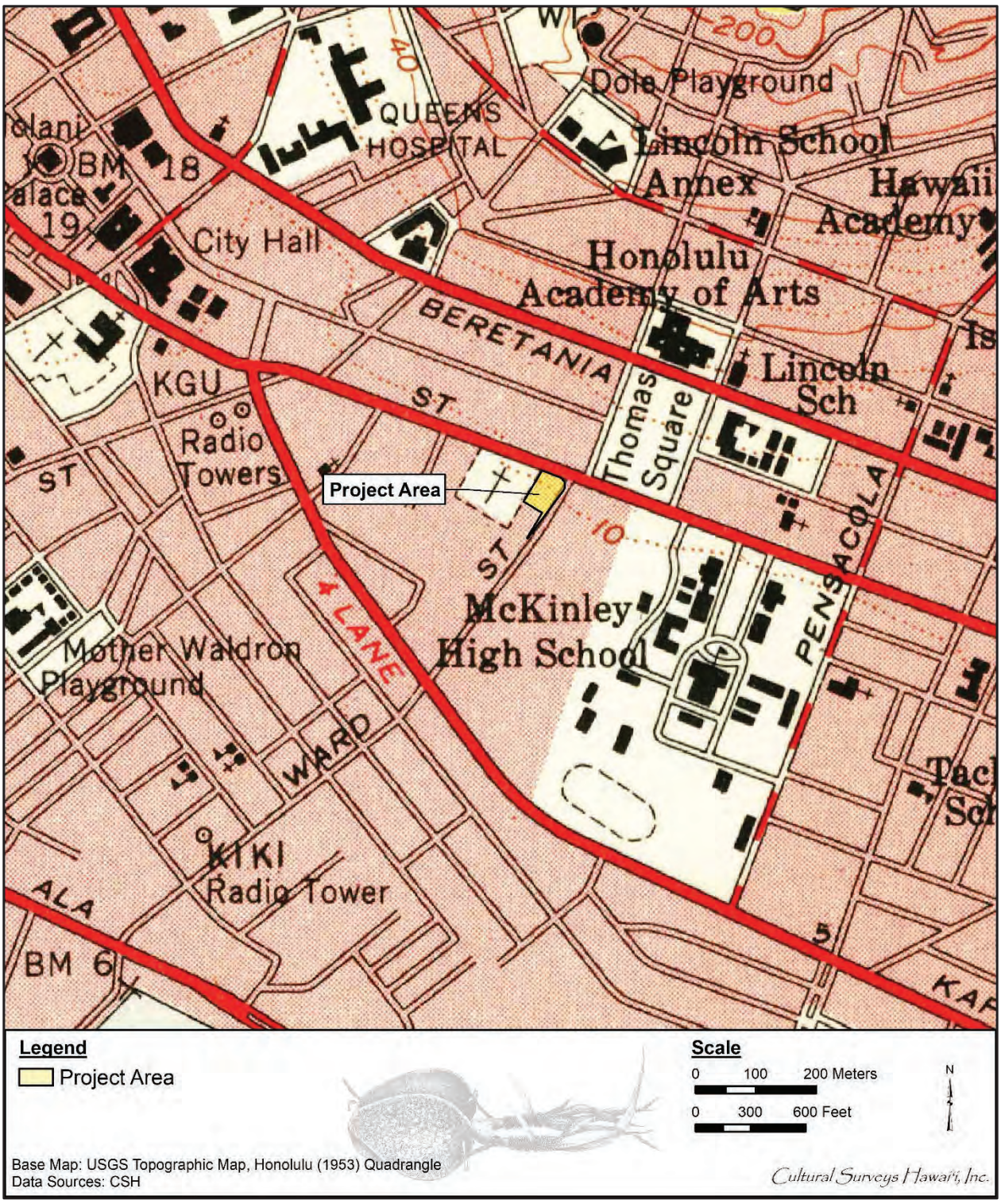


Figure 33. Portion of the 1953 USGS topographic map, Honolulu Quadrangle, showing the project area

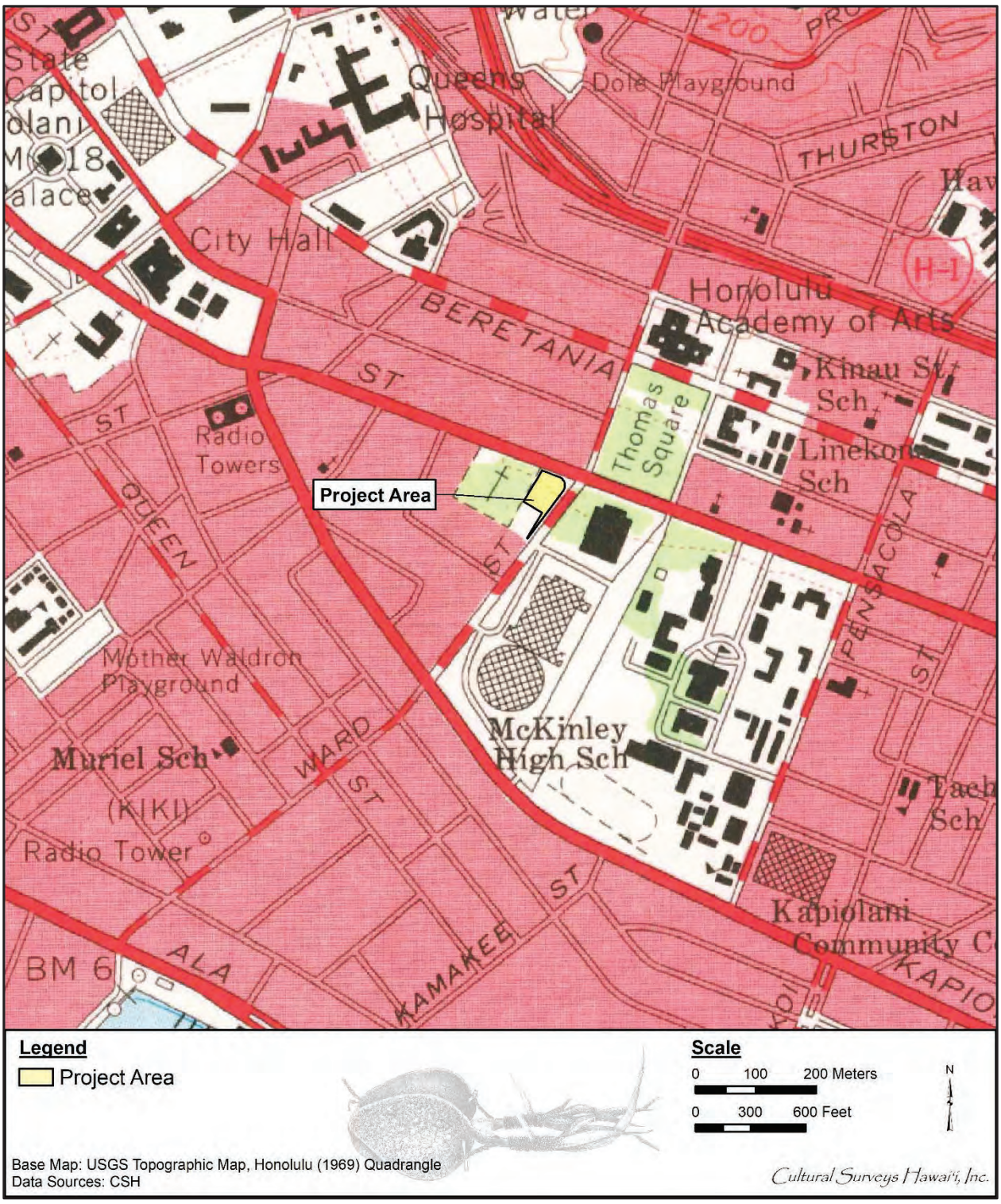


Figure 34. Portion of the 1969 USGS Topographic Map, Honolulu Quadrangle, showing the project area

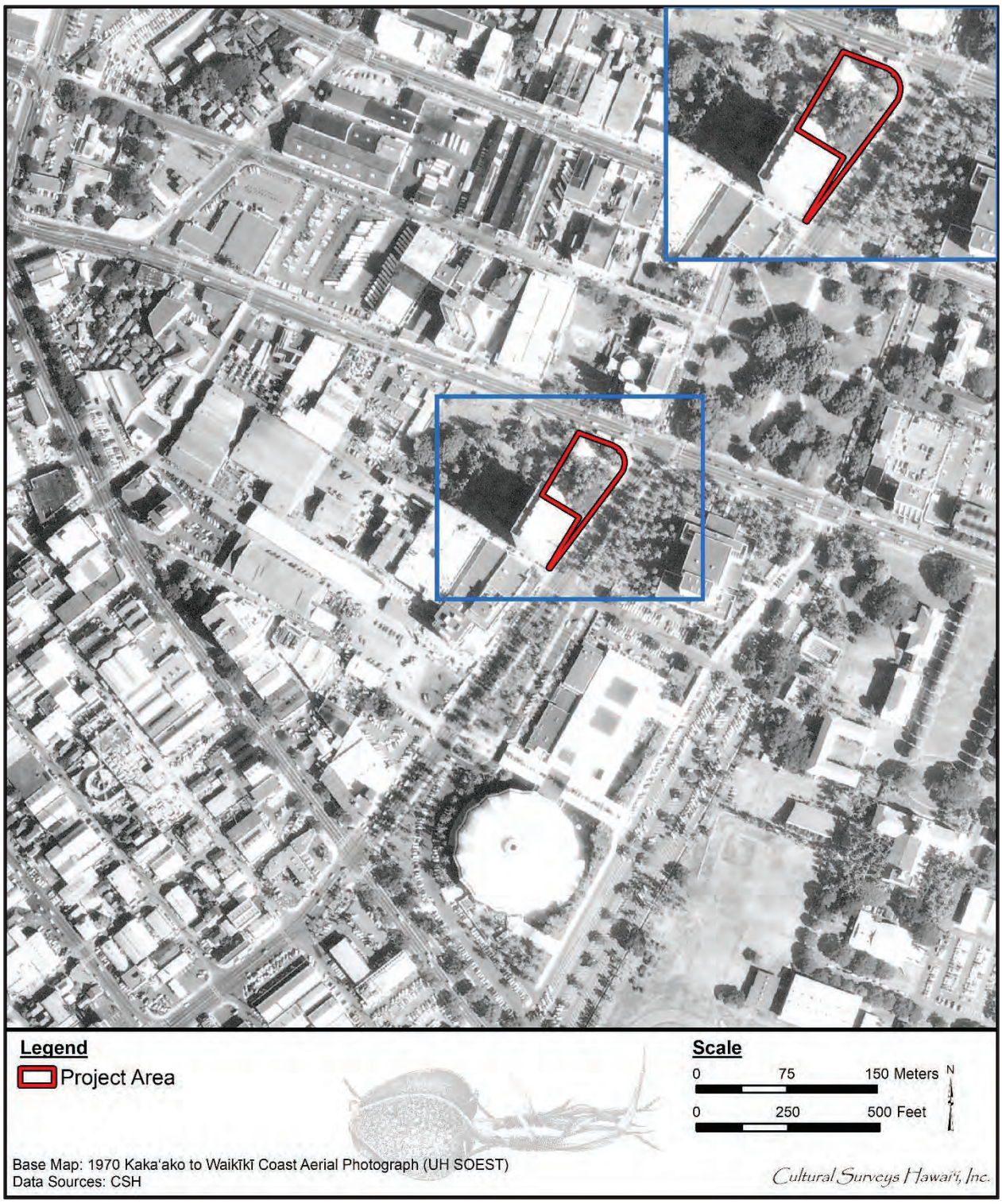


Figure 35. 1970 Kaka‘ako to Waikīkī Coast Aerial Photograph (UH SOEST), showing the project area

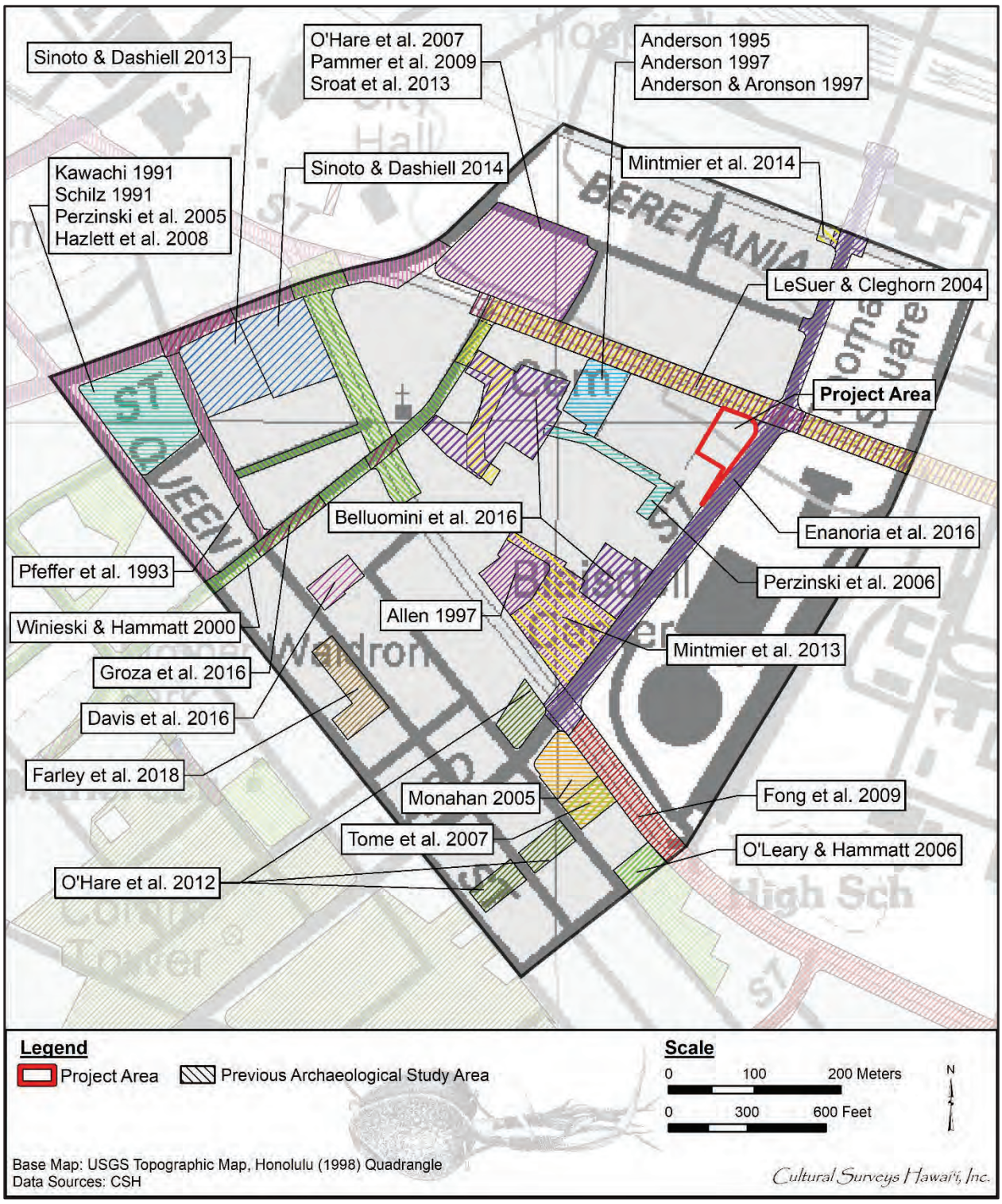


Figure 36. A portion of the 1998 Honolulu USGS 7.5-minute topographic quadrangle with overlay of previous archaeological studies in the vicinity of the project area

Table 2. Previous archaeological studies in the vicinity of the project area

Reference	Type of Investigation	General Location	Results (SIHP # 50-80-14-)
Kawachi 1991	Archaeological monitoring	Queen Emmalani Tower/Keola La‘i Condominium; TMKs: [1] 2-1-048:008, 009	Human humerus and cranium identified (no SIHP number assigned)
Schilz 1991	Literature review	Queen Emmalani Tower/Keola La‘i Condominium; TMKs: [1] 2-1-048:008, 009	Concluded project area had low potential for subsurface cultural deposits; recommended monitoring during below grade excavations
Pfeffer et al. 1993	Archaeological monitoring	Kaka‘ako Improvement District 1, included several streets (closest was a *mauka* spur up Alapa‘i St from King St)	Two cemeteries (SIHP #s -4534 and -3712) and two isolated burials (SIHP #s -4532-1 and -4533-1) documented; none near the present project area
Anderson 1995	Archaeological inventory survey	One Archer Lane (TMKs: [1] 2-1-044:041, 042, and 043)	One historic property identified: SIHP # -5373, post-Contact trash pit containing bottles, ceramics, and metal fragments
Allen 1997	Geo-archaeological coring	Symphony Park, corner of Kapi‘olani Blvd and Ward Ave	No archaeological historic properties identified
Anderson 1997	Archaeological inventory survey	One Archer Lane (TMKs: [1] 2-1-044:041, 042, and 043)	One historic property identified: SIHP # -5455, post-Contact burial associated with King Street Catholic Cemetery
Anderson and Aronson 1997	Archaeological monitoring and data recovery	One Archer Lane (TMKs: [1] 2-1-044:041, 042, and 043)	Identified 29 additional post-Contact burials (SIHP # -5455) associated with King Street Catholic Cemetery (as far as ca. 12 m from the cemetery boundary)

Reference	Type of Investigation	General Location	Results (SIHP # 50-80-14-)
Winieski and Hammatt 2000	Archaeological monitoring	Kaka‘ako Improvement District 3, Pohulani Elderly Rental Housing Kauhale	Identified 11 burials (SIHP # -5820); many had been disturbed by construction work; those found in situ or partially in situ were in traditional Hawaiian flexed burial positions within the buried A horizon or natural sand; identified nine burials in extended and flexed burial positions (SIHP # -4380); documented one area of buried pond sediments (no SIHP number assigned)
LeSuer and Cleghorn 2004	Literature review and field inspection	King St and HECO Ward Ave Complex	Noted possibility of fishponds beneath HECO Ward Ave Complex and human burials in vicinity of Roman Catholic Cemetery
Monahan 2005	Archaeological inventory survey	Three parcels bounded by Ward Ave, Kapi‘olani Blvd, and Waimanu St	No historic properties identified
Perzinski et al. 2005	Archaeological inventory survey	Queen Emmalani Tower/Keola La‘i Condominium; TMKs: [1] 2-1-048:008, 009	Isolated human skeletal remains (SIHP # -1604) and evidence of historical occupation (SIHP # -6766)
O’Leary and Hammatt 2006	Archaeological inventory survey	Moana Vista Project on Kapi‘olani Blvd	No historic properties identified, but archaeological monitoring recommended based on background research
Perzinski et al. 2006	Archaeological inventory survey	Kewalo HECO Dispatch Center TMK: [1] 2-01-044:003	Two historic coffin burials found on south side of (ca. 2 m outside) King Street Catholic Cemetery (SIHP # -5455)
O’Hare et al. 2007	Archaeological inventory survey	Alapai Transit Center	Identified SIHP # -6901, historic trash pits, and SIHP # -6902, three human burials

Reference	Type of Investigation	General Location	Results (SIHP # 50-80-14-)
Tome et al. 2007	Archaeological monitoring	0.48-acre parcel bounded by Ward Ave, Kapi‘olani Blvd, and Waimanu St	No historic properties identified
Hazlett et al. 2008	Archaeological monitoring	Queen Emmalani Tower/Keola La‘i Condominium; TMKs: [1] 2-1-048:008, 009	Isolated human remains associated with SIHP # -1604 (see Perzinski et al. 2005)
Fong et al. 2009	Archaeological monitoring	Kapi‘olani Blvd	No historic properties identified
Pammer et al. 2009	Archaeological inventory survey	Alapai Transit Center	Identified three additional features of SIHP # -6901, historic trash pits, and SIHP # -6902, three human burials
O’Hare et al. 2012	Literature review and field inspection	Board of Water Supply (BWS) Beretania Property, TMKs: [1] 2-1-036:001, 004, 005, and 006	Assessed a high probability for pre-20th century burials and cultural deposits associated, as well as 20th century trash deposits
Mintmier et al. 2013	Archaeological inventory survey	Symphony Park, corner of Kapi‘olani Blvd and Ward Ave	Portion of the previously identified Kewalo Wetlands, SIHP # -6636, recorded in several trenches
Sinoto and Dashiell 2013	Literature review and field inspection	801 South St	No historic properties identified; recommended archaeological monitoring during project demolition and construction
Sroat et al. 2013	Archaeological monitoring	Alapai Transit Center	Three features of previously identified SIHP # -6901 recorded: three trash pits with 19th to 20th century artifacts
Mintmier et al. 2014	Archaeological monitoring	Intersection of Ward Ave and S Beretania St	No historic properties identified

Reference	Type of Investigation	General Location	Results (SIHP # 50-80-14-)
Sinoto and Dashiell 2014	Archaeological inventory survey	801 South St Bldg B (Honolulu Advertiser Bldg)	Concluded wetland deposit exposed in *mauka*/Diamond Head portion of parcel was natural wetland, not fishpond or *lo‘i*; two ditches, SIHP # -7687 Feas. A and B likely constructed in late 1800s
Belluomini et al. 2016	Archaeological inventory survey	Ward Ave HECO Facility, TMK: [1] 2-1-044:003, 039, and 044	Deposits associated with the Kewalo Wetlands (SIHP # -6636) identified in two test units
Davis et al. 2016	Archaeological inventory survey	803 Waimanu St	SIHP # -7951, four mid-20th century pit features associated with residential/light industrial use of the property
Enanoria et al. 2016	Archaeological monitoring	Ward Ave From Kīna‘u St to Kapi‘olani Blvd	No archaeological historic properties identified
Groza et al. 2016	Literature review and field inspection	50 locations, including S King St between Cooke and Pi‘ikoi St	Noted that burials have been recorded south of the present-day boundary of the Roman King Street Catholic Cemetery, and that it is possible burials may be present north of the present-day boundary along King St, as King St has been widened several times
Farley et al. 2018	Literature review and field inspection	Portion of block bounded by Cooke, Kawaiaha‘o, Kamani, and Queen St	No surface archaeological historic properties identified; assessed high potential for subsurface historic properties
Mintmier et al. 2018	Archaeological monitoring	Corner of Kapi‘olani Blvd and Ward Ave, TMKs: [1] 2-1-044:001, 032, 047, and 048 (por.)	Slight refinement of the boundary of SIHP # -6636 (Kewalo Wetlands); ten new features assigned to existing SIHP # -7565, historic commercial site dating to ca. 1950s through 1980s

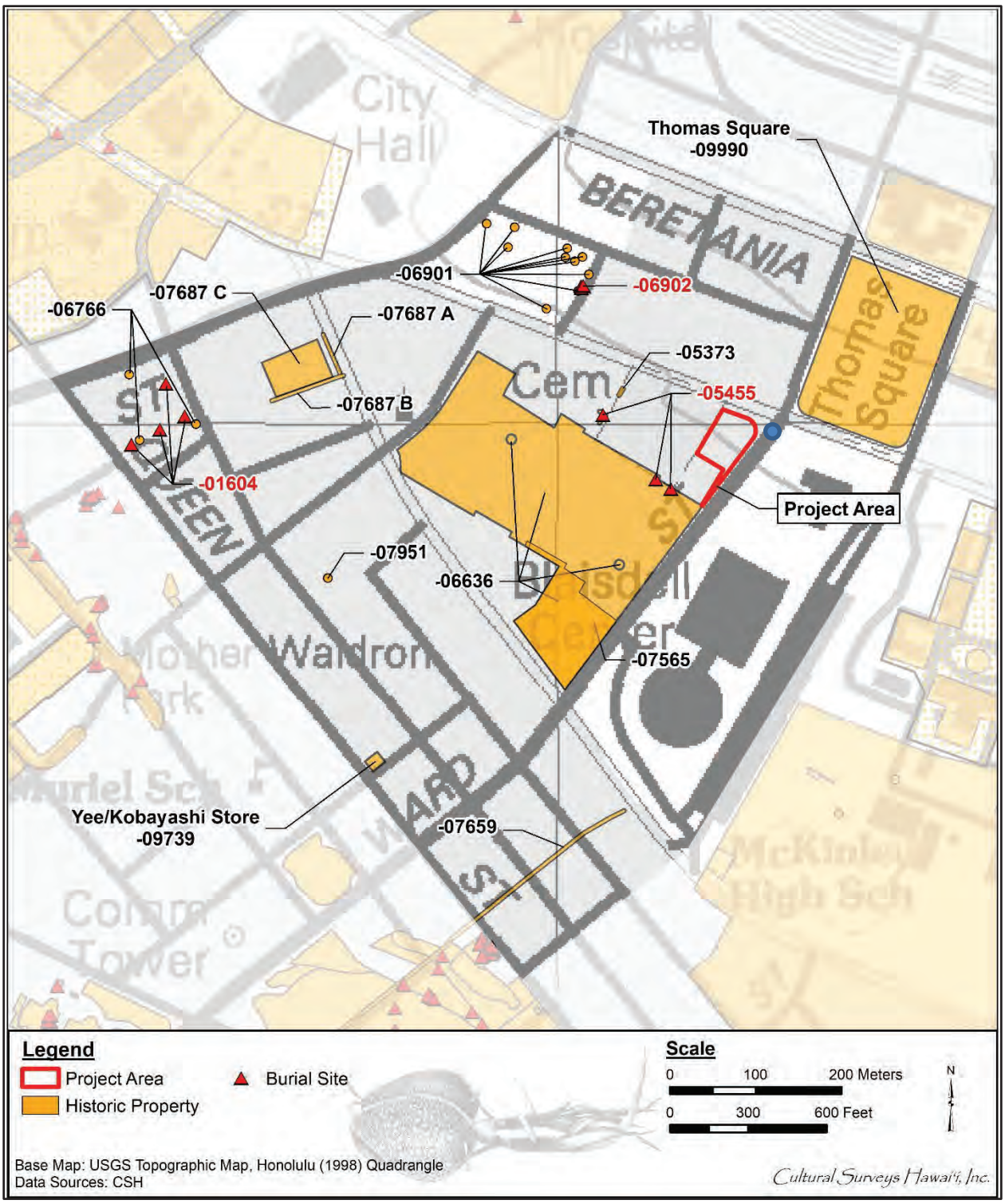


Figure 37. A portion of the 1998 Honolulu USGS 7.5-minute topographic quadrangle with overlay of historic properties in the vicinity of the project area and the location of the stratigraphic profile presented in Figure 38 and Figure 39 (blue dot)

Table 3. Historic properties previously identified in the vicinity of the project area

SIHP # 50-80-14-	Formal Type/ Name	Comment	Source
1604	Human skeletal remains	Isolated remains	Perzinski et al. 2005, Hazlett et al. 2008
5373	Historic trash pit	Post-Contact	Anderson 1995
5455	Human skeletal remains formerly associated with the King St Cemetery	Post-Contact burial cluster	Anderson 1997, Anderson and Aronson 1997, Perzinski et al. 2006
6636	Subsurface wetland sediments	Pre- to post-Contact	Mintmier et al. 2013
6766	Subsurface cultural features	Post-Contact	Perzinski et al. 2005
6901:1	Historic trash pit	Post-Contact	O’Hare et al. 2007
6901:2	Historic trash pit	Post-Contact	O’Hare et al. 2007
6901:3	Historic trash pit	Post-Contact	O’Hare et al. 2007
6901:4	Historic trash pit	Post-Contact	O’Hare et al. 2007
6901:5	Historic trash pit	Post-Contact	Pammer et al. 2009
6901:6	Historic trash pit	Post-Contact	Pammer et al. 2009
6901:7	Historic trash pit	Post-Contact	Pammer et al. 2009
6901:8	Historic trash pit	Post-Contact	Sroat et al. 2013
6901:9	Historic trash pit	Post-Contact	Sroat et al. 2013
6901:10	Historic trash pit	Post-Contact	Sroat et al. 2013
6902	Human skeletal remains	Post-Contact	O’Hare et al. 2007
7565	Subsurface structural remnants	Post-Contact	Mintmier et al. 2013
7659	Concretized Ward Estate ‘Auwai (ditch)	Post-Contact	Pammer et al. 2014
7687:A	Ditch	Post-Contact	Sinoto and Dashiell 2014
7687:B	Ditch	Post-Contact	Sinoto and Dashiell 2014
7687:C	Buried surface	Compacted coral limestone surface	Sinoto and Dashiell 2014
7951	Historic trash pits	1940s-1950s	Davis et al. 2016
9739	Yee/Kobayashi Store	Post-Contact	Hawai‘i Register
9990	Thomas Square	Historic park, constructed in 1843	NRHP Registration Form 1972

Figure 38. Enanoria et al. (2016) Profile 6, view to west

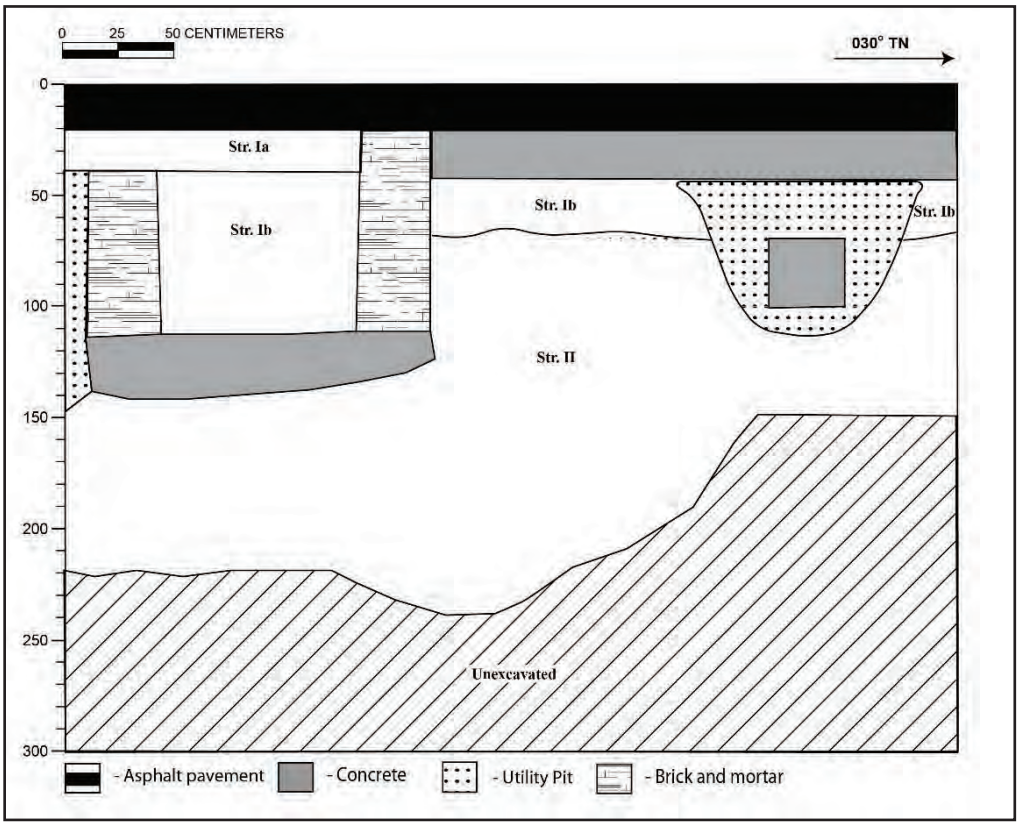


Figure 39. Enanoria et al. (2016) Profile 6, northwest wall; description of strata presented in Table 4 below; utility infrastructure was determined to be modern

Table 4. Enanoria et al. (2016) Profile 6 stratigraphic description

Stratum	Depth (cmbs)	Description
Surface	0–25	Asphalt
Ia	25–40	Fill; 10YR 8/2 very pale brown; coarse sand to cobbles; structureless single-grain; moist loose consistency; no cementation; non-plastic; marine origin; abrupt lower boundary; smooth topography; imported crushed coral fill associated with construction of the existing asphalt surface
Ib	40–150	Fill; 10YR 4/2 brown; gravelly sandy clay loam; weak, fine, crumb structure; moist loose consistency; no cementation; non-plastic; terrigenous origin; clear lower boundary; broken/discontinuous topography; reworked (i.e., excavated and backfilled) alluvial sediment related to construction of the existing utility box
II	70–240 (BOE)	Natural; 10YR 4/1 very dark brown; very coarse sand; structureless single-grain; moist, loose consistency; no cementation; non-plastic; terrigenous origin; lower boundary not visible; smooth topography; naturally deposited volcanic cinder

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Appendix A King Street Catholic Cemetery

Roman Catholic Church (account from Perzinski et al. 2006:12–13)

The first catholic priests arrived in the Hawaiian Islands on July 9, 1827. By 1829, however, the Catholic religion was outlawed by king Kamehameha III and anyone who had converted to Catholicism was deemed a traitor to the Hawaiian Kingdom. Persecution continued for the next ten years until the French warship *Artemise* arrived in Honolulu on July 9, 1839 with demands for the release of the imprisoned Catholics and permission to worship. The threat of war and the potential loss of the throne caused the king to meet the demands, thus triggering an influx of Roman Catholic priests and in turn converts (Kamakau 1992).

The Roman Catholic cemetery (now known as the King Street Cemetery), adjacent to the current [Kewalo HECO Dispatch Center] project area, is believed to have been given to the church in 1827, though no documentation of the transfer was recorded (*Hawai‘i Business News*, December 2004) [reference to 1847 Metcalf map]. The date of the oldest headstone within the cemetery today is 1841, though it is not known whether this represents the earliest burials (Anderson 1995a:5), as it is known that many of the earliest Christian burials were marked with wooden crosses. An 1847 map clearly shows the Roman Catholic cemetery along King Street and just east of Thomas Square [reference to 1847 Metcalf map]. The rectangular shape of the plot (versus the currently more square shape), indicates that the cemetery has expanded its dimensions. .

A letter to the Board of Health in 1902 gives a description of the cemetery prior to its closing in the 1940’s

> The CATHOLIC CEMETERY, on the makai side of King Street, just ewa of Mrs. Ward’s property, “The Old Plantation,” at the foot of Kapiolani St. is about 500 feet long on King Street by 400 ft. deep and comprises two portions, the old and the new. The original cemetery is the ewa half of the present cemetery and was opened about 1851. In the early seventies the Waikīkī portion was purchased and presented to the Church.
>
> The soil of the front half of the cemetery is good for about four feet but beneath this is a strata of black sand four feet deep. The rear quarter of the grounds is decidedly unfit for use as the water level is struck at a depth of three and one half feet and hence burials have been made at that depth which is two and a half feet short of the required depth. The water drains into the open ponds behind in which the natives still fish to a limited extent. Below these ponds are fifteen or twenty houses occupied by laborers and their families; on the ewa side are quite a few more and acrosss [*sic*] the street from the cemetery are residences.
>
> The ‘ewa half of the cemetery is badly crowded and it is doubtful if a grave could be dug and not find a coffin. The new portion is also pretty well filled and very little space is left.
>
> The Mission has practically ceased burying in this place, there being but two or three a month as against five times that number previously, most of the bodies now being taken to Pearl City.

> The same difficulty in counting graves is experienced as at Kawaiahao for the people do not put permanent marks on the graves, and in a few years the wood rots away and no sign is left. I counted 416 graves in the old portion and 355 in the new. Total 771.
>
> In quite a few cases the bodies are buried in the same grave on top of one another owing to the wishes of the deceased. This practice naturally necessitates some being buried at a less depth than six feet. A case in point is where a burial of a child was made at a depth of not over four feet in the same grave as one of its ancestors about two weeks ago (City Sanitary Officer 1902:2-3 from Anderson 1995a:6-7).

The dimensions of the cemetery as described above indicates that the cemetery was larger than recent maps suggest. Measurements from TMK 2-1-44 indicate that the cemetery boundaries extend approximately 350 feet along King Street, as opposed to the 500 feet indicated above. Along its north/south orientation, current maps indicate that the cemetery extends a maximum of 340 feet from King Street, though the description above indicates that the cemetery once extended 400 feet from King Street. The additional 60 feet unaccounted for in current maps suggests that the cemetery once extended well into the current [Kewalo HECO Dispatch Center] project area.

APPENDIX J

Traffic Impact Report

Traffic Impact Report

Liliuokalani Center

Prepared for:
Liliuokalani Trust

Prepared by:
Wilson Okamoto Corporation

October 2021

TRAFFIC IMPACT REPORT

FOR THE

LILIUOKALANI CENTER

Prepared for:

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October 2021

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I. INTRODUCTION

A. Purpose of Study

The purpose of this study is to identify and assess the traffic impacts resulting from the redevelopment of existing building space formerly occupied by The Honolulu Club in Honolulu on the island of Oahu. The proposed project entails the development of a state-of-the-art Liliuokalani Center which will offer pathways in the arts, sports, technology, and entrepreneurship for youth supported through community networks.

B. Scope of Study

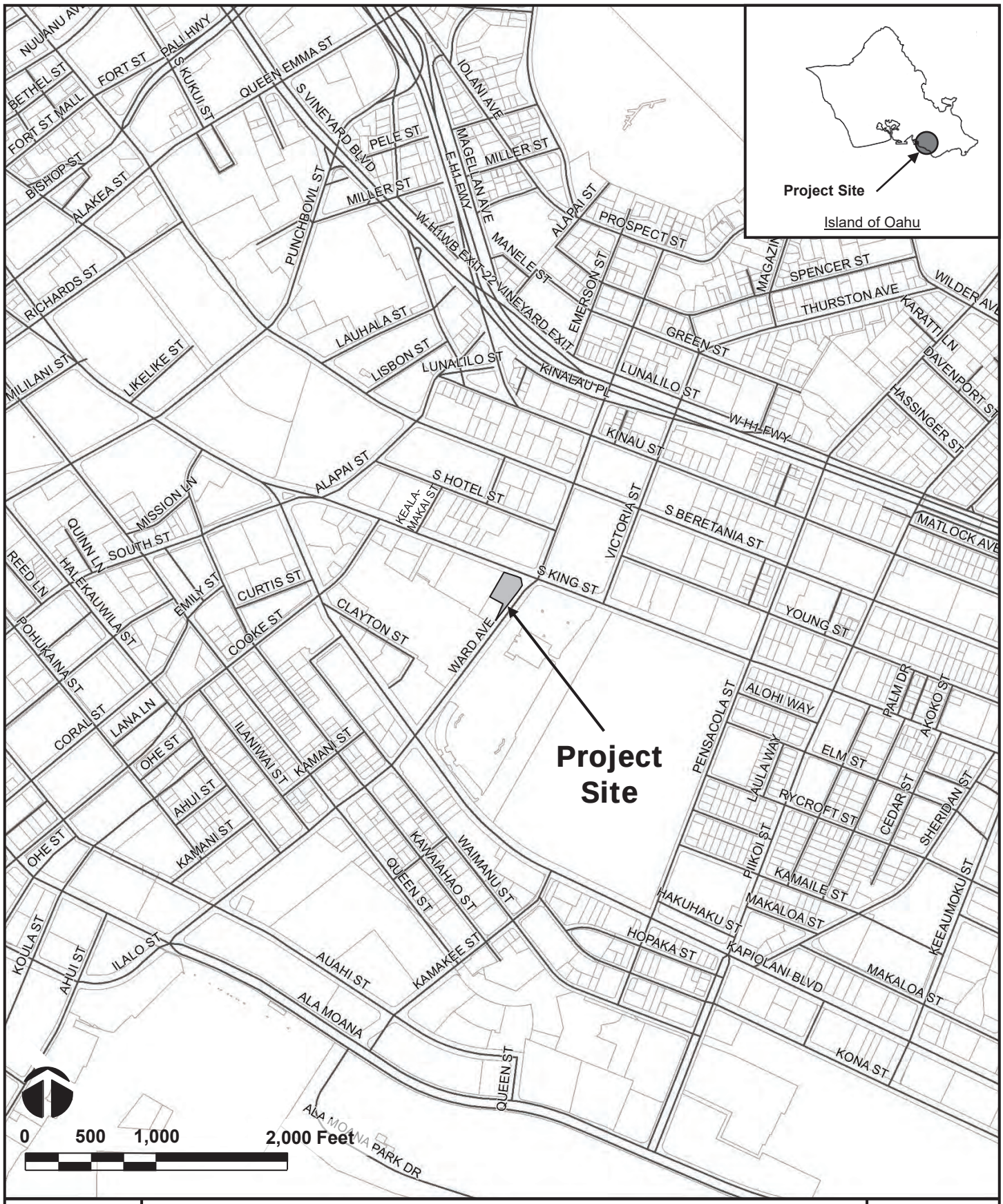
This report presents the findings and conclusions of the traffic study, the scope of which includes:

1. Description of the proposed project.
2. Evaluation of existing roadway and traffic operations in the vicinity.
3. Analysis of future roadway and traffic conditions without the proposed project.
4. Analysis and development of trip generation characteristics for the proposed project.
5. Superimposition of site-generated traffic over future traffic conditions.
6. The identification and analysis of traffic impacts resulting from the proposed project.
7. Recommendations of improvements, if appropriate, that would mitigate the traffic impacts resulting from the proposed project.

II. PROJECT DESCRIPTION

A. Location

The proposed site for the Liliuokalani Center is located within an existing building on the corner of Ward Avenue and South King Street in Kakaako on the island of Oahu (see Figure 1). The project site is bounded by Ward Avenue to the east, South King Street to the north, and residential & commercial uses to the west and south and is further identified as Tax Map Key (TMK): 2-1-044:005. Access to the project site will continue to be provided via existing driveways off Ward Avenue.



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LILIUOKALANI CENTER

LOCATION MAP AND VICINITY MAP

FIGURE 1

B. Project Characteristics

The project site for the Liliuokalani Center is located at the southwest corner of South King Street and Ward Avenue in Honolulu and formerly housed The Honolulu Club. The proposed project entails the renovation of approximately 65,000 square feet of existing spaces to develop a state-of-the-art facility to foster exploration, creativity, and innovative thinking to prepare Hawaiian youth for a rapidly changing future. The primary programs to be supported by the new space are the Liliuokalani Trust (LT) Academy daytime program and the Olino Pathway after school program.

The LT Academy will operate between 7:00 AM and 2:15 PM and provide programming for K-12 students. Enrollment for these daytime programs is expected to be a total of approximately 85 students with the majority expected to be transported to/from the facility via LT vehicles.

The Olino Pathway Program is an afterschool program geared towards middle to high school students that will operate between 2:00 PM and 7:00 PM. Enrollment in the program is expected to be approximately 235 students with the majority expected to be transported to/from the facility via LT vehicles. The Olino Pathway Program will offer several options for students to engage with including dance, theater, creative media, entrepreneurship, film, volleyball, coding, gaming, mindfulness, and others. These programs are expected to use a variety of spaces including the following:

- Lounge/quiet space
- Flex/classroom space
- Wellness center
- Black box theater, performance studio space, exhibit space
- Dance studios
- Flex maker space
- Music studio, Music/video recording studio
- Computer/tech lab
- Teaching Kitchen/Café
- Gym/Fitness Center

It should be noted that a café located on-site is expected to also be open to the public for breakfast and lunch service during weekdays and breakfast service on the

weekends but for walk-up service only. The proposed redevelopment is expected to be completed by Year 2024. Access to the project site will continue to be provided via two existing driveways off Ward Avenue. The south driveway provides access to the parking garage and is connected internally to the adjacent porte cochere while the north driveway is as an exit only driveway serving the porte cochere. It should be noted that use of the porte cochere is intended to be used only by authorized vehicles associated with the Liliuokalani Center. Service and delivery operations for the existing site is currently facilitated via an existing loading area accessed off South King Street. In addition, there is currently a designated freight loading zone along South King Street. With the proposed project, delivery activities will be relocated to the first floor of the building with access provided off Ward Avenue.

III. BASELINE TRAFFIC CONDITIONS

A. Area Roadway System

In the vicinity of the project site, Ward Avenue is a predominantly four-lane, two-way City and County of Honolulu roadway generally oriented in the north-south direction. North of the project site, Ward Avenue intersects South Beretania Street. At this signalized intersection, the northbound approach of Ward Avenue includes two through lanes, while the southbound approach is comprised of two through lanes and an exclusive right-turn lane. Contraflow operations are implemented along Ward Avenue during the AM peak period to provide an additional southbound lane. During contraflow operations, the northbound approach of Ward Avenue includes one through lane while the southbound approach includes three through lanes and an exclusive right-turn lane. South Beretania Street is a predominantly five-lane, one-way major City and County of Honolulu arterial that serves as the westbound component of a roadway couplet system with South King Street. At the intersection with Ward Avenue, the westbound approach on South Beretania Street has an exclusive left-turn lane, three through lanes, and a shared through and right-turn lane. It should be noted that right-turn movements are prohibited from the westbound approach during contraflow operations along Ward Avenue.

Near the northeast corner of the project site, Ward Avenue intersects South King Street. At the intersection with South King Street, the northbound approach of

Ward Avenue includes two through lanes and an exclusive right-turn lane, while the southbound approach includes two through lanes. As previously discussed, contraflow operations are implemented along Ward Avenue during the AM peak period. During contraflow operations, the northbound approach includes a through lane and an exclusive right-turn lane while the southbound approach includes three through lanes. South King Street is a predominantly five-lane, one-way City and County of Honolulu major arterial that serves as the eastbound component of a roadway couplet system with South Beretania Street. At this signalized intersection, the eastbound approach of South King Street includes a shared left-turn and through lane, three through lanes, and a shared through and right-turn lane.

South of the intersection with South King Street, Ward Avenue intersects Kapiolani Boulevard. At this signalized intersection, the northbound and southbound approaches of Ward Avenue include exclusive left-turn lanes, two through lanes, and exclusive right-turn lanes. Kapiolani Boulevard is a predominantly six-lane, two-way major City and County of Honolulu arterial generally oriented in the east-west direction. At the intersection with Ward Avenue, the eastbound approach on Kapiolani Boulevard includes two through lanes and a shared through and right-turn lane, while the westbound approach includes an exclusive left-turn lane, a through lane, and a shared through and right turn lane. Contraflow operations are implemented along this segment of Kapiolani Boulevard during the peak periods. During the AM peak period, the eastbound approach of Kapiolani Boulevard includes a through lane and a shared through and right-turn lane while the westbound approach includes an exclusive left-turn lane, two through lanes, and a shared through and right-turn lane. During the PM peak period, left-turn movements are prohibited from the westbound approach during the contraflow operations in the PM peak period.

West of the project site, South King Street intersects Kealamakai Street. At this unsignalized T-intersection, the eastbound approach of South King Street has a shared left-turn and through lane and three through lanes. However, since parking is allowed on South King Street, the shared left-turn and through lane effectively operates as a left-turn pocket except during the PM peak period when parking is prohibited. Kealamakai Street is a two-lane, two-way roadway that is generally

oriented in the north-south direction between South King Street and South Hotel Street. At the intersection with South King Street, the Kealamakai Street approach of has one stop-controlled lane that serves left-turn traffic movements.

Further west, South King Street intersects Cooke Street. At this unsignalized T-intersection, the eastbound approach of South King Street includes four through lanes and a shared right-turn and through lane. Cooke Street is a predominantly two-lane, two-way roadway generally oriented in the north-south direction between Ala Moana Boulevard and South King Street. At the intersection with South King Street, the northbound approach of Cooke Street has a stop-controlled lane that serves right-turn traffic movements.

B. Traffic Volumes and Conditions

1. General

a. Traffic Data

The traffic data used for the purpose of analysis is based available turning movement and 24-hour traffic data in the vicinity collected between Years 2013-2019. The manual turning movement count surveys were conducted during the morning peak hours between 6:00 AM and 9:00 AM, and the afternoon peak hours between 3:00 PM and 6:00 PM at the following intersections:

- Ward Avenue and South Beretania Street
- Ward Avenue and South King Street
- Ward Avenue and Kapiolani Boulevard
- South King Street and Kealamakai Street
- South King Street and Cooke Street

These traffic counts were supplemented by 24-hour traffic data obtained from the City and County of Honolulu in the vicinity of the project. More recent traffic data is not able to be collected at this time due to the ongoing COVID-19 pandemic that has resulted in significantly decreased traffic volumes and shifted travel pattern. The available traffic data was utilized to develop baseline traffic counts that represent Year 2021 conditions. It should be noted that a comparison of the traffic data from different years indicates that traffic

volumes in the vicinity have remained relatively stable or declined for the past few years along the adjacent roadways.

Appendix A includes the traffic count data used for this report.

b. Capacity Analysis Methodology

The highway capacity analysis performed in this study is based upon procedures presented in the "Highway Capacity Manual", Transportation Research Board, 2010, and the "Synchro" software, developed by Trafficware. The analysis is based on the concept of Level of Service (LOS) to identify the traffic impacts associated with traffic demands during the peak periods of traffic.

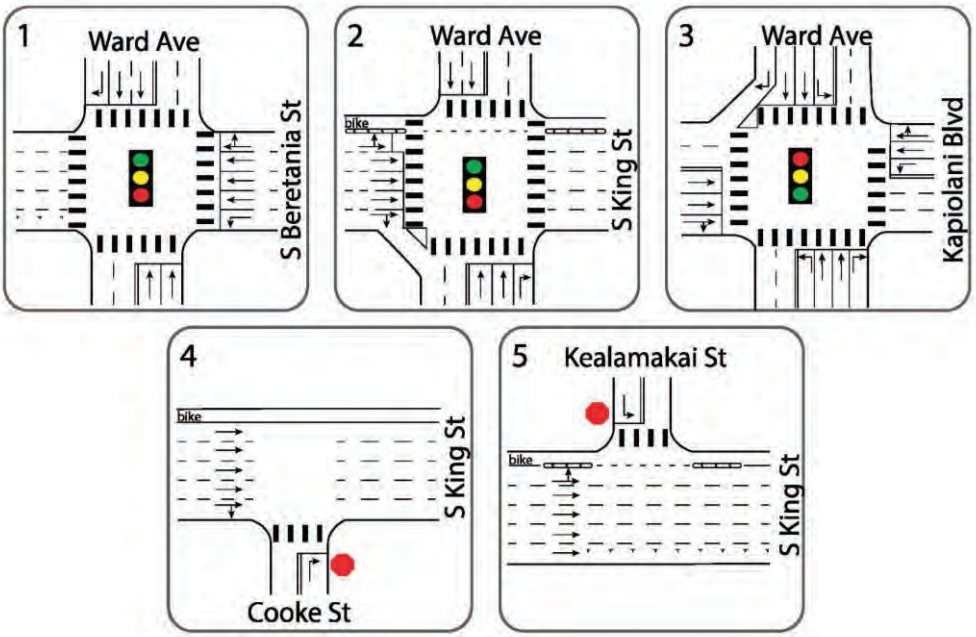
LOS is a quantitative and qualitative assessment of traffic operations. Levels of Service are defined by LOS "A" through "F"; LOS "A" representing ideal or free-flow traffic operating conditions and LOS "F" unacceptable or potentially congested traffic operating conditions.

"Volume-to-Capacity" (v/c) ratio is another measure indicating the relative traffic demand to the road carrying capacity. A v/c ratio of one (1.00) indicates that the roadway is operating at or near capacity. A v/c ratio of greater than 1.00 indicates that the traffic demand exceeds the road's carrying capacity. The LOS definitions are included in Appendix B.

2. Baseline Peak Hour Traffic

a. General

Figures 2 and 3 show the baseline (Year 2021) lane configurations and peak period traffic volumes. The AM peak hour of traffic generally occurs between 7:15 AM and 8:15 AM while the PM peak hour of traffic generally occurs between 4:45 PM and 5:45 PM. The analysis is based on these peak hour time periods for each intersection to identify the traffic impacts resulting from the proposed project. LOS calculations are included in Appendix C.



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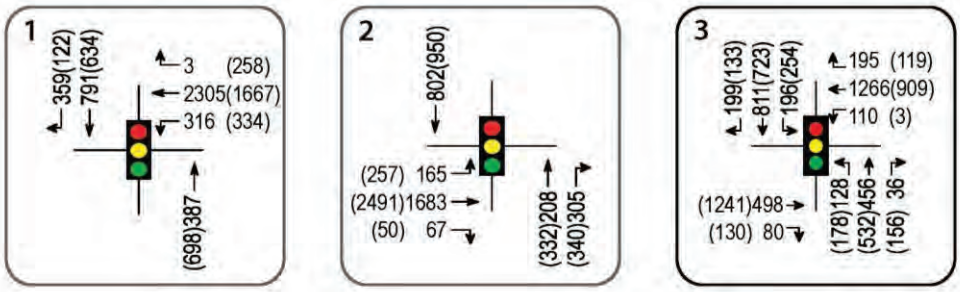
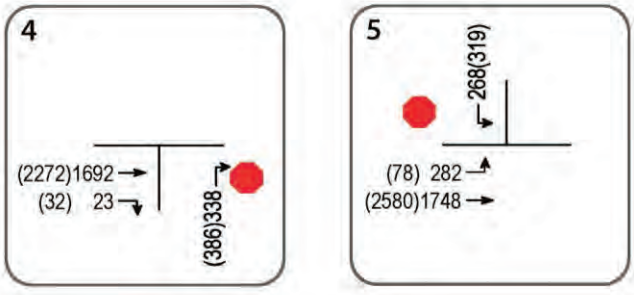
LILIUOKALANI CENTER

BASELINE LANE CONFIGURATIONS

FIGURE 2





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LILIUOKALANI CENTER

BASELINE PEAK HOURS OF TRAFFIC

FIGURE 3

b. Ward Avenue and South Beretania Street

At the intersection with South Beretania Street, Ward Avenue carries 578 vehicles northbound and 1,150 vehicles southbound during the AM peak period. During the PM peak period, the overall traffic volumes are lower with 698 vehicles traveling northbound and 756 vehicles traveling southbound. The northbound and southbound approaches of Ward Avenue operate at LOS "C" during the AM and PM peak periods. Vehicular queues periodically form on the Ward Avenue approaches of the intersection with the most significant queueing occurring on the northbound approach during the PM peak period. The northbound queues along Ward Avenue periodically extend through the upstream intersections with South Hotel Street and South King Street during that peak period.

South Beretania Street carries 2,624 vehicles and 2,259 vehicles westbound during the AM and PM peak periods, respectively. The South Beretania Street approach operates at LOS "B" during the AM peak period and LOS "A" during the PM peak period. Vehicular queues periodically form on the South Beretania Street approach of the intersection with the most significant queueing occurring during the PM peak period. Most of these queues were observed to clear the intersection after each traffic signal cycle change.

c. Ward Avenue and South King Street

At the intersection with South King Street, Ward Avenue carries 513 vehicles northbound and 802 vehicles southbound during the AM peak period. During the PM peak period, the traffic volumes are higher with 672 vehicles traveling northbound and 950 vehicles traveling southbound. Both approaches of Ward Avenue operate at LOS "B" during the AM peak period and LOS "C" during the PM peak period. Vehicular queues periodically form on the Ward Avenue approaches of the intersection with the most significant queuing observed during the PM peak period. During this period, northbound

queues along Ward Avenue extended from the downstream intersections with Kinau Street and South Beretania Street through this intersection. In addition, it should be noted that a cursory assessment of the travel patterns in the vicinity indicates that there is a high volume of southbound vehicles along Ward Avenue that utilize South Hotel Street as a cut-through to access South King Street via Kealamakai Street since left-turns are prohibited at the intersection of Ward Avenue and South King Street.

South King Street carries 1,915 vehicles and 2,798 vehicles eastbound during the AM and PM peak periods, respectively. The South King Street approach operates at LOS "B" during both AM and PM peak periods. Vehicular queues periodically form on the King Street approach of the intersection with the most significant queuing observed during the PM peak period. However, most of these queues were observed to clear the intersection after each traffic signal cycle change with the exception of the shared left-turn and through lane. Turning vehicles in this lane often had to wait for pedestrian and/or bicycle traffic. In addition, northbound queues along Ward Avenue occasionally extended through this intersection providing limited gaps for left-turning traffic from South King Street.

d. Ward Avenue and Kapiolani Boulevard

At the intersection with Kapiolani Boulevard, Ward Avenue carries 620 vehicles northbound and 1,206 vehicles southbound during the AM peak period. During the PM peak period, the overall traffic volume is higher with 866 vehicles traveling northbound and 1,110 traveling vehicles southbound. The Ward Avenue approaches of the intersection operate at LOS "C" during both peak periods. Vehicular queues periodically form on the Ward Avenue approaches of the intersection with the most significant queueing observed during the PM peak period. The northbound queues along Ward Avenue periodically extend through the upstream intersections with Waimanu

Street during that peak period. Most of these queues were observed to clear the intersection after each traffic signal cycle change.

Kapiolani Boulevard carries 578 vehicles eastbound 1,571 vehicles westbound during the AM peak period. During the PM peak period, the overall volume is higher with 1,371 vehicles travelling eastbound and 1,031 vehicles travelling westbound during the PM peak period. The Kapiolani Boulevard approach operates at LOS "C" during the AM and PM peak periods. Vehicular queues periodically form on the Kapiolani Boulevard approaches of the intersection during both peak periods. Most of these queues were observed to clear the intersection after each traffic signal cycle change.

e. South King Street and Kealamakai Street

At the intersection with Kealamakai Street, South King Street carries 2,030 vehicles during the AM peak period and 2,658 vehicles eastbound during the PM peak period. Kealamakai Street carries 268 vehicles and 319 vehicles southbound during the AM and PM peak periods, respectively. The Kealamakai Street approach operates at LOS "F" and LOS "D" during the AM and PM peak periods, respectively. As previously discussed, an assessment of the traffic patterns in the vicinity of the project indicates that a number of southbound vehicles along Ward Avenue utilize South Hotel Street as a cut-through to access South King Street via Kealamakai Street due to the left-turn prohibitions along Ward Avenue. As a result, there is a high volume of southbound turning vehicles on the Kealamakai Street during both peak periods. However, it should be noted that the upstream intersection along South King Street with Alapai Street provides gaps in the traffic stream to facilitate turning movements from Kealamakai Street.

f. South King Street and Cooke Street

At the intersection with Cooke Street, South King Street carries 1,718 vehicles and 2,304 vehicles eastbound during the AM and PM peak periods, respectively.

Cooke Street carries 338 vehicles during the AM peak period and 386 vehicles northbound during the AM peak period. The Cooke Street approach operates at LOS "B" and LOS "C" during the AM and PM peak periods, respectively. Traffic queues occasionally formed on the Cooke Street approach of the intersection during both peak periods, however, as previously noted the traffic signal at the upstream intersection of South King Street with Alapai Street provides gaps in the traffic stream to facilitate turning movements from Cooke Street.

IV. PROJECTED TRAFFIC CONDITIONS

A. Site-Generated Traffic

1. Trip Generation Methodology

The proposed project is intended to support new spaces for the LT Academy daytime program and the Olino Pathway afterschool program. As previously discussed, the LT Academy daytime programs will operate Mondays through Fridays between 7:00 AM and 2:15 PM providing programming for approximately 85 students, while the Olino Pathway afterschool program will operate between 2:00 PM and 7:00 PM serving approximately 235 students. As such, site-generated trips during the AM commuter peak period are primarily expected to be associated with the facility's daytime programs while site-generated trips during the PM commuter peak period are expected to be associated with the afterschool program. Based on previous operating data from other Liliuokalani Trust facilities, 75% of the students attending the daytime programs are expected to be transported via LT vehicles with the remaining 25% of students expected to access the project site via private vehicles. At this time, the type of vehicle (i.e. school bus, mini bus, shuttle vans, etc.) to be used for the proposed project is still under consideration but for the purpose of this report, LT

vehicles were conservatively assumed to be shuttle vans with an occupancy of ~14 students/vehicle. It should be noted that LT vehicles are also assumed to park on-site between the transporting activities of students to and from the facility.

During the PM peak period, majority of the students enrolled in the Olino Pathway program are anticipated to be picked-up at designated locations within the Honolulu area and transported to the project site via LT vehicles. Although a small portion of the students enrolled in the Olino Pathway program are anticipated to arrive at the site prior to the start of the afternoon commuter peak period, majority of the students (95%) are anticipated to arrive at the project site between 3:00 PM and 4:00 PM. The designated pick-up locations with the maximum total number of students anticipated at each location are as follows:

- Stevenson Middle School (~50 students)
- Roosevelt High School (~50 students)
- Halau Ku Mana (~50 students)
- Kula Kaiapuni o Anuenue (~50 students)
- Papakolea Community Park (~25 students)

Similar to the AM peak period, the LT vehicles are expected to park on-site and return students to their respective drop-off locations at the end of the program around 7:00 PM. Table 1 summarizes the projected trip generation characteristics related to the development of the Liliuokalani Center applied to the AM and PM peak hours of traffic.

Table 1: Peak Hour Trip Generation

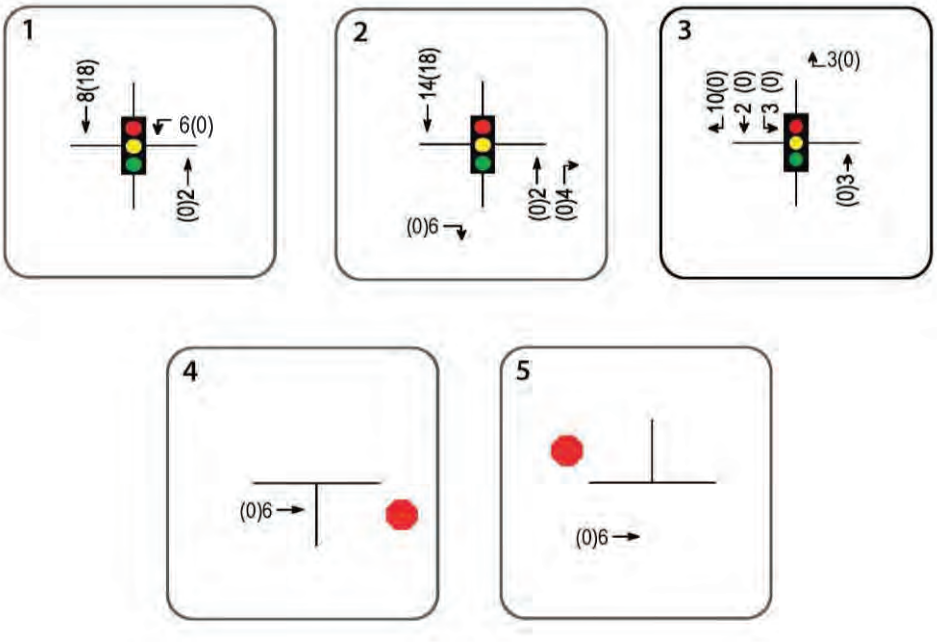
LILIUOKALANI CENTER		
		PROJECTED TRIP ENDS
AM PEAK	ENTER	26
	EXIT	21
	TOTAL	47
PM PEAK	ENTER	18
	EXIT	0
	TOTAL	18

2. Trip Distribution

Figure 4 shows the distribution of site-generated traffic during the AM and PM peak periods. Primary access to the project site is expected to be provided via driveways off Ward Avenue. As previously discussed, site-generated trips are expected to access the project site via private vehicles or LT vehicles that will transport students from designated locations in the Honolulu area. The directional distribution of site-generated trips via private vehicles was based upon the relative distribution of traffic along the regional roadways in the vicinity of the project including South King Street, South Beretania Street, Ward Avenue, and Kapiolani Boulevard. As such, 30% of trips were assumed to be traveling eastbound via South King Street, while westbound trips were split between Kapiolani Boulevard (15%) and South Beretania Street (30%). In addition, 10% and 15% of trips were assumed to be traveling northbound and southbound, respectively, via Ward Avenue. The directional distribution of the site-generated trips that are expected to be made via LT vehicles was based upon their assumed origin/destination, allowed turning movements, and relative convenience of the available routes. The designated pick-up locations are generally located north of the project site and as such, are anticipated to access the project site via Ward Avenue or South Beretania Street.

B. Through Traffic Forecasting Methodology

The travel forecast is based upon historical traffic count data obtained from the State DOT, Highways Division at survey stations in the vicinity of the project site. Although historical data indicates relatively stable traffic volumes in the project vicinity, a 2.0% growth rate per year was conservatively assumed along the project roadways. Using Year 2021 as the Base Year, a growth rate factor of 1.06 was applied to the existing traffic demands along Ward Avenue, South King Street, South Beretania Street, and Kapiolani Boulevard to achieve the projected Year 2024 traffic volumes.



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DISTRIBUTION OF SITE-GENERATED TRIPS WITH PROJECT

FIGURE 4

C. Other Considerations

1. Straub Main Campus Redevelopment

There are other planned developments in the vicinity of the project site including the Straub Main Campus Redevelopment located north of the project site. The campus redevelopment includes renovations of existing spaces and expansion of the hospital's medical facilities. The proposed Straub Main Campus Redevelopment is expected to be completed by Year 2035 and as such this project was not incorporated into Year 2024 projected conditions.

2. Ward Village Development

The proposed project is also located in the vicinity of the Ward Village project which is currently undergoing redevelopment. The Ward Village Master Plan entails the replacement of the site's existing uses and the construction of several mixed-use developments implemented in multiple phases. According to the "Transportation Master Plan for the Ward Village Master Plan" (updated October 2020) Phase 1 of the Master Plan has been completed with Phase 2 under construction and Phase 3 to be completed by Year 2024. As such, the trips associated with Phases 2 and 3 of the Master Plan were incorporated into the Year 2024 without project conditions.

3. South King Street and Cooke Street

The City and County of Honolulu Department of Transportation Services has future plans to install a traffic signal system at the intersection of South King Street and Cooke Street. However, the timeline of this improvement is not known at this time and as such was not incorporated into the Year 2024 projected conditions. It should be noted that the installation of a traffic signal system would facilitate turning traffic from the side street approach and improve traffic operations on Cooke Street. In addition, this improvement would also provide gaps in the traffic stream along South King

Street to facilitate turning movements from the side street approach at the adjacent intersection with Kealamakai Street.

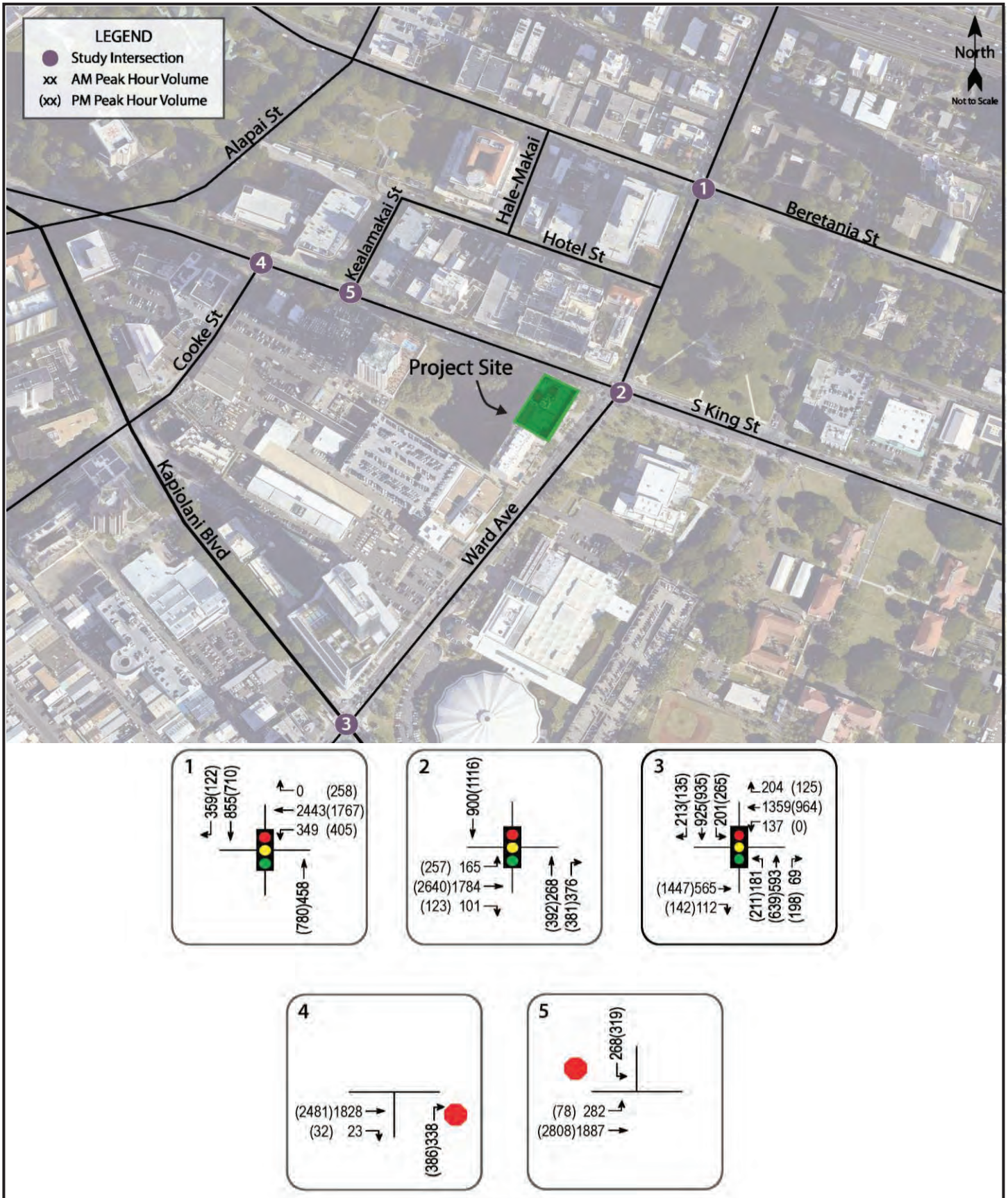
D. Total Traffic Volumes Without Project

The projected Year 2024 AM and PM peak period traffic volumes and operating conditions without the development of the Liliuokalani Center are shown in Figure 5 and summarized in Table 2. The analysis incorporates other developments in the vicinity as well as ambient growth of traffic. The baseline levels of service are provided for comparison purposes. LOS calculations are included in Appendix D.

Table 2: Baseline and Projected Year 2024 (Without Project) LOS Traffic Operating Conditions

Intersection	Approach/ Critical Movement	AM		PM	
		Base-line	Year 2024 w/out Proj	Base-line	Year 2024 w/out Proj
Ward Ave/ South Beretania St	Westbound	B	B	B	B
	Northbound	C	C	C	C
	Southbound	C	C	C	C
Ward Ave/ South King St	Eastbound	B	B	B	C
	Northbound	B	B	C	C
	Southbound	B	B	C	C
Ward Ave/ Kapiolani Blvd	Eastbound	C	D	C	D
	Westbound	C	C	C	C
	Northbound	C	D	C	D
	Southbound	D	D	C	D
South King St/ Kealamakai St	Eastbound	F	F	D	E
South King St/ Cooke St	Northbound	B	B	C	C

Under Year 2024 without project conditions, traffic operations are generally expected to remain similar to baseline conditions with the exception of those at the intersection of Ward Avenue and Kapiolani Boulevard. Along Ward Avenue, traffic operations at the intersections with South Beretania Street is expected to continue operating at LOS "C" or better during both peak periods, whereas those at the



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LILIUOKALANI CENTER

YEAR 2024 PEAK HOURS OF TRAFFIC
WITHOUT PROJECT

FIGURE
5

intersection with South King Street are anticipated to continue operating at LOS "B" during the AM peak period and LOS "C" during the PM peak period. At Kapiolani Boulevard, traffic operations are expected to deteriorate from LOS "C" to LOS "D" or better during both peak periods due to ambient growth in traffic. Along South King Street, traffic operations at Cooke Street are anticipated to continue operating at LOS "B" and LOS "C" during the AM and PM peak periods, respectively, whereas those at the intersection with Kealamakai Street are expected to continue operating at LOS "F" or better during both peak periods. As previously discussed, the high volume of left-turning vehicles from Kealamakai Street are influenced by vehicles that utilize South Hotel Street and Kealamakai Street as a cut-through route to connect to South King Street.

E. Total Traffic Volumes With Project

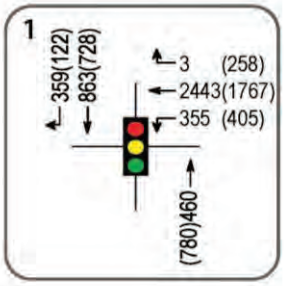
Figure 6 shows the Year 2024 cumulative AM and PM peak hour traffic conditions resulting from the development of the Liliuokalani Center. The cumulative volumes consist of site-generated traffic superimposed over Year 2024 projected traffic demands. The traffic impacts resulting from the proposed project are addressed in the following section.

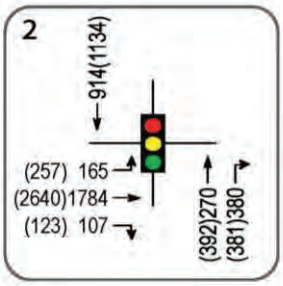
V. TRAFFIC IMPACT ANALYSIS

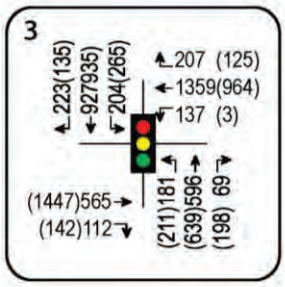
The Year 2024 cumulative AM and PM peak hour traffic conditions with the development of the Liliuokalani Center are summarized in Table 3. The baseline and projected Year 2024 (Without Project) operating conditions are provided for comparison purposes. LOS calculations are included in Appendix E.

Table 3: Baseline and Projected Year 2024 (Without and With Project) LOS Traffic Operating Conditions

Intersection	Approach/ Critical Movement	AM			PM		
		Base-line	Year 2024		Base-line	Year 2024	
			w/out Proj	w/ Proj		w/out Proj	w/ Proj
Ward Ave/ South Beretania St	Westbound	B	B	B	B	B	B
	Northbound	C	C	C	C	C	C
	Southbound	C	C	C	C	C	C







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LILIUOKALANI CENTER

YEAR 2024 PEAK HOURS OF TRAFFIC
WITH PROJECT

FIGURE
6

Table 3: Baseline and Projected Year 2024 (Without and With Project) LOS Traffic Operating Conditions (Cont'd)

Intersection	Approach/ Critical Movement	AM			PM		
		Base-line	Year 2024		Base-line	Year 2024	
			w/out Proj	w/ Proj		w/out Proj	w/ Proj
Ward Ave/ South King St	Eastbound	B	B	B	B	C	C
	Northbound	B	B	B	C	C	C
	Southbound	B	B	B	C	C	C
Ward Ave/ Kapiolani Blvd	Eastbound	C	D	D	C	D	D
	Westbound	C	C	C	C	C	C
	Northbound	C	D	D	C	D	D
	Southbound	D	D	D	C	D	D
South King St/ Kealamakai St	Eastbound	F	F	F	D	E	E
South King St/ Cooke St	Northbound	B	B	B	C	C	C

Under Year 2024 with project conditions, traffic operations in the vicinity are expected to remain similar to Without Project conditions. Along Ward Avenue, the approaches at the intersection with Kapiolani Boulevard are expected to continue operating at LOS "D" or better during both peak periods, whereas those at South King Street are expected to continue operating at LOS "C" or better during both peak periods. At South Beretania Street, the approaches at that intersection are anticipated to continue operating at LOS "C" or better during both peak periods. The remaining study intersections along South King Street at Cooke Street and Kealamakai Street are also anticipated to continue operating similar to Without Project conditions. As previously discussed, the high volume of left-turning vehicles from Kealamakai Street are influenced by vehicles that utilize South Hotel Street and Kealamakai Street as a cut-through route to connect to South King Street. It should be noted that the planned implementation of a traffic signal system at the adjacent intersection of South King Street and Cooke Street is expected to provide gaps in the traffic stream to facilitate turning movements from Kealamakai Street.

VI. MULTIMODAL FACILITIES

A. Pedestrian Facilities

Pedestrian facilities in the vicinity of the project are generally comprised of improved sidewalks, crosswalks, and curb ramps. Pedestrian crossings are facilitated by curb ramps and protected pedestrian signal phases at the signalized intersections along Ward Avenue at the intersections with South Beretania Street, South King Street, and Kapiolani Boulevard. However, pedestrian connectivity and convenient access are impacted between these intersections and along South King Street by the wide spacing of intersections. Along Ward Avenue, the spacing between South King Street and Kapiolani Boulevard is more than 1,200 feet and along South King Street the spacing between Cooke Street and Ward Avenue is more than 1,100 feet. It should be noted that there is a midblock crossing along Ward Avenue between South King Street and Kapiolani Boulevard to facilitate pedestrian access. That midblock crossing has been recently shortened with the installation of buffered bike lanes along both sides of Ward Avenue, but this crossing is unsignalized.

B. Bicycle Facilities

1. Methodology

Bicycle Level of Traffic Stress (LTS) is a metric developed by the Mineta Transportation Institute used to classify a roadway segment or intersection. The LTS ranking system is based on the amount of traffic stress imposed on cyclists based on variables such as street width, prevailing vehicle speed, and average daily traffic volumes. The Level of Traffic Stress ranges from 1 to 4 and can be assessed for a given segment or intersection via six tables provided by the Mineta Transportation Institute. The general descriptions of the LTS levels are as follows:

- LTS 1: Characterized by strong separation from all except low speed, low volume traffic. Simple crossings. Suitable for children.
- LTS 2: Except in low speed/low volume traffic situations, cyclists have their own place to ride that keeps them from having to interact with traffic except at formal crossings. There is a physical separation from higher speed and multilane traffic. Crossings are easy for an adult to navigate. This refers to a level of traffic stress that most adults can tolerate, particularly those sometimes classified as interested but concerned.

- LTS 3: Involves interaction with moderate speed or multilane traffic, or close proximity to higher speed traffic. Refers to a level of traffic stress acceptable to those classified as enthused and confident.
- LTS 4: Involves interaction with higher speed traffic or close proximity to high-speed traffic. Refers to a level of stress acceptable only to those classified as strong and fearless.

It should be noted that current LTS methodology assumes no traffic stress is imposed on cyclists at signalized intersections. Guidance provided by the Mineta Transportation Institute includes categorizing signalized intersections as a LTS 2.

2. Existing Conditions and Bicycle Level of Traffic Stress

Several bicycle facilities are located in close proximity to the proposed Liliuokalani Center. Protected bike lanes are provided along South King Street on the north side of the project site and along both sides of Ward Avenue. A bike lane is also provided further north along South Beretania Street between Ward Avenue and Alapai Street. Additionally, there are two BIKI bike share stations in close proximity to the project site with the closest bike share station located near the northwest corner of the intersection of Ward Avenue and South King Street and a second bike share station located east of the project site at Blaisdell Center.

The Level of Traffic Stress (LTS) was assessed for the roadways in the vicinity of the project to determine the level of stress imposed upon bicyclists based upon the prevailing speed and geometric characteristics of the roadway. Between Kinalau Place and South King Street, Ward Avenue is rated at LTS 3 due to the lack of dedicated bicycle facilities along this roadway segment thereby requiring bicyclists to share the roadway with vehicular traffic. Further south along Ward Avenue, the roadway segment between King Street and Kapiolani Boulevard is rated at LTS 1 since separated bike facilities are provided along both sides of the roadway. Similarly, between Alapai Street and Pensacola Street, King Street is rated at LTS 1 due to the provision of separated bike facilities. Along South Beretania Street, the LTS between Pensacola Street and Ward Avenue is rated at LTS 4 due to the lack of bicycle

facilities along this roadway segment requiring bicyclists to share the roadway with multilane, high-speed traffic. Between Ward Avenue and Alapai Street, South Beretania Street improves slightly to LTS 3 due to the provisions of bike lanes; however, bicyclists are still in close proximity to multilane traffic along this roadway segment. Figures 7 and 8 depict the existing bicycle facilities and the LTS for the roadways in the vicinity of the project.

In addition, the City and County of Honolulu has future plans to provide additional bicycle facilities in the project vicinity. According to the 2019 Update of the Oahu Bike Plan published by the City and County of Honolulu Department of Transportation Services, these improvements include the following:

- Extension of the existing bike lane along South Beretania Street from Alapai Street and North King Street and between Ward Avenue and Pensacola Street
- Protected bike lane along Kapiolani Boulevard from South Street to Waialae Avenue
- Shared Use Path within Thomas Square Park along Ward Avenue (Note: Thomas Square Park is currently under renovation.)

The addition of these facilities is expected to enhance connectivity for bicyclists in the project vicinity but the timelines for these improvements are not known at this time.

C. Transit Facilities

1. Methodology

Transit Capacity and Quality of Service is a metric used to measure transit availability, comfort, and convenience from both the passenger and transit service provider's points of view. The framework for this metric is outlined in the Transit Cooperative Research Program (TCRP) Report 165: Transit Capacity and Quality of Service Manual (TCQSM), 3rd Edition published in 2013 which provides research-based guidance on public transit capacity and quality of service. The quality of service concepts and methods contained in the TCQSM address real-world transit operations, comprehensive planning, and design needs. The research for and development of the TCQSM

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BICYCLE FACILITIES

FIGURE 7

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EXISTING BICYCLE LTS

FIGURE 8

has also directly supported the development of the Multimodal Level of Service (LOS) analysis methodologies introduced in the Highway Capacity Manual (HCM) 2010 and subsequently refined in HCM 6. Multimodal LOS analyzes a roadway corridor comprised of street segments which are defined as a length of street between intersections where traffic may have to stop due to traffic control. Transit LOS can be directly compared to other transportation modes with LOS "A" representing the best quality of service and the letter "F" used to represent the worst quality of service. The assessment evaluates the quality of transit operations incorporating factors that bear all aspect of a transit trip including the pedestrian environment along the street, service frequency and reliability, and the availability of transit amenities at those stop locations.

2. Existing Conditions and Transit LOS

There are a number of existing transit resources located in the vicinity of the project site. These facilities are provided by "The Bus" which is operated by the Oahu Transit Service (OTS) for the City and County of Honolulu Department of Transportation Services. Within a quarter mile radius of the project site, there are a total of 7 bus stop locations serving a total of 12 unique routes (see Figure 9). Additional routes may be accessed at the nearby Alapai Transit Center west of the project site. Access to the nearby bus stops is facilitated by pedestrian facilities along South King Street, South Beretania Street, and Ward Avenue. To verify the existing quality of service for the transit facilities in the project vicinity, an assessment of these facilities was conducted based on the methodology outlined by the TCQSM. The transit facilities along Ward Avenue are rated at LOS "F" since it is only served by single local bus route with headways of 60 minutes and with limited transit amenities. Along South King Street and South Beretania Street, the transit facilities along those roadways are rated at LOS "A" and LOS "B", respectively, since they are served by several local and express routes with headways of 30 minutes or less. Transit LOS calculations are included in Appendix F.

LEGEND

- Bus Stop
- Bus Route
- (A) Transit LOS

BUS FACILITIES

Bus Stop	Bus Route(s)
Alapai Transit Center	4, 11, 15, 43, 51, 52, 53, 54, 80, 81, 82, 83, 84, 84A, 86, 88, 89, 90, 91, 92, 93, 96, 97, 98, 98A, 101, 102, 103, 121, 122
Ward Ave & S Beretania St	4, 15
S Beretania St & Ward Ave	1, 2
Ward Ave & S King St	15
S King St & Ward Ave	1, 2
S King St & Cooke St	1, 1L, 2
Ward Ave & S Kapiolani Blvd	15
Kapiolani Blvd & Ward Ave	3, 9, 13, 40, 51, 52, 53

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LILIUOKALANI CENTER

TRANSIT FACILITIES AND TRANSIT LOS

FIGURE 9

Transit in the vicinity of the project is expected to improve under in the future due to the development of a rail transit system by the City and County of Honolulu that will extend between Kapolei and Honolulu providing an alternate mode of travel. The closest transit station from the project site is expected to be the Kakaako Station located off Ward Avenue less than half a mile away to the south of the project site. However, the expected completion date for this project is not known at this time.

VII. RECOMMENDATIONS

Based on the analysis of the traffic data, the following are the recommendations of this study to be incorporated in the project design.

1. Provide sufficient sight distance for motorists to safely enter and exit the project driveways to ensure pedestrians, bicyclists, and motorists are aware of the presence of each other at these conflict points.

2. Provide adequate on-site loading and off-loading service areas and prohibit off-site loading operations.

3. Provide adequate turn-around area for service, delivery, and refuse collection vehicles to maneuver on the project site to avoid vehicle-reversing maneuvers onto public roadways.

4. Provide sufficient turning radii at all project driveways to avoid or minimize vehicle encroachments to oncoming traffic lanes.

5. Consider reversing the traffic flow of the existing porte cochere off Ward Avenue and designating the northern driveway for entering vehicles and the southern driveway for exiting vehicles. Coordinate the design of the porte cochere with the City and County of Honolulu regarding bypass area requirements within the porte cochere. If traffic flow within the porte cochere is not reversed, establish routes for the LT vehicles to/from the project site that incorporate right-turn movements only and prohibit left-turn movements into the project driveways.

6. Monitor operations at the porte cochere and utilize on-site personnel to manage drop-off and pick-up area to ensure traffic queues do not extend onto the adjacent roadway. It should be noted that the use of the porte cochere is intended to be for authorized vehicles associated with the Liliuokalani Center only.

7. Provide adequate signage at the project driveway to notify motorists of the location of the drop-off area and the parking garage.

8. Provide adequate pedestrian connections between the on-site uses and off-site facilities. All pedestrian connections should be made accessible in conformance with the American with Disabilities Act (ADA).

9. Consider incorporating bicycle facilities within the project boundaries including designated and secured bicycle parking to encourage the use of alternate modes of transportation and connections that facilitate access to the several bicycle facilities in close proximity to the project site.

10. Prepare a supplemental traffic assessment to verify projected traffic conditions since more recent baseline traffic data could not be collected given the ongoing COVID-19 pandemic.

11. As may be required by the City and County of Honolulu, prepare a Transportation Management Plan which includes traffic circulation, parking, loading, and traffic demand management strategies to minimize the impact of the Liliuokalani Center on the surrounding roadway network.

VIII. CONCLUSION

The proposed project entails the renovation of the existing space that formerly housed the Honolulu Club at the southwest corner of the South King Street and Ward Avenue intersection to include a state-of-the art facility to accommodate programs supported by Liliuokalani Trust. The primary programs supported by the new space are the LT Academy and Olino Pathway Program. The LT Academy will operate between 7:00 AM and 2:15 PM and provide programming for K-12 students while the Olino Pathway Program is an afterschool program for middle to high school students that will operate between 2:00 PM and 7:00 PM. Majority of the students enrolled in both the daytime and afterschool programs are expected to be transported to the site via LT vehicles. In addition, the project site is located in the vicinity of regional roadways that are able to accommodate the addition of site-generated trips. As such, with the implementation of the aforementioned recommendations, traffic operations with the proposed project are generally expected to remain similar to without project conditions. Although traffic operations are generally expected to remain similar to without project conditions, the preparation of a Traffic Management Plan that includes traffic circulation, parking, loading, and traffic demand management (TDM) strategies is recommended to further minimize the potential impact of the Liliuokalani Center on the surrounding roadway network.

APPENDIX A

BASELINE TRAFFIC COUNT DATA

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hi 96826

Counted By:GL, CY
Counter:TU-0651, TU-0652
Weather:Clear

File Name : WarKin AM
Site Code : 00000002
Start Date : 10/16/2013
Page No : 1

Groups Printed- Unshifted

	Ward Avenue Southbound					S. King Street Westbound					Ward Avenue Northbound					S. King Street Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:00 AM	0	98	0	20	118	0	0	0	19	19	0	14	20	23	57	19	132	14	24	189	383
06:15 AM	0	116	0	33	149	0	0	0	33	33	0	13	36	30	79	12	209	4	36	261	522
06:30 AM	0	153	0	56	209	0	0	0	47	47	0	26	42	43	111	27	282	21	38	368	735
06:45 AM	0	155	0	31	186	0	0	0	44	44	0	42	51	59	152	26	325	19	55	425	807
Total	0	522	0	140	662	0	0	0	143	143	0	95	149	155	399	84	948	58	153	1243	2447
07:00 AM	0	189	0	32	221	0	0	0	25	25	0	46	57	32	135	40	329	16	44	429	810
07:15 AM	0	151	0	23	174	0	0	0	32	32	0	69	81	51	201	44	456	12	53	565	972
07:30 AM	0	213	0	46	259	0	0	0	49	49	0	57	97	50	204	55	495	25	39	614	1126
07:45 AM	0	170	0	47	217	0	0	0	41	41	0	40	71	45	156	30	394	13	48	485	899
Total	0	723	0	148	871	0	0	0	147	147	0	212	306	178	696	169	1674	66	184	2093	3807
08:00 AM	0	268	0	23	291	0	0	0	19	19	0	42	56	20	118	36	338	17	17	408	836
08:15 AM	0	180	0	18	198	0	0	0	15	15	0	46	61	18	125	53	264	29	22	368	706
08:30 AM	0	202	0	10	212	0	0	0	18	18	0	43	60	13	116	51	327	27	20	425	771
08:45 AM	0	155	0	14	169	0	0	0	12	12	0	63	54	14	131	45	327	25	12	409	721
Total	0	805	0	65	870	0	0	0	64	64	0	194	231	65	490	185	1256	98	71	1610	3034
Grand Total	0	2050	0	353	2403	0	0	0	354	354	0	501	686	398	1585	438	3878	222	408	4946	9288
Apprch %	0	85.3	0	14.7		0	0	0	100		0	31.6	43.3	25.1		8.9	78.4	4.5	8.2		
Total %	0	22.1	0	3.8	25.9	0	0	0	3.8	3.8	0	5.4	7.4	4.3	17.1	4.7	41.8	2.4	4.4	53.3	

	Ward Avenue Southbound				S. King Street Westbound				Ward Avenue Northbound				S. King Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	151	0	151	0	0	0	0	0	**69**	81	150	44	456	12	512	813
07:30 AM	0	213	0	213	0	0	0	0	0	57	**97**	**154**	**55**	**495**	**25**	**575**	**942**
07:45 AM	0	170	0	170	0	0	0	0	0	40	71	111	30	394	13	437	718
08:00 AM	0	**268**	0	**268**	0	0	0	0	0	42	56	98	36	338	17	391	757
Total Volume	0	802	0	802	0	0	0	0	0	208	305	513	165	1683	67	1915	3230
% App. Total	0	100	0		0	0	0		0	40.5	59.5		8.6	87.9	3.5		
PHF	.000	.748	.000	.748	.000	.000	.000	.000	.000	.754	.786	.833	.750	.850	.670	.833	.857

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hi 96826

Counted By:GL, CY
Counter:TU-0651, TU-0652
Weather:Clear

File Name : WarKin PM
Site Code : 00000002
Start Date : 10/16/2013
Page No : 1

Groups Printed- Unshifted

	Ward Avenue Southbound					S. King Street Westbound					Ward Avenue Northbound					S. King Street Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
03:00 PM	0	154	0	19	173	0	0	0	28	28	0	85	67	25	177	69	415	31	18	533	911
03:15 PM	0	156	0	19	175	0	0	0	24	24	0	115	90	35	240	44	448	29	13	534	973
03:30 PM	0	207	0	30	237	0	0	0	30	30	0	100	87	52	239	70	486	19	17	592	1098
03:45 PM	0	199	0	13	212	0	0	0	27	27	0	99	101	51	251	55	477	10	2	544	1034
Total	0	716	0	81	797	0	0	0	109	109	0	399	345	163	907	238	1826	89	50	2203	4016
04:00 PM	0	203	0	21	224	0	0	0	47	47	0	103	90	79	272	57	481	7	22	567	1110
04:15 PM	0	201	0	14	215	0	0	0	33	33	0	115	95	63	273	54	544	2	17	617	1138
04:30 PM	0	243	0	56	299	0	0	0	83	83	0	96	83	105	284	60	658	10	47	775	1441
04:45 PM	0	270	0	36	306	0	0	0	48	48	0	79	74	68	221	64	615	10	31	720	1295
Total	0	917	0	127	1044	0	0	0	211	211	0	393	342	315	1050	235	2298	29	117	2679	4984
05:00 PM	0	213	0	23	236	0	0	0	50	50	0	70	86	81	237	68	622	21	28	739	1262
05:15 PM	0	224	0	32	256	0	0	0	49	49	0	87	97	35	219	65	596	9	15	685	1209
05:30 PM	0	199	0	23	222	0	0	0	31	31	0	77	91	51	219	65	595	8	20	688	1160
05:45 PM	0	241	0	13	254	0	0	0	28	28	0	106	100	61	267	53	663	9	17	742	1291
Total	0	877	0	91	968	0	0	0	158	158	0	340	374	228	942	251	2476	47	80	2854	4922
Grand Total	0	2510	0	299	2809	0	0	0	478	478	0	1132	1061	706	2899	724	6600	165	247	7736	13922
Apprch %	0	89.4	0	10.6		0	0	0	100		0	39	36.6	24.4		9.4	85.3	2.1	3.2		
Total %	0	18	0	2.1	20.2	0	0	0	3.4	3.4	0	8.1	7.6	5.1	20.8	5.2	47.4	1.2	1.8	55.6	

	Ward Avenue Southbound				S. King Street Westbound				Ward Avenue Northbound				S. King Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	243	0	243	0	0	0	0	0	**96**	83	179	60	**658**	10	**728**	**1150**
04:45 PM	0	**270**	0	**270**	0	0	0	0	0	79	74	153	64	615	10	689	1112
05:00 PM	0	213	0	213	0	0	0	0	0	70	86	156	**68**	622	**21**	711	1080
05:15 PM	0	224	0	224	0	0	0	0	0	87	**97**	**184**	65	596	9	670	1078
Total Volume	0	950	0	950	0	0	0	0	0	332	340	672	257	2491	50	2798	4420
% App. Total	0	100	0		0	0	0		0	49.4	50.6		9.2	89	1.8		
PHF	.000	.880	.000	.880	.000	.000	.000	.000	.000	.865	.876	.913	.945	.946	.595	.961	.961

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hi 96826

Counted By:MA
Counter:TU-0654
Weather:Clear

File Name : WarHot AM
Site Code : 00000003
Start Date : 10/16/2013
Page No : 1

Groups Printed- Unshifted

	Ward Avenue Southbound					Westboun d	Ward Avenue Northbound					Hotel Street Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:00 AM	0	105	48	1	154	0	0	33	0	0	33	4	0	2	23	29	216
06:15 AM	0	125	59	4	188	0	1	27	0	4	32	6	0	2	22	30	250
06:30 AM	0	148	54	5	207	0	1	52	0	2	55	3	0	10	44	57	319
06:45 AM	0	162	87	1	250	0	2	68	0	4	74	2	0	3	34	39	363
Total	0	540	248	11	799	0	4	180	0	10	194	15	0	17	123	155	1148
07:00 AM	0	190	62	1	253	0	1	80	0	3	84	4	0	6	21	31	368
07:15 AM	0	177	74	3	254	0	1	101	0	5	107	1	0	2	34	37	398
07:30 AM	0	196	89	4	289	0	4	101	0	1	106	5	0	4	34	43	438
07:45 AM	0	184	80	4	268	0	1	79	0	8	88	5	0	3	50	58	414
Total	0	747	305	12	1064	0	7	361	0	17	385	15	0	15	139	169	1618
08:00 AM	0	245	76	3	324	0	0	79	0	3	82	4	0	9	28	41	447
08:15 AM	0	188	58	2	248	0	8	86	0	6	100	5	0	8	22	35	383
08:30 AM	0	177	50	1	228	0	5	83	0	3	91	2	0	7	22	31	350
08:45 AM	0	138	50	3	191	0	7	89	0	3	99	7	0	4	25	36	326
Total	0	748	234	9	991	0	20	337	0	15	372	18	0	28	97	143	1506
Grand Total	0	2035	787	32	2854	0	31	878	0	42	951	48	0	60	359	467	4272
Apprch %	0	71.3	27.6	1.1			3.3	92.3	0	4.4		10.3	0	12.8	76.9		
Total %	0	47.6	18.4	0.7	66.8	0	0.7	20.6	0	1	22.3	1.1	0	1.4	8.4	10.9	

	Ward Avenue Southbound				Westbound	Ward Avenue Northbound				Hotel Street Eastbound				
Start Time	Left	Thru	Right	App. Total	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1														
Peak Hour for Entire Intersection Begins at 07:15 AM														
07:15 AM	0	177	74	251	0	1	**101**	0	102	1	0	2	3	356
07:30 AM	0	196	**89**	285	0	**4**	101	0	**105**	**5**	0	4	9	399
07:45 AM	0	184	80	264	0	1	79	0	80	5	0	3	8	352
08:00 AM	0	**245**	76	**321**	0	0	79	0	79	4	0	**9**	**13**	**413**
Total Volume	0	802	319	1121	0	6	360	0	366	15	0	18	33	1520
% App. Total	0	71.5	28.5			1.6	98.4	0		45.5	0	54.5		
PHF	.000	.818	.896	.873	.000	.375	.891	.000	.871	.750	.000	.500	.635	.920

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hi 96826

Counted By:KT, BC
Counter:TU-0654, TU-0653
Weather:Clear

File Name : WarHot PM
Site Code : 00000003
Start Date : 10/16/2013
Page No : 1

Groups Printed- Unshifted

	Ward Avenue Southbound					Westbound	Ward Avenue Northbound					Hotel Street Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
03:00 PM	0	133	50	2	185	0	16	149	0	10	175	14	0	11	22	47	407
03:15 PM	0	150	50	2	202	0	11	172	0	9	192	10	0	12	22	44	438
03:30 PM	0	164	38	3	205	0	10	168	0	7	185	10	0	15	40	65	455
03:45 PM	0	182	39	3	224	0	0	163	0	2	165	4	0	13	24	41	430
Total	0	629	177	10	816	0	37	652	0	28	717	38	0	51	108	197	1730
04:00 PM	0	190	52	5	247	0	3	171	0	3	177	18	0	13	46	77	501
04:15 PM	0	185	44	3	232	0	6	184	0	5	195	15	0	16	20	51	478
04:30 PM	0	225	39	7	271	0	7	146	0	9	162	20	0	17	43	80	513
04:45 PM	0	210	31	8	249	0	3	138	0	6	147	26	0	27	30	83	479
Total	0	810	166	23	999	0	19	639	0	23	681	79	0	73	139	291	1971
05:00 PM	0	190	26	3	219	0	4	143	0	8	155	13	0	19	30	62	436
05:15 PM	0	202	21	1	224	0	4	160	0	7	171	6	0	12	19	37	432
05:30 PM	0	193	22	3	218	0	12	140	0	8	160	6	0	10	27	43	421
05:45 PM	0	214	19	2	235	0	11	179	0	5	195	8	0	11	9	28	458
Total	0	799	88	9	896	0	31	622	0	28	681	33	0	52	85	170	1747
Grand Total	0	2238	431	42	2711	0	87	1913	0	79	2079	150	0	176	332	658	5448
Apprch %	0	82.6	15.9	1.5			4.2	92	0	3.8		22.8	0	26.7	50.5		
Total %	0	41.1	7.9	0.8	49.8	0	1.6	35.1	0	1.5	38.2	2.8	0	3.2	6.1	12.1	

	Ward Avenue Southbound				Westbound	Ward Avenue Northbound				Hotel Street Eastbound				
Start Time	Left	Thru	Right	App. Total	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1														
Peak Hour for Entire Intersection Begins at 04:00 PM														
04:00 PM	0	190	**52**	242	0	3	171	0	174	18	0	13	31	447
04:15 PM	0	185	44	229	0	6	**184**	0	**190**	15	0	16	31	450
04:30 PM	0	**225**	39	**264**	0	**7**	146	0	153	20	0	17	37	**454**
04:45 PM	0	210	31	241	0	3	138	0	141	**26**	0	**27**	**53**	435
Total Volume	0	810	166	976	0	19	639	0	658	79	0	73	152	1786
% App. Total	0	83	17			2.9	97.1	0		52	0	48		
PHF	.000	.900	.798	.924	.000	.679	.868	.000	.866	.760	.000	.676	.717	.983

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hi 96826

Counted By:GC, PA
Counter:D4-3888, D4-3889
Weather:Clear

File Name : WarBer AM
Site Code : 00000004
Start Date : 10/16/2013
Page No : 1

Groups Printed- Unshifted

	Ward Avenue Southbound					S. Beretania Street Westbound					Ward Avenue Northbound					S. Beretania Street Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:00 AM	0	119	62	6	187	25	181	1	6	213	0	38	0	7	45	0	0	0	3	3	448
06:15 AM	0	149	72	6	227	34	230	0	8	272	0	30	0	10	40	0	0	0	18	18	557
06:30 AM	0	153	77	16	246	47	301	0	7	355	2	45	0	22	69	0	0	0	21	21	691
06:45 AM	0	168	83	22	273	73	426	2	16	517	0	68	0	12	80	0	0	0	25	25	895
Total	0	589	294	50	933	179	1138	3	37	1357	2	181	0	51	234	0	0	0	67	67	2591
07:00 AM	0	175	68	16	259	78	520	2	12	612	0	88	0	3	91	0	0	0	19	19	981
07:15 AM	0	175	94	12	281	65	597	0	8	670	0	109	0	8	117	0	0	0	25	25	1093
07:30 AM	0	213	105	27	345	73	652	0	22	747	0	101	0	20	121	0	0	0	35	35	1248
07:45 AM	0	181	99	21	301	87	653	1	21	762	0	90	0	26	116	0	0	0	34	34	1213
Total	0	744	366	76	1186	303	2422	3	63	2791	0	388	0	57	445	0	0	0	113	113	4535
08:00 AM	0	222	92	20	334	91	600	2	21	714	0	87	0	8	95	0	0	0	14	14	1157
08:15 AM	0	173	115	15	303	69	528	0	10	607	0	93	0	8	101	0	0	0	5	5	1016
08:30 AM	0	163	80	15	258	73	400	0	13	486	0	82	0	12	94	0	0	0	14	14	852
08:45 AM	0	107	42	11	160	79	383	0	6	468	0	99	0	18	117	0	0	0	2	2	747
Total	0	665	329	61	1055	312	1911	2	50	2275	0	361	0	46	407	0	0	0	35	35	3772
Grand Total	0	1998	989	187	3174	794	5471	8	150	6423	2	930	0	154	1086	0	0	0	215	215	10898
Apprch %	0	62.9	31.2	5.9		12.4	85.2	0.1	2.3		0.2	85.6	0	14.2		0	0	0	100		
Total %	0	18.3	9.1	1.7	29.1	7.3	50.2	0.1	1.4	58.9	0	8.5	0	1.4	10	0	0	0	2	2	

	Ward Avenue Southbound				S. Beretania Street Westbound				Ward Avenue Northbound				S. Beretania Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	175	94	269	65	597	0	662	0	**109**	0	**109**	0	0	0	0	1040
07:30 AM	0	213	**105**	**318**	73	652	0	725	0	101	0	101	0	0	0	0	**1144**
07:45 AM	0	181	99	280	87	**653**	1	**741**	0	90	0	90	0	0	0	0	1111
08:00 AM	0	**222**	92	314	**91**	600	**2**	693	0	87	0	87	0	0	0	0	1094
Total Volume	0	791	390	1181	316	2502	3	2821	0	387	0	387	0	0	0	0	4389
% App. Total	0	67	33		11.2	88.7	0.1		0	100	0		0	0	0		
PHF	.000	.891	.929	.928	.868	.958	.375	.952	.000	.888	.000	.888	.000	.000	.000	.000	.959

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu, Hi 96826

Counted By:GC, PA
Counter:D4-3889, D4-3888
Weather:Clear

File Name : WarBer PM
Site Code : 00000004
Start Date : 10/16/2013
Page No : 1

Groups Printed- Unshifted

	Ward Avenue Southbound					S. Beretania Street Westbound					Ward Avenue Northbound					S. Beretania Street Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
03:00 PM	0	100	18	9	127	53	325	25	9	412	0	142	0	16	158	0	0	0	11	11	708
03:15 PM	0	144	34	9	187	67	440	30	15	552	1	190	0	10	201	0	0	0	13	13	953
03:30 PM	0	138	32	14	184	69	433	43	9	554	0	174	0	15	189	0	0	0	24	24	951
03:45 PM	0	136	30	15	181	78	482	47	12	619	0	164	0	8	172	0	0	0	24	24	996
Total	0	518	114	47	679	267	1680	145	45	2137	1	670	0	49	720	0	0	0	72	72	3608
04:00 PM	0	151	55	12	218	88	403	36	11	538	0	208	0	10	218	0	0	0	10	10	984
04:15 PM	0	151	37	6	194	89	474	37	7	607	0	190	0	10	200	0	0	0	12	12	1013
04:30 PM	0	178	38	23	239	81	502	62	25	670	0	189	0	14	203	0	0	0	21	21	1133
04:45 PM	0	152	35	16	203	92	487	71	16	666	0	173	0	19	192	0	0	0	29	29	1090
Total	0	632	165	57	854	350	1866	206	59	2481	0	760	0	53	813	0	0	0	72	72	4220
05:00 PM	0	153	30	18	201	72	457	88	21	638	0	146	0	4	150	0	0	0	10	10	999
05:15 PM	0	162	22	11	195	69	427	75	16	587	0	161	0	8	169	0	0	0	7	7	958
05:30 PM	0	155	22	13	190	68	374	78	18	538	0	119	0	15	134	0	0	0	11	11	873
05:45 PM	0	171	31	9	211	68	350	54	17	489	0	166	0	13	179	0	0	0	11	11	890
Total	0	641	105	51	797	277	1608	295	72	2252	0	592	0	40	632	0	0	0	39	39	3720
Grand Total	0	1791	384	155	2330	894	5154	646	176	6870	1	2022	0	142	2165	0	0	0	183	183	11548
Apprch %	0	76.9	16.5	6.7		13	75	9.4	2.6		0	93.4	0	6.6		0	0	0	100		
Total %	0	15.5	3.3	1.3	20.2	7.7	44.6	5.6	1.5	59.5	0	17.5	0	1.2	18.7	0	0	0	1.6	1.6	

	Ward Avenue Southbound				S. Beretania Street Westbound				Ward Avenue Northbound				S. Beretania Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	151	37	188	89	474	37	600	0	**190**	0	**190**	0	0	0	0	978
04:30 PM	0	**178**	**38**	**216**	81	**502**	62	645	0	189	0	189	0	0	0	0	**1050**
04:45 PM	0	152	35	187	**92**	487	71	**650**	0	173	0	173	0	0	0	0	1010
05:00 PM	0	153	30	183	72	457	**88**	617	0	146	0	146	0	0	0	0	946
Total Volume	0	634	140	774	334	1920	258	2512	0	698	0	698	0	0	0	0	3984
% App. Total	0	81.9	18.1		13.3	76.4	10.3		0	100	0		0	0	0		
PHF	.000	.890	.921	.896	.908	.956	.733	.966	.000	.918	.000	.918	.000	.000	.000	.000	.949

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu HI, 96826

Counted by:WL, AN
Counters:D4-3888, D4-5675
Weather:CLEAR

File Name : KAP WAR AM
Site Code : 00000003
Start Date : 9/11/2019
Page No : 1

Groups Printed- Unshifted

	Ward Avenue Southbound					Kapiolani Boulevard Westbound					Ward Avenue Northbound					Kapiolani Boulevard Eastbound				
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
06:00 AM	8	112	23	5	148	19	72	6	7	104	13	31	4	8	56	48	7	11	66	374
06:15 AM	28	128	35	12	203	22	89	5	2	118	14	42	5	11	72	32	7	7	46	439
06:30 AM	25	153	45	16	239	44	154	13	9	220	22	42	9	13	86	82	21	11	114	659
06:45 AM	33	158	32	11	234	51	216	14	9	290	26	65	13	8	112	78	18	7	103	739
Total	94	551	135	44	824	136	531	38	27	732	75	180	31	40	326	240	53	36	329	2211
07:00 AM	29	130	58	17	234	44	242	15	15	316	28	110	15	18	171	93	21	21	135	856
07:15 AM	35	170	68	9	282	53	304	23	7	387	24	131	15	9	179	115	16	15	146	994
07:30 AM	41	185	31	24	281	44	314	33	26	417	47	140	6	12	205	117	24	11	152	1055
07:45 AM	72	226	50	20	368	41	304	26	26	397	32	105	5	20	162	138	19	16	173	1100
Total	177	711	207	70	1165	182	1164	97	74	1517	131	486	41	59	717	463	80	63	606	4005
08:00 AM	48	230	50	12	340	57	344	28	12	441	25	80	10	21	136	128	21	6	155	1072
08:15 AM	65	231	54	12	362	48	191	15	9	263	27	90	13	13	143	123	26	8	157	925
08:30 AM	59	174	50	20	303	24	196	27	8	255	30	98	18	10	156	117	29	14	160	874
08:45 AM	59	199	44	10	312	43	170	33	27	273	24	87	15	19	145	124	21	11	156	886
Total	231	834	198	54	1317	172	901	103	56	1232	106	355	56	63	580	492	97	39	628	3757
Grand Total	502	2096	540	168	3306	490	2596	238	157	3481	312	1021	128	162	1623	1195	230	138	1563	9973
Apprch %	15.2	63.4	16.3	5.1		14.1	74.6	6.8	4.5		19.2	62.9	7.9	10		76.5	14.7	8.8		
Total %	5	21	5.4	1.7	33.1	4.9	26	2.4	1.6	34.9	3.1	10.2	1.3	1.6	16.3	12	2.3	1.4	15.7	

	Ward Avenue Southbound				Kapiolani Boulevard Westbound				Ward Avenue Northbound				Kapiolani Boulevard Eastbound			
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 07:15 AM																
07:15 AM	35	170	68	273	53	304	23	380	24	131	15	170	115	16	131	954
07:30 AM	41	185	31	257	44	314	33	391	47	140	6	193	117	24	141	982
07:45 AM	72	226	50	348	41	304	26	371	32	105	5	142	138	19	157	1018
08:00 AM	48	230	50	328	57	344	28	429	25	80	10	115	128	21	149	1021
Total Volume	196	811	199	1206	195	1266	110	1571	128	456	36	620	498	80	578	3975
% App. Total	16.3	67.2	16.5		12.4	80.6	7		20.6	73.5	5.8		86.2	13.8		
PHF	.681	.882	.732	.866	.855	.920	.833	.916	.681	.814	.600	.803	.902	.833	.920	.973

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu HI, 96826

Counted by:WL, AN
Counters:D4-3888, D4-5675
Weather:CLEAR

File Name : KAP WAR PM
Site Code : 00000003
Start Date : 9/11/2019
Page No : 1

Groups Printed- Unshifted

	Ward Avenue Southbound					Kapiolani Boulevard Westbound					Ward Avenue Northbound					Kapiolani Boulevard Eastbound				
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Thru	Right	Peds	App. Total	Int. Total
03:00 PM	49	133	34	10	226	35	164	35	13	247	32	133	21	16	202	158	22	4	184	859
03:15 PM	70	163	52	8	293	36	125	24	18	203	32	137	34	8	211	182	35	6	223	930
03:30 PM	56	145	59	14	274	35	158	22	18	233	38	111	34	18	201	201	32	7	240	948
03:45 PM	65	134	46	11	256	41	155	33	14	243	30	141	29	18	218	205	29	17	251	968
Total	240	575	191	43	1049	147	602	114	63	926	132	522	118	60	832	746	118	34	898	3705
04:00 PM	63	152	41	18	274	38	181	30	22	271	34	133	24	14	205	260	29	11	300	1050
04:15 PM	54	176	37	13	280	8	201	27	16	252	29	148	39	13	229	290	24	12	326	1087
04:30 PM	57	161	33	14	265	1	245	47	25	318	35	129	29	4	197	320	37	12	369	1149
04:45 PM	80	180	41	6	307	0	210	32	20	262	43	142	49	5	239	291	19	15	325	1133
Total	254	669	152	51	1126	47	837	136	83	1103	141	552	141	36	870	1161	109	50	1320	4419
05:00 PM	72	189	27	18	306	1	221	17	39	278	49	117	35	9	210	336	34	19	389	1183
05:15 PM	45	193	32	4	274	1	233	23	21	278	51	144	43	15	253	294	40	9	343	1148
05:30 PM	52	175	27	11	265	2	215	27	23	267	30	136	30	10	206	294	41	11	346	1084
05:45 PM	60	191	30	14	295	2	210	20	24	256	58	133	31	17	239	271	29	18	318	1108
Total	229	748	116	47	1140	6	879	87	107	1079	188	530	139	51	908	1195	144	57	1396	4523
Grand Total	723	1992	459	141	3315	200	2318	337	253	3108	461	1604	398	147	2610	3102	371	141	3614	12647
Apprch %	21.8	60.1	13.8	4.3		6.4	74.6	10.8	8.1		17.7	61.5	15.2	5.6		85.8	10.3	3.9		
Total %	5.7	15.8	3.6	1.1	26.2	1.6	18.3	2.7	2	24.6	3.6	12.7	3.1	1.2	20.6	24.5	2.9	1.1	28.6	

	Ward Avenue Southbound				Kapiolani Boulevard Westbound				Ward Avenue Northbound				Kapiolani Boulevard Eastbound			
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 04:30 PM																
04:30 PM	57	161	33	251	1	245	47	293	35	129	29	193	320	37	357	1094
04:45 PM	80	180	41	301	0	210	32	242	43	142	49	234	291	19	310	1087
05:00 PM	72	189	27	288	1	221	17	239	49	117	35	201	336	34	370	1098
05:15 PM	45	193	32	270	1	233	23	257	51	144	43	238	294	40	334	1099
Total Volume	254	723	133	1110	3	909	119	1031	178	532	156	866	1241	130	1371	4378
% App. Total	22.9	65.1	12		0.3	88.2	11.5		20.6	61.4	18		90.5	9.5		
PHF	.794	.937	.811	.922	.750	.928	.633	.880	.873	.924	.796	.910	.923	.813	.926	.996

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu HI, 96826

Counted by:AP, LF
Counters:D4-5673, T-1841
Weather:CLEAR

File Name : KIN COO AM
Site Code : 00000001
Start Date : 9/11/2019
Page No : 1

Groups Printed- Unshifted

	Cooke Street Northbound			King Street Eastbound			
Start Time	Right	Peds	App. Total	Thru	Right	App. Total	Int. Total
06:00 AM	23	7	30	66	3	69	99
06:15 AM	27	6	33	164	4	168	201
06:30 AM	43	4	47	242	7	249	296
06:45 AM	83	9	92	258	7	265	357
Total	176	26	202	730	21	751	953
07:00 AM	79	20	99	419	7	426	525
07:15 AM	109	13	122	387	10	397	519
07:30 AM	75	10	85	454	5	459	544
07:45 AM	75	12	87	432	1	433	520
Total	338	55	393	1692	23	1715	2108
08:00 AM	66	9	75	432	4	436	511
08:15 AM	44	7	51	379	7	386	437
08:30 AM	48	3	51	381	5	386	437
08:45 AM	48	6	54	310	6	316	370
Total	206	25	231	1502	22	1524	1755
Grand Total	720	106	826	3924	66	3990	4816
Apprch %	87.2	12.8		98.3	1.7		
Total %	15	2.2	17.2	81.5	1.4	82.8	

	Cooke Street Northbound		King Street Eastbound			
Start Time	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 06:00 AM to 08:45 AM - Peak 1 of 1						
Peak Hour for Entire Intersection Begins at 07:00 AM						
07:00 AM	79	79	419	7	426	505
07:15 AM	109	109	387	10	397	506
07:30 AM	75	75	454	5	459	534
07:45 AM	75	75	432	1	433	508
Total Volume	338	338	1692	23	1715	2053
% App. Total	100		98.7	1.3		
PHF	.775	.775	.932	.575	.934	.961

Wilson Okamoto Corporation

1907 S. Beretania Street, Suite 400
Honolulu HI, 96826

Counted by:AP, TS
Counters:T-1841, T-5673
Weather:CLEAR

File Name : KIN COO PM
Site Code : 00000001
Start Date : 9/11/2019
Page No : 1

Groups Printed- Unshifted

	Cooke Street Northbound			King Street Eastbound			
Start Time	Right	Peds	App. Total	Thru	Right	App. Total	Int. Total
03:00 PM	83	7	90	395	5	400	490
03:15 PM	76	7	83	404	11	415	498
03:30 PM	87	12	99	452	2	454	553
03:45 PM	88	18	106	448	2	450	556
Total	334	44	378	1699	20	1719	2097
04:00 PM	94	13	107	517	7	524	631
04:15 PM	91	25	116	529	11	540	656
04:30 PM	82	12	94	560	6	566	660
04:45 PM	99	18	117	603	7	610	727
Total	366	68	434	2209	31	2240	2674
05:00 PM	101	19	120	557	6	563	683
05:15 PM	104	16	120	552	13	565	685
05:30 PM	75	16	91	456	2	458	549
05:45 PM	86	10	96	430	6	436	532
Total	366	61	427	1995	27	2022	2449
Grand Total	1066	173	1239	5903	78	5981	7220
Apprch %	86	14		98.7	1.3		
Total %	14.8	2.4	17.2	81.8	1.1	82.8	

	Cooke Street Northbound		King Street Eastbound			
Start Time	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1						
Peak Hour for Entire Intersection Begins at 04:30 PM						
04:30 PM	82	82	560	6	566	648
04:45 PM	99	99	603	7	610	709
05:00 PM	101	101	557	6	563	664
05:15 PM	104	104	552	13	565	669
Total Volume	386	386	2272	32	2304	2690
% App. Total	100		98.6	1.4		
PHF	.928	.928	.942	.615	.944	.949

APPENDIX B

LEVEL OF SERVICE DEFINITIONS

LEVEL OF SERVICE DEFINITIONS

LEVEL-OF-SERVICE CRITERIA FOR AUTOMOBILES AT SIGNALIZED INTERSECTIONS

LOS A describes operations with a control delay of 10s/veh or less and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is exceptionally favorable or the cycle length is very short. If it is due to favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.

LOS B describes operations with control delay between 10 and 20s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.

LOS C describes operations with control delay between 20 and 35s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when progression is favorable or the cycle length is moderate. Individual *cycle failures* (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear at this level. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.

LOS D describes operations with control delay between 35 and 55s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.

LOS E describes operations with control delay between 55 and 80s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.

LOS F describes operations with control delay exceeding 80s/veh or a volume-to-capacity ratio greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most Cycles fail to clear the queue.

A lane group can incur a delay less than 80s/veh when the volume-to-capacity ratio exceeds 1.0. This condition typically occurs when the cycle length is short, the signal progression is favorable, or both. As a result, both the delay and volume-to-capacity ratio are considered when lane group LOS is established. A ratio of 1.0 or more indicated that cycle capacity is fully utilized and represents failure from a capacity perspective (just as delay in excess of 80s/veh represents failure from a delay perspective).

"Highway Capacity Manual," Transportation Research Board, 2010.

LEVEL OF SERVICE DEFINITIONS

LEVEL-OF-SERVICE (LOS) CRITERIA FOR AUTOMOBILES AT A TWO-WAY STOP CONTROLLED (TWSC) INTERSECTIONS

LOS for a TWSC intersection is determined by the computed or measured control delay. For motor vehicles, LOS is determined for each minor-street movement (or shared movement) as well as major-street left turns by using criteria shown below. Major-street through vehicles are assumed to experience zero delay. LOS F is assigned to the movement if the volume-to-capacity ratio for the movement exceeds 1.0, regardless of the control delay.

The following lists the LOS criteria for a TWSC intersection:

LOS A describes operations with a control delay of 10s/veh or less and a volume-to-capacity ratio no greater than 1.0.

LOS B describes operations with a control delay between 10s/veh and 15s/veh and a volume-to-capacity ratio no greater than 1.0.

LOS C describes operations with a control delay between 15s/veh and 25s/veh and a volume-to-capacity ratio no greater than 1.0.

LOS D describes operations with a control delay between 25s/veh and 35s/veh and a volume-to-capacity ratio no greater than 1.0.

LOS E describes operations with a control delay between 35s/veh and 50s/veh and a volume-to-capacity ratio no greater than 1.0.

LOS F describes operations with a control exceeding 50s/veh and a volume-to-capacity ratio no greater than 1.0 or when the volume-to-capacity ratio exceeds 1.0, regardless of the measurement of the control delay.

"Highway Capacity Manual," Transportation Research Board, 2010.

APPENDIX C

CAPACITY ANALYSIS CALCULATIONS
BASELINE PEAK PERIOD TRAFFIC ANALYSIS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	316	2305	0	0	387	0	0	791	359
Future Volume (veh/h)	0	0	0	316	2305	0	0	387	0	0	791	359
Number				1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		0.91
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1863	1863	1900	0	1863	0	0	1863	1863
Adj Flow Rate, veh/h				329	2401	0	0	403	0	0	824	374
Adj No. of Lanes				1	4	0	0	1	0	0	3	1
Peak Hour Factor				0.96	0.96	0.96	0.92	0.96	0.25	0.92	0.96	0.96
Percent Heavy Veh, %				2	2	2	0	2	0	0	2	2
Cap, veh/h				940	3394	0	0	638	0	0	1743	491
Arrive On Green				0.53	0.53	0.00	0.00	0.34	0.00	0.00	0.34	0.34
Sat Flow, veh/h				1774	6669	0	0	1863	0	0	5253	1434
Grp Volume(v), veh/h				329	2401	0	0	403	0	0	824	374
Grp Sat Flow(s),veh/h/ln				1774	1602	0	0	1863	0	0	1695	1434
Q Serve(g_s), s				8.4	22.1	0.0	0.0	14.2	0.0	0.0	10.0	18.2
Cycle Q Clear(g_c), s				8.4	22.1	0.0	0.0	14.2	0.0	0.0	10.0	18.2
Prop In Lane				1.00		0.00	0.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				940	3394	0	0	638	0	0	1743	491
V/C Ratio(X)				0.35	0.71	0.00	0.00	0.63	0.00	0.00	0.47	0.76
Avail Cap(c_a), veh/h				996	3598	0	0	856	0	0	2336	659
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				10.6	13.9	0.0	0.0	21.6	0.0	0.0	20.2	22.9
Incr Delay (d2), s/veh				0.2	0.6	0.0	0.0	1.0	0.0	0.0	0.2	3.6
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.2	9.8	0.0	0.0	7.5	0.0	0.0	4.7	7.7
LnGrp Delay(d),s/veh				10.9	14.5	0.0	0.0	22.6	0.0	0.0	20.4	26.5
LnGrp LOS				B	B			C			C	C
Approach Vol, veh/h					2730			403			1198	
Approach Delay, s/veh					14.0			22.6			22.3	
Approach LOS					B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				31.9		46.5		31.9
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				36.0		44.0		36.0
Max Q Clear Time (g_c+I1), s				20.2		24.1		16.2
Green Ext Time (p_c), s				6.7		17.4		2.4

Intersection Summary	
HCM 2010 Ctrl Delay	17.1
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	334	1667	258	0	698	0	0	634	122
Future Volume (veh/h)	0	0	0	334	1667	258	0	698	0	0	634	122
Number				1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.97	1.00		1.00	1.00		0.93
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1863	1863	1900	0	1863	0	0	1863	1863
Adj Flow Rate, veh/h				352	1755	272	0	735	0	0	667	128
Adj No. of Lanes				1	4	0	0	2	0	0	2	1
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				2	2	2	0	2	0	0	2	2
Cap, veh/h				966	3054	473	0	1095	0	0	1095	456
Arrive On Green				0.54	0.54	0.54	0.00	0.31	0.00	0.00	0.31	0.31
Sat Flow, veh/h				1774	5609	869	0	3725	0	0	3632	1473
Grp Volume(v), veh/h				352	1504	523	0	735	0	0	667	128
Grp Sat Flow(s),veh/h/ln				1774	1602	1673	0	1770	0	0	1770	1473
Q Serve(g_s), s				7.7	14.2	14.2	0.0	12.4	0.0	0.0	11.0	4.5
Cycle Q Clear(g_c), s				7.7	14.2	14.2	0.0	12.4	0.0	0.0	11.0	4.5
Prop In Lane				1.00		0.52	0.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				966	2617	911	0	1095	0	0	1095	456
V/C Ratio(X)				0.36	0.57	0.57	0.00	0.67	0.00	0.00	0.61	0.28
Avail Cap(c_a), veh/h				1218	3300	1149	0	1706	0	0	1706	710
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				8.9	10.3	10.3	0.0	20.6	0.0	0.0	20.1	17.9
Incr Delay (d2), s/veh				0.2	0.2	0.6	0.0	0.7	0.0	0.0	0.6	0.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.8	6.2	6.5	0.0	6.1	0.0	0.0	5.5	1.9
LnGrp Delay(d),s/veh				9.1	10.5	10.9	0.0	21.3	0.0	0.0	20.7	18.2
LnGrp LOS				A	B	B		C			C	B
Approach Vol, veh/h					2379			735			795	
Approach Delay, s/veh					10.4			21.3			20.3	
Approach LOS					B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				26.2		42.3		26.2
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				33.0		47.0		33.0
Max Q Clear Time (g_c+I1), s				13.0		16.2		14.4
Green Ext Time (p_c), s				5.1		21.1		5.0

Intersection Summary	
HCM 2010 Ctrl Delay	14.5
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	165	1683	67	0	0	0	0	208	305	0	802	0
Future Volume (veh/h)	165	1683	67	0	0	0	0	208	305	0	802	0
Number	5	2	12				3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.92	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900				0	1863	1863	0	1863	0
Adj Flow Rate, veh/h	172	1753	0				0	217	318	0	835	0
Adj No. of Lanes	0	5	0				0	1	1	0	3	0
Peak Hour Factor	0.96	0.96	0.96				0.92	0.96	0.96	0.92	0.96	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	0	2	0
Cap, veh/h	311	3427	0				0	680	529	0	1855	0
Arrive On Green	0.48	0.48	0.00				0.00	0.36	0.36	0.00	0.36	0.00
Sat Flow, veh/h	654	7565	0				0	1863	1449	0	5421	0
Grp Volume(v), veh/h	481	1444	0				0	217	318	0	835	0
Grp Sat Flow(s),veh/h/ln	1830	1509	0				0	1863	1449	0	1695	0
Q Serve(g_s), s	11.7	10.3	0.0				0.0	5.2	11.2	0.0	7.8	0.0
Cycle Q Clear(g_c), s	11.7	10.3	0.0				0.0	5.2	11.2	0.0	7.8	0.0
Prop In Lane	0.36		0.00				0.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	870	2868	0				0	680	529	0	1855	0
V/C Ratio(X)	0.55	0.50	0.00				0.00	0.32	0.60	0.00	0.45	0.00
Avail Cap(c_a), veh/h	1142	3766	0				0	1222	951	0	3336	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00				0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	11.7	11.3	0.0				0.0	14.3	16.2	0.0	15.1	0.0
Incr Delay (d2), s/veh	0.6	0.1	0.0				0.0	0.3	1.1	0.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	4.2	0.0				0.0	2.7	4.6	0.0	3.7	0.0
LnGrp Delay(d),s/veh	12.2	11.4	0.0				0.0	14.5	17.3	0.0	15.3	0.0
LnGrp LOS	B	B						B	B		B	
Approach Vol, veh/h		1925						535			835	
Approach Delay, s/veh		11.6						16.2			15.3	
Approach LOS		B						B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		34.7		27.8				27.8
Change Period (Y+Rc), s		5.0		5.0				5.0
Max Green Setting (Gmax), s		39.0		41.0				41.0
Max Q Clear Time (g_c+I1), s		13.7		9.8				13.2
Green Ext Time (p_c), s		16.0		6.7				2.6

Intersection Summary	
HCM 2010 Ctrl Delay	13.3
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	257	2491	50	0	0	0	0	332	340	0	950	0
Future Volume (veh/h)	257	2491	50	0	0	0	0	332	340	0	950	0
Number	5	2	12				3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.81	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900				0	1863	1863	0	1863	0
Adj Flow Rate, veh/h	271	2622	0				0	349	358	0	1000	0
Adj No. of Lanes	0	5	0				0	2	1	0	2	0
Peak Hour Factor	0.95	0.95	0.95				0.92	0.95	0.95	0.92	0.95	0.95
Percent Heavy Veh, %	2	2	2				0	2	2	0	2	0
Cap, veh/h	353	3693	0				0	1273	460	0	1273	0
Arrive On Green	0.51	0.51	0.00				0.00	0.36	0.36	0.00	0.36	0.00
Sat Flow, veh/h	685	7532	0				0	3632	1280	0	3725	0
Grp Volume(v), veh/h	723	2170	0				0	349	358	0	1000	0
Grp Sat Flow(s),veh/h/ln	1828	1509	0				0	1770	1280	0	1770	0
Q Serve(g_s), s	25.2	21.7	0.0				0.0	5.6	19.8	0.0	20.0	0.0
Cycle Q Clear(g_c), s	25.2	21.7	0.0				0.0	5.6	19.8	0.0	20.0	0.0
Prop In Lane	0.37		0.00				0.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	941	3105	0				0	1273	460	0	1273	0
V/C Ratio(X)	0.77	0.70	0.00				0.00	0.27	0.78	0.00	0.79	0.00
Avail Cap(c_a), veh/h	967	3191	0				0	1693	612	0	1693	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00				0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	15.5	14.6	0.0				0.0	18.1	22.6	0.0	22.7	0.0
Incr Delay (d2), s/veh	3.7	0.7	0.0				0.0	0.1	4.6	0.0	1.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.6	9.0	0.0				0.0	2.7	7.5	0.0	10.0	0.0
LnGrp Delay(d),s/veh	19.2	15.3	0.0				0.0	18.2	27.2	0.0	24.5	0.0
LnGrp LOS	B	B						B	C		C	
Approach Vol, veh/h		2893						707			1000	
Approach Delay, s/veh		16.3						22.8			24.5	
Approach LOS		B						C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		45.9		33.6				33.6
Change Period (Y+Rc), s		5.0		5.0				5.0
Max Green Setting (Gmax), s		42.0		38.0				38.0
Max Q Clear Time (g_c+I1), s		27.2		22.0				21.8
Green Ext Time (p_c), s		13.7		6.5				3.7

Intersection Summary		
HCM 2010 Ctrl Delay		19.1
HCM 2010 LOS		B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	498	80	110	1266	195	128	456	36	196	811	199
Future Volume (veh/h)	0	498	80	110	1266	195	128	456	36	196	811	199
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.92	1.00		0.93	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	0	524	84	116	1333	205	135	480	38	206	854	0
Adj No. of Lanes	0	2	0	1	3	0	1	2	1	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	874	139	145	1844	283	166	1048	435	242	1198	536
Arrive On Green	0.00	0.29	0.29	0.08	0.42	0.42	0.09	0.30	0.30	0.14	0.34	0.00
Sat Flow, veh/h	0	3119	482	1774	4392	675	1774	3539	1469	1774	3539	1583
Grp Volume(v), veh/h	0	305	303	116	1029	509	135	480	38	206	854	0
Grp Sat Flow(s),veh/h/ln	0	1770	1739	1774	1695	1677	1774	1770	1469	1774	1770	1583
Q Serve(g_s), s	0.0	15.0	15.2	6.5	25.7	25.7	7.6	11.2	1.9	11.5	21.3	0.0
Cycle Q Clear(g_c), s	0.0	15.0	15.2	6.5	25.7	25.7	7.6	11.2	1.9	11.5	21.3	0.0
Prop In Lane	0.00		0.28	1.00		0.40	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	0	511	502	145	1423	704	166	1048	435	242	1198	536
V/C Ratio(X)	0.00	0.60	0.60	0.80	0.72	0.72	0.81	0.46	0.09	0.85	0.71	0.00
Avail Cap(c_a), veh/h	0	541	531	245	1670	826	280	1151	478	385	1360	609
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	31.0	31.1	45.8	24.5	24.5	45.1	29.1	25.8	42.8	29.3	0.0
Incr Delay (d2), s/veh	0.0	1.6	1.8	9.6	1.3	2.6	9.1	0.3	0.1	10.1	1.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.6	7.6	3.6	12.3	12.4	4.1	5.5	0.8	6.3	10.7	0.0
LnGrp Delay(d),s/veh	0.0	32.7	32.8	55.4	25.8	27.1	54.1	29.4	25.9	52.9	30.8	0.0
LnGrp LOS		C	C	E	C	C	D	C	C	D	C	
Approach Vol, veh/h		608			1654			653			1060	
Approach Delay, s/veh		32.8			28.3			34.3			35.1	
Approach LOS		C			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s		47.6	18.8	35.0	13.3	34.3	14.5	39.4
Change Period (Y+Rc), s		5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s		50.0	22.0	33.0	14.0	31.0	16.0	39.0
Max Q Clear Time (g_c+I1), s		27.7	13.5	13.2	8.5	17.2	9.6	23.3
Green Ext Time (p_c), s		11.5	0.4	3.4	0.1	3.2	0.2	5.7

Intersection Summary		
HCM 2010 Ctrl Delay		31.8
HCM 2010 LOS		C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1241	130	0	909	119	178	532	156	254	723	133
Future Volume (veh/h)	0	1241	130	0	909	119	178	532	156	254	723	133
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.90	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	0	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	0	1320	138	0	967	127	189	566	166	270	769	0
Adj No. of Lanes	0	3	0	0	3	0	1	2	1	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	0	1686	176	0	1638	214	225	1114	448	309	1283	574
Arrive On Green	0.00	0.36	0.36	0.00	0.36	0.36	0.13	0.31	0.31	0.17	0.36	0.00
Sat Flow, veh/h	0	4831	488	0	4698	593	1774	3539	1425	1774	3539	1583
Grp Volume(v), veh/h	0	960	498	0	723	371	189	566	166	270	769	0
Grp Sat Flow(s),veh/h/ln	0	1695	1761	0	1695	1733	1774	1770	1425	1774	1770	1583
Q Serve(g_s), s	0.0	25.3	25.3	0.0	17.4	17.5	10.5	13.1	9.1	14.9	17.8	0.0
Cycle Q Clear(g_c), s	0.0	25.3	25.3	0.0	17.4	17.5	10.5	13.1	9.1	14.9	17.8	0.0
Prop In Lane	0.00		0.28	0.00		0.34	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	0	1226	637	0	1226	627	225	1114	448	309	1283	574
V/C Ratio(X)	0.00	0.78	0.78	0.00	0.59	0.59	0.84	0.51	0.37	0.87	0.60	0.00
Avail Cap(c_a), veh/h	0	1451	753	0	1451	742	371	1162	468	512	1444	646
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	28.6	28.6	0.0	26.0	26.1	42.9	28.1	26.7	40.4	26.1	0.0
Incr Delay (d2), s/veh	0.0	2.4	4.6	0.0	0.5	0.9	8.7	0.4	0.5	8.9	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	12.3	13.1	0.0	8.2	8.5	5.7	6.4	3.6	8.0	8.8	0.0
LnGrp Delay(d),s/veh	0.0	31.0	33.1	0.0	26.5	27.0	51.6	28.4	27.2	49.3	26.6	0.0
LnGrp LOS		C	C		C	C	D	C	C	D	C	
Approach Vol, veh/h		1458			1094			921			1039	
Approach Delay, s/veh		31.7			26.6			33.0			32.5	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		41.3	22.5	36.6		41.3	17.7	41.4
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s		43.0	29.0	33.0		43.0	21.0	41.0
Max Q Clear Time (g_c+I1), s		19.5	16.9	15.1		27.3	12.5	19.8
Green Ext Time (p_c), s		7.8	0.6	4.5		9.0	0.3	5.8

Intersection Summary	
HCM 2010 Ctrl Delay	30.9
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	38.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	282	437	0	0	268	0
Future Vol, veh/h	282	437	0	0	268	0
Conflicting Peds, #/hr	67	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	-	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	92	92	96	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	294	455	0	0	279	0

Major/Minor	Major1		Minor2	
Conflicting Flow All	67	0	1110	-
Stage 1	-	-	67	-
Stage 2	-	-	1043	-
Critical Hdwy	3.1	-	5.4	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	4.4	-
Follow-up Hdwy	2.218	-	2.5	-
Pot Cap-1 Maneuver	1564	-	391	0
Stage 1	-	-	-	0
Stage 2	-	-	566	0
Platoon blocked, %		-		
Mov Cap-1 Maneuver	1464	-	~ 250	-
Mov Cap-2 Maneuver	-	-	~ 250	-
Stage 1	-	-	-	-
Stage 2	-	-	530	-

Approach	EB	SB
HCM Control Delay, s	3.2	134.7
HCM LOS		F

Minor Lane/Major Mvmt	EBL	EBT	SBLn1
Capacity (veh/h)	1464	-	250
HCM Lane V/C Ratio	0.201	-	1.117
HCM Control Delay (s)	8.1	0	134.7
HCM Lane LOS	A	A	F
HCM 95th %tile Q(veh)	0.7	-	12.2

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	11.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	78	516	0	0	319	0
Future Vol, veh/h	78	516	0	0	319	0
Conflicting Peds, #/hr	77	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	-	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	92	92	95	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	82	543	0	0	336	0

Major/Minor	Major1		Minor2	
Conflicting Flow All	77	0	784	-
Stage 1	-	-	77	-
Stage 2	-	-	707	-
Critical Hdwy	3.1	-	5.4	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	4.4	-
Follow-up Hdwy	2.218	-	2.5	-
Pot Cap-1 Maneuver	1555	-	576	0
Stage 1	-	-	-	0
Stage 2	-	-	768	0
Platoon blocked, %		-		
Mov Cap-1 Maneuver	1441	-	455	-
Mov Cap-2 Maneuver	-	-	455	-
Stage 1	-	-	-	-
Stage 2	-	-	712	-

Approach	EB	SB
HCM Control Delay, s	1	32.1
HCM LOS		D

Minor Lane/Major Mvmt	EBL	EBT	SBLn1
Capacity (veh/h)	1441	-	455
HCM Lane V/C Ratio	0.057	-	0.738
HCM Control Delay (s)	7.6	0	32.1
HCM Lane LOS	A	A	D
HCM 95th %tile Q(veh)	0.2	-	6

Intersection	
Int Delay, s/veh	5.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	338	23	0	0	0	338
Future Vol, veh/h	338	23	0	0	0	338
Conflicting Peds, #/hr	0	55	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	-	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	92	92	92	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	352	24	0	0	0	352

Major/Minor	Major1			Minor1	
Conflicting Flow All	0	0		-	419
Stage 1	-	-		-	-
Stage 2	-	-		-	-
Critical Hdwy	-	-		-	5.2
Critical Hdwy Stg 1	-	-		-	-
Critical Hdwy Stg 2	-	-		-	-
Follow-up Hdwy	-	-		-	2.5
Pot Cap-1 Maneuver	-	-		0	906
Stage 1	-	-		0	-
Stage 2	-	-		0	-
Platoon blocked, %	-	-			
Mov Cap-1 Maneuver	-	-		-	859
Mov Cap-2 Maneuver	-	-		-	-
Stage 1	-	-		-	-
Stage 2	-	-		-	-

Approach	EB	NB
HCM Control Delay, s	0	12.1
HCM LOS		B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR
Capacity (veh/h)	859	-	-
HCM Lane V/C Ratio	0.41	-	-
HCM Control Delay (s)	12.1	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	2	-	-

Intersection	
Int Delay, s/veh	7.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	454	32	0	0	0	386
Future Vol, veh/h	454	32	0	0	0	386
Conflicting Peds, #/hr	0	65	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	-	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	92	92	92	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	478	34	0	0	0	406

Major/Minor	Major1			Minor1	
Conflicting Flow All	0	0		-	560
Stage 1	-	-		-	-
Stage 2	-	-		-	-
Critical Hdwy	-	-		-	5.2
Critical Hdwy Stg 1	-	-		-	-
Critical Hdwy Stg 2	-	-		-	-
Follow-up Hdwy	-	-		-	2.5
Pot Cap-1 Maneuver	-	-		0	774
Stage 1	-	-		0	-
Stage 2	-	-		0	-
Platoon blocked, %	-	-			
Mov Cap-1 Maneuver	-	-		-	726
Mov Cap-2 Maneuver	-	-		-	-
Stage 1	-	-		-	-
Stage 2	-	-		-	-

Approach	EB	NB
HCM Control Delay, s	0	16.1
HCM LOS		C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR
Capacity (veh/h)	726	-	-
HCM Lane V/C Ratio	0.56	-	-
HCM Control Delay (s)	16.1	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q(veh)	3.5	-	-

APPENDIX D

CAPACITY ANALYSIS CALCULATIONS
PROJECTED YEAR 2024 PEAK PERIOD TRAFFIC
ANALYSIS WITHOUT PROJECT

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	349	2443	0	0	458	0	0	855	359
Future Volume (veh/h)	0	0	0	349	2443	0	0	458	0	0	855	359
Number				1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		0.91
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1863	1863	1900	0	1863	0	0	1863	1863
Adj Flow Rate, veh/h				364	2545	0	0	477	0	0	891	374
Adj No. of Lanes				1	4	0	0	1	0	0	3	1
Peak Hour Factor				0.96	0.96	0.96	0.92	0.96	0.92	0.92	0.96	0.96
Percent Heavy Veh, %				2	2	2	0	2	0	0	2	2
Cap, veh/h				942	3402	0	0	641	0	0	1750	494
Arrive On Green				0.53	0.53	0.00	0.00	0.34	0.00	0.00	0.34	0.34
Sat Flow, veh/h				1774	6669	0	0	1863	0	0	5253	1434
Grp Volume(v), veh/h				364	2545	0	0	477	0	0	891	374
Grp Sat Flow(s),veh/h/ln				1774	1602	0	0	1863	0	0	1695	1434
Q Serve(g_s), s				9.7	24.7	0.0	0.0	18.1	0.0	0.0	11.2	18.5
Cycle Q Clear(g_c), s				9.7	24.7	0.0	0.0	18.1	0.0	0.0	11.2	18.5
Prop In Lane				1.00		0.00	0.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				942	3402	0	0	641	0	0	1750	494
V/C Ratio(X)				0.39	0.75	0.00	0.00	0.74	0.00	0.00	0.51	0.76
Avail Cap(c_a), veh/h				975	3522	0	0	838	0	0	2287	645
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				11.1	14.6	0.0	0.0	23.1	0.0	0.0	20.9	23.3
Incr Delay (d2), s/veh				0.3	0.9	0.0	0.0	2.6	0.0	0.0	0.2	3.8
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.8	11.0	0.0	0.0	9.7	0.0	0.0	5.2	7.8
LnGrp Delay(d),s/veh				11.3	15.5	0.0	0.0	25.7	0.0	0.0	21.1	27.1
LnGrp LOS				B	B			C			C	C
Approach Vol, veh/h					2909			477			1265	
Approach Delay, s/veh					15.0			25.7			22.9	
Approach LOS					B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				32.5		47.5		32.5
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				36.0		44.0		36.0
Max Q Clear Time (g_c+I1), s				20.5		26.7		20.1
Green Ext Time (p_c), s				7.0		15.8		2.7

Intersection Summary	
HCM 2010 Ctrl Delay	18.2
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	405	1767	258	0	780	0	0	710	122
Future Volume (veh/h)	0	0	0	405	1767	258	0	780	0	0	710	122
Number				1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		0.93
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1863	1863	1900	0	1863	0	0	1863	1863
Adj Flow Rate, veh/h				426	1860	272	0	821	0	0	747	128
Adj No. of Lanes				1	4	0	0	2	0	0	2	1
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				2	2	2	0	2	0	0	2	2
Cap, veh/h				957	3071	449	0	1129	0	0	1129	471
Arrive On Green				0.54	0.54	0.54	0.00	0.32	0.00	0.00	0.32	0.32
Sat Flow, veh/h				1774	5690	832	0	3725	0	0	3632	1476
Grp Volume(v), veh/h				426	1571	561	0	821	0	0	747	128
Grp Sat Flow(s),veh/h/ln				1774	1602	1716	0	1770	0	0	1770	1476
Q Serve(g_s), s				10.3	15.8	15.8	0.0	14.6	0.0	0.0	12.9	4.6
Cycle Q Clear(g_c), s				10.3	15.8	15.8	0.0	14.6	0.0	0.0	12.9	4.6
Prop In Lane				1.00		0.48	0.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				957	2593	926	0	1129	0	0	1129	471
V/C Ratio(X)				0.44	0.61	0.61	0.00	0.73	0.00	0.00	0.66	0.27
Avail Cap(c_a), veh/h				1128	3055	1091	0	1750	0	0	1750	730
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				9.9	11.1	11.1	0.0	21.4	0.0	0.0	20.8	18.0
Incr Delay (d2), s/veh				0.3	0.3	0.7	0.0	0.9	0.0	0.0	0.7	0.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				5.1	6.9	7.5	0.0	7.2	0.0	0.0	6.3	1.9
LnGrp Delay(d),s/veh				10.2	11.4	11.9	0.0	22.3	0.0	0.0	21.5	18.3
LnGrp LOS				B	B	B		C			C	B
Approach Vol, veh/h					2558			821			875	
Approach Delay, s/veh					11.3			22.3			21.0	
Approach LOS					B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				27.6		43.2		27.6
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				35.0		45.0		35.0
Max Q Clear Time (g_c+I1), s				14.9		17.8		16.6
Green Ext Time (p_c), s				5.7		20.4		5.6

Intersection Summary	
HCM 2010 Ctrl Delay	15.4
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	165	1784	101	0	0	0	0	268	376	0	900	0
Future Volume (veh/h)	165	1784	101	0	0	0	0	268	376	0	900	0
Number	5	2	12				3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.89	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900				0	1863	1863	0	1863	0
Adj Flow Rate, veh/h	172	1858	0				0	279	392	0	938	0
Adj No. of Lanes	0	5	0				0	1	1	0	3	0
Peak Hour Factor	0.96	0.96	0.96				0.92	0.96	0.96	0.92	0.96	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	0	2	0
Cap, veh/h	287	3358	0				0	717	543	0	1958	0
Arrive On Green	0.46	0.46	0.00				0.00	0.39	0.39	0.00	0.39	0.00
Sat Flow, veh/h	620	7601	0				0	1863	1409	0	5421	0
Grp Volume(v), veh/h	508	1522	0				0	279	392	0	938	0
Grp Sat Flow(s),veh/h/ln	1832	1509	0				0	1863	1409	0	1695	0
Q Serve(g_s), s	13.6	11.9	0.0				0.0	7.1	15.6	0.0	9.2	0.0
Cycle Q Clear(g_c), s	13.6	11.9	0.0				0.0	7.1	15.6	0.0	9.2	0.0
Prop In Lane	0.34		0.00				0.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	849	2797	0				0	717	543	0	1958	0
V/C Ratio(X)	0.60	0.54	0.00				0.00	0.39	0.72	0.00	0.48	0.00
Avail Cap(c_a), veh/h	1027	3383	0				0	1214	918	0	3313	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00				0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	13.2	12.7	0.0				0.0	14.7	17.3	0.0	15.3	0.0
Incr Delay (d2), s/veh	0.7	0.2	0.0				0.0	0.3	1.8	0.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.9	5.0	0.0				0.0	3.7	6.3	0.0	4.3	0.0
LnGrp Delay(d),s/veh	13.8	12.9	0.0				0.0	15.0	19.1	0.0	15.5	0.0
LnGrp LOS	B	B						B	B		B	
Approach Vol, veh/h		2030						671			938	
Approach Delay, s/veh		13.1						17.4			15.5	
Approach LOS		B						B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		35.6		30.4				30.4
Change Period (Y+Rc), s		5.0		5.0				5.0
Max Green Setting (Gmax), s		37.0		43.0				43.0
Max Q Clear Time (g_c+I1), s		15.6		11.2				17.6
Green Ext Time (p_c), s		15.0		7.8				3.5

Intersection Summary	
HCM 2010 Ctrl Delay	14.5
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	257	2640	123	0	0	0	0	392	381	0	1116	0
Future Volume (veh/h)	257	2640	123	0	0	0	0	392	381	0	1116	0
Number	5	2	12				3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.82	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900				0	1863	1863	0	1863	0
Adj Flow Rate, veh/h	271	2779	0				0	413	401	0	1175	0
Adj No. of Lanes	0	5	0				0	2	1	0	2	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2				0	2	2	0	2	0
Cap, veh/h	322	3575	0				0	1374	505	0	1374	0
Arrive On Green	0.50	0.50	0.00				0.00	0.39	0.39	0.00	0.39	0.00
Sat Flow, veh/h	650	7569	0				0	3632	1302	0	3725	0
Grp Volume(v), veh/h	763	2287	0				0	413	401	0	1175	0
Grp Sat Flow(s),veh/h/ln	1830	1509	0				0	1770	1302	0	1770	0
Q Serve(g_s), s	31.0	26.4	0.0				0.0	6.9	23.4	0.0	26.1	0.0
Cycle Q Clear(g_c), s	31.0	26.4	0.0				0.0	6.9	23.4	0.0	26.1	0.0
Prop In Lane	0.36		0.00				0.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	907	2990	0				0	1374	505	0	1374	0
V/C Ratio(X)	0.84	0.76	0.00				0.00	0.30	0.79	0.00	0.86	0.00
Avail Cap(c_a), veh/h	916	3021	0				0	1525	561	0	1525	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00				0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	18.8	17.6	0.0				0.0	18.2	23.2	0.0	24.1	0.0
Incr Delay (d2), s/veh	7.1	1.2	0.0				0.0	0.1	7.0	0.0	4.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.3	11.2	0.0				0.0	3.4	9.3	0.0	13.6	0.0
LnGrp Delay(d),s/veh	25.8	18.8	0.0				0.0	18.3	30.3	0.0	28.7	0.0
LnGrp LOS	C	B						B	C		C	
Approach Vol, veh/h		3050						814			1175	
Approach Delay, s/veh		20.6						24.2			28.7	
Approach LOS		C						C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		47.6		38.3				38.3
Change Period (Y+Rc), s		5.0		5.0				5.0
Max Green Setting (Gmax), s		43.0		37.0				37.0
Max Q Clear Time (g_c+I1), s		33.0		28.1				25.4
Green Ext Time (p_c), s		9.6		5.2				3.6

Intersection Summary	
HCM 2010 Ctrl Delay	23.0
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	565	112	137	1359	204	181	593	69	201	925	213
Future Volume (veh/h)	0	565	112	137	1359	204	181	593	69	201	925	213
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.93	1.00		0.92	1.00		0.93	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	0	595	118	144	1431	215	191	624	73	212	974	0
Adj No. of Lanes	0	2	0	1	3	0	1	2	1	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	812	160	173	1865	280	222	1065	443	244	1109	496
Arrive On Green	0.00	0.28	0.28	0.10	0.42	0.42	0.13	0.30	0.30	0.14	0.31	0.00
Sat Flow, veh/h	0	3001	575	1774	4410	662	1774	3539	1471	1774	3539	1583
Grp Volume(v), veh/h	0	361	352	144	1100	546	191	624	73	212	974	0
Grp Sat Flow(s),veh/h/ln	0	1770	1713	1774	1695	1681	1774	1770	1471	1774	1770	1583
Q Serve(g_s), s	0.0	20.0	20.2	8.6	30.0	30.1	11.4	16.2	4.0	12.7	28.2	0.0
Cycle Q Clear(g_c), s	0.0	20.0	20.2	8.6	30.0	30.1	11.4	16.2	4.0	12.7	28.2	0.0
Prop In Lane	0.00		0.34	1.00		0.39	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	0	494	478	173	1434	711	222	1065	443	244	1109	496
V/C Ratio(X)	0.00	0.73	0.74	0.83	0.77	0.77	0.86	0.59	0.16	0.87	0.88	0.00
Avail Cap(c_a), veh/h	0	539	522	213	1597	792	279	1144	476	311	1210	541
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	35.3	35.4	48.0	26.7	26.7	46.4	32.1	27.8	45.7	35.2	0.0
Incr Delay (d2), s/veh	0.0	4.6	4.9	20.0	2.1	4.1	19.3	0.7	0.2	18.6	7.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	10.4	10.2	5.2	14.5	14.8	6.8	8.0	1.6	7.4	14.9	0.0
LnGrp Delay(d),s/veh	0.0	39.9	40.3	68.0	28.8	30.8	65.7	32.8	28.0	64.4	42.4	0.0
LnGrp LOS		D	D	E	C	C	E	C	C	E	D	
Approach Vol, veh/h		713			1790			888			1186	
Approach Delay, s/veh		40.1			32.5			39.5			46.3	
Approach LOS		D			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s		50.8	19.9	37.6	15.6	35.2	18.6	38.9
Change Period (Y+Rc), s		5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s		51.0	19.0	35.0	13.0	33.0	17.0	37.0
Max Q Clear Time (g_c+I1), s		32.1	14.7	18.2	10.6	22.2	13.4	30.2
Green Ext Time (p_c), s		11.2	0.2	4.4	0.1	3.4	0.2	3.7

Intersection Summary		
HCM 2010 Ctrl Delay		38.6
HCM 2010 LOS		D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1447	142	0	964	125	211	639	198	265	935	135
Future Volume (veh/h)	0	1447	142	0	964	125	211	639	198	265	935	135
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.89	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	0	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	0	1539	151	0	1026	133	224	680	211	282	995	0
Adj No. of Lanes	0	3	0	0	3	0	1	2	1	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	0	1818	178	0	1757	227	256	1052	421	316	1171	524
Arrive On Green	0.00	0.39	0.39	0.00	0.39	0.39	0.14	0.30	0.30	0.18	0.33	0.00
Sat Flow, veh/h	0	4865	460	0	4707	587	1774	3539	1416	1774	3539	1583
Grp Volume(v), veh/h	0	1110	580	0	766	393	224	680	211	282	995	0
Grp Sat Flow(s),veh/h/ln	0	1695	1767	0	1695	1736	1774	1770	1416	1774	1770	1583
Q Serve(g_s), s	0.0	32.5	32.5	0.0	19.5	19.5	13.5	18.2	13.4	16.9	28.5	0.0
Cycle Q Clear(g_c), s	0.0	32.5	32.5	0.0	19.5	19.5	13.5	18.2	13.4	16.9	28.5	0.0
Prop In Lane	0.00		0.26	0.00		0.34	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	0	1312	684	0	1312	672	256	1052	421	316	1171	524
V/C Ratio(X)	0.00	0.85	0.85	0.00	0.58	0.59	0.88	0.65	0.50	0.89	0.85	0.00
Avail Cap(c_a), veh/h	0	1402	731	0	1402	718	326	1138	455	408	1301	582
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	30.4	30.4	0.0	26.4	26.4	45.6	33.3	31.6	43.7	33.9	0.0
Incr Delay (d2), s/veh	0.0	4.8	8.7	0.0	0.6	1.1	18.8	1.1	0.9	18.0	5.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	16.0	17.4	0.0	9.1	9.6	7.9	9.0	5.3	9.9	14.8	0.0
LnGrp Delay(d),s/veh	0.0	35.2	39.2	0.0	27.0	27.5	64.4	34.4	32.5	61.7	39.0	0.0
LnGrp LOS		D	D		C	C	E	C	C	E	D	
Approach Vol, veh/h		1690			1159			1115			1277	
Approach Delay, s/veh		36.5			27.1			40.1			44.0	
Approach LOS		D			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		47.1	24.4	37.3		47.1	20.7	41.0
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s		45.0	25.0	35.0		45.0	20.0	40.0
Max Q Clear Time (g_c+I1), s		21.5	18.9	20.2		34.5	15.5	30.5
Green Ext Time (p_c), s		8.3	0.5	5.1		7.6	0.3	4.9

Intersection Summary		
HCM 2010 Ctrl Delay		37.0
HCM 2010 LOS		D

Intersection	
Int Delay, s/veh	31.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	282	380	0	0	268	0
Future Vol, veh/h	282	380	0	0	268	0
Conflicting Peds, #/hr	67	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	-	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	92	92	96	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	294	396	0	0	279	0

Major/Minor	Major1		Minor2	
Conflicting Flow All	67	0	1051	-
Stage 1	-	-	67	-
Stage 2	-	-	984	-
Critical Hdwy	3.1	-	5.4	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	4.4	-
Follow-up Hdwy	2.218	-	2.5	-
Pot Cap-1 Maneuver	1564	-	419	0
Stage 1	-	-	-	0
Stage 2	-	-	597	0
Platoon blocked, %		-		
Mov Cap-1 Maneuver	1464	-	~ 273	-
Mov Cap-2 Maneuver	-	-	~ 273	-
Stage 1	-	-	-	-
Stage 2	-	-	559	-

Approach	EB	SB
HCM Control Delay, s	3.4	101.3
HCM LOS		F

Minor Lane/Major Mvmt	EBL	EBT	SBLn1
Capacity (veh/h)	1464	-	273
HCM Lane V/C Ratio	0.201	-	1.023
HCM Control Delay (s)	8.1	0	101.3
HCM Lane LOS	A	A	F
HCM 95th %tile Q(veh)	0.7	-	10.6

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	13.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	78	565	0	0	319	0
Future Vol, veh/h	78	565	0	0	319	0
Conflicting Peds, #/hr	77	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	-	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	82	595	0	0	336	0

Major/Minor	Major1		Minor2	
Conflicting Flow All	77	0	836	-
Stage 1	-	-	77	-
Stage 2	-	-	759	-
Critical Hdwy	3.1	-	5.4	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	4.4	-
Follow-up Hdwy	2.218	-	2.5	-
Pot Cap-1 Maneuver	1555	-	542	0
Stage 1	-	-	-	0
Stage 2	-	-	733	0
Platoon blocked, %		-		
Mov Cap-1 Maneuver	1441	-	426	-
Mov Cap-2 Maneuver	-	-	426	-
Stage 1	-	-	-	-
Stage 2	-	-	679	-

Approach	EB	SB
HCM Control Delay, s	0.9	38.4
HCM LOS		E

Minor Lane/Major Mvmt	EBL	EBT	SBLn1
Capacity (veh/h)	1441	-	426
HCM Lane V/C Ratio	0.057	-	0.788
HCM Control Delay (s)	7.6	0	38.4
HCM Lane LOS	A	A	E
HCM 95th %tile Q(veh)	0.2	-	6.9

Intersection	
Int Delay, s/veh	5.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	366	23	0	0	0	338
Future Vol, veh/h	366	23	0	0	0	338
Conflicting Peds, #/hr	0	55	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	-	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	92	92	92	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	381	24	0	0	0	352

Major/Minor	Major1			Minor1	
Conflicting Flow All	0	0		-	448
Stage 1	-	-		-	-
Stage 2	-	-		-	-
Critical Hdwy	-	-		-	5.2
Critical Hdwy Stg 1	-	-		-	-
Critical Hdwy Stg 2	-	-		-	-
Follow-up Hdwy	-	-		-	2.5
Pot Cap-1 Maneuver	-	-		0	877
Stage 1	-	-		0	-
Stage 2	-	-		0	-
Platoon blocked, %	-	-			
Mov Cap-1 Maneuver	-	-		-	831
Mov Cap-2 Maneuver	-	-		-	-
Stage 1	-	-		-	-
Stage 2	-	-		-	-

Approach	EB	NB
HCM Control Delay, s	0	12.5
HCM LOS		B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR
Capacity (veh/h)	831	-	-
HCM Lane V/C Ratio	0.424	-	-
HCM Control Delay (s)	12.5	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	2.1	-	-

Intersection	
Int Delay, s/veh	7.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	497	32	0	0	0	386
Future Vol, veh/h	497	32	0	0	0	386
Conflicting Peds, #/hr	0	65	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	-	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	523	34	0	0	0	406

Major/Minor	Major1			Minor1	
Conflicting Flow All	0	0		-	605
Stage 1	-	-		-	-
Stage 2	-	-		-	-
Critical Hdwy	-	-		-	5.2
Critical Hdwy Stg 1	-	-		-	-
Critical Hdwy Stg 2	-	-		-	-
Follow-up Hdwy	-	-		-	2.5
Pot Cap-1 Maneuver	-	-		0	736
Stage 1	-	-		0	-
Stage 2	-	-		0	-
Platoon blocked, %	-	-			
Mov Cap-1 Maneuver	-	-		-	690
Mov Cap-2 Maneuver	-	-		-	-
Stage 1	-	-		-	-
Stage 2	-	-		-	-

Approach	EB	NB
HCM Control Delay, s	0	17.4
HCM LOS		C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR
Capacity (veh/h)	690	-	-
HCM Lane V/C Ratio	0.589	-	-
HCM Control Delay (s)	17.4	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q(veh)	3.9	-	-

APPENDIX E

CAPACITY ANALYSIS CALCULATIONS
PROJECTED YEAR 2024 PEAK PERIOD TRAFFIC
ANALYSIS WITH PROJECT

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	355	2443	3	0	460	0	0	863	359
Future Volume (veh/h)	0	0	0	355	2443	3	0	460	0	0	863	359
Number				1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		0.91
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1863	1863	1900	0	1863	0	0	1863	1863
Adj Flow Rate, veh/h				370	2545	3	0	479	0	0	899	374
Adj No. of Lanes				1	4	0	0	1	0	0	3	1
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.92	0.96	0.96
Percent Heavy Veh, %				2	2	2	0	2	0	0	2	2
Cap, veh/h				936	3512	4	0	645	0	0	1760	497
Arrive On Green				0.53	0.53	0.53	0.00	0.35	0.00	0.00	0.35	0.35
Sat Flow, veh/h				1774	6659	8	0	1863	0	0	5253	1435
Grp Volume(v), veh/h				370	1837	711	0	479	0	0	899	374
Grp Sat Flow(s),veh/h/ln				1774	1602	1861	0	1863	0	0	1695	1435
Q Serve(g_s), s				9.9	23.1	23.1	0.0	17.9	0.0	0.0	11.1	18.2
Cycle Q Clear(g_c), s				9.9	23.1	23.1	0.0	17.9	0.0	0.0	11.1	18.2
Prop In Lane				1.00		0.00	0.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				936	2535	982	0	645	0	0	1760	497
V/C Ratio(X)				0.40	0.72	0.72	0.00	0.74	0.00	0.00	0.51	0.75
Avail Cap(c_a), veh/h				987	2673	1035	0	848	0	0	2314	653
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				11.2	14.3	14.3	0.0	22.8	0.0	0.0	20.5	22.9
Incr Delay (d2), s/veh				0.3	0.9	2.4	0.0	2.5	0.0	0.0	0.2	3.5
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.8	10.3	12.3	0.0	9.6	0.0	0.0	5.2	7.7
LnGrp Delay(d),s/veh				11.4	15.2	16.7	0.0	25.3	0.0	0.0	20.8	26.4
LnGrp LOS				B	B	B		C			C	C
Approach Vol, veh/h					2918			479			1273	
Approach Delay, s/veh					15.1			25.3			22.4	
Approach LOS					B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				32.4		46.7		32.4
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				36.0		44.0		36.0
Max Q Clear Time (g_c+I1), s				20.2		25.1		19.9
Green Ext Time (p_c), s				7.2		16.6		2.8

Intersection Summary	
HCM 2010 Ctrl Delay	18.2
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	405	1767	258	0	780	0	0	728	122
Future Volume (veh/h)	0	0	0	405	1767	258	0	780	0	0	728	122
Number				1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		0.93
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1863	1863	1900	0	1863	0	0	1863	1863
Adj Flow Rate, veh/h				426	1860	272	0	821	0	0	766	128
Adj No. of Lanes				1	4	0	0	2	0	0	2	1
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				2	2	2	0	2	0	0	2	2
Cap, veh/h				957	3071	449	0	1129	0	0	1129	471
Arrive On Green				0.54	0.54	0.54	0.00	0.32	0.00	0.00	0.32	0.32
Sat Flow, veh/h				1774	5690	832	0	3725	0	0	3632	1476
Grp Volume(v), veh/h				426	1571	561	0	821	0	0	766	128
Grp Sat Flow(s),veh/h/ln				1774	1602	1716	0	1770	0	0	1770	1476
Q Serve(g_s), s				10.3	15.8	15.8	0.0	14.6	0.0	0.0	13.3	4.6
Cycle Q Clear(g_c), s				10.3	15.8	15.8	0.0	14.6	0.0	0.0	13.3	4.6
Prop In Lane				1.00		0.48	0.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				957	2593	926	0	1129	0	0	1129	471
V/C Ratio(X)				0.44	0.61	0.61	0.00	0.73	0.00	0.00	0.68	0.27
Avail Cap(c_a), veh/h				1128	3055	1091	0	1750	0	0	1750	730
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				9.9	11.1	11.1	0.0	21.4	0.0	0.0	20.9	18.0
Incr Delay (d2), s/veh				0.3	0.3	0.7	0.0	0.9	0.0	0.0	0.7	0.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				5.1	6.9	7.5	0.0	7.2	0.0	0.0	6.6	1.9
LnGrp Delay(d),s/veh				10.2	11.4	11.9	0.0	22.3	0.0	0.0	21.7	18.3
LnGrp LOS				B	B	B		C			C	B
Approach Vol, veh/h					2558			821			894	
Approach Delay, s/veh					11.3			22.3			21.2	
Approach LOS					B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				27.6		43.2		27.6
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				35.0		45.0		35.0
Max Q Clear Time (g_c+I1), s				15.3		17.8		16.6
Green Ext Time (p_c), s				5.8		20.4		5.6

Intersection Summary	
HCM 2010 Ctrl Delay	15.5
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	165	1784	107	0	0	0	0	270	380	0	914	0
Future Volume (veh/h)	165	1784	107	0	0	0	0	270	380	0	914	0
Number	5	2	12				3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.89	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900				0	1863	1863	0	1863	0
Adj Flow Rate, veh/h	172	1858	0				0	281	396	0	952	0
Adj No. of Lanes	0	5	0				0	1	1	0	3	0
Peak Hour Factor	0.96	0.96	0.96				0.92	0.96	0.96	0.92	0.96	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	0	2	0
Cap, veh/h	287	3355	0				0	718	544	0	1961	0
Arrive On Green	0.46	0.46	0.00				0.00	0.39	0.39	0.00	0.39	0.00
Sat Flow, veh/h	620	7601	0				0	1863	1410	0	5421	0
Grp Volume(v), veh/h	508	1522	0				0	281	396	0	952	0
Grp Sat Flow(s),veh/h/ln	1832	1509	0				0	1863	1410	0	1695	0
Q Serve(g_s), s	13.6	12.0	0.0				0.0	7.2	15.9	0.0	9.4	0.0
Cycle Q Clear(g_c), s	13.6	12.0	0.0				0.0	7.2	15.9	0.0	9.4	0.0
Prop In Lane	0.34		0.00				0.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	848	2794	0				0	718	544	0	1961	0
V/C Ratio(X)	0.60	0.54	0.00				0.00	0.39	0.73	0.00	0.49	0.00
Avail Cap(c_a), veh/h	1025	3379	0				0	1212	917	0	3309	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00				0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	13.2	12.7	0.0				0.0	14.7	17.3	0.0	15.3	0.0
Incr Delay (d2), s/veh	0.7	0.2	0.0				0.0	0.3	1.9	0.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.9	5.0	0.0				0.0	3.7	6.4	0.0	4.4	0.0
LnGrp Delay(d),s/veh	13.9	12.9	0.0				0.0	15.0	19.2	0.0	15.5	0.0
LnGrp LOS	B	B						B	B		B	
Approach Vol, veh/h		2030						677			952	
Approach Delay, s/veh		13.1						17.5			15.5	
Approach LOS		B						B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		35.6		30.5				30.5
Change Period (Y+Rc), s		5.0		5.0				5.0
Max Green Setting (Gmax), s		37.0		43.0				43.0
Max Q Clear Time (g_c+I1), s		15.6		11.4				17.9
Green Ext Time (p_c), s		15.0		7.9				3.5

Intersection Summary		
HCM 2010 Ctrl Delay		14.6
HCM 2010 LOS		B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	257	2640	123	0	0	0	0	392	381	0	1134	0
Future Volume (veh/h)	257	2640	123	0	0	0	0	392	381	0	1134	0
Number	5	2	12				3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.82	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900				0	1863	1863	0	1863	0
Adj Flow Rate, veh/h	271	2779	0				0	413	401	0	1194	0
Adj No. of Lanes	0	5	0				0	2	1	0	2	0
Peak Hour Factor	0.95	0.95	0.95				0.92	0.95	0.95	0.92	0.95	0.95
Percent Heavy Veh, %	2	2	2				0	2	2	0	2	0
Cap, veh/h	321	3558	0				0	1384	510	0	1384	0
Arrive On Green	0.49	0.49	0.00				0.00	0.39	0.39	0.00	0.39	0.00
Sat Flow, veh/h	650	7569	0				0	3632	1304	0	3725	0
Grp Volume(v), veh/h	763	2287	0				0	413	401	0	1194	0
Grp Sat Flow(s),veh/h/ln	1830	1509	0				0	1770	1304	0	1770	0
Q Serve(g_s), s	31.3	26.7	0.0				0.0	6.9	23.3	0.0	26.8	0.0
Cycle Q Clear(g_c), s	31.3	26.7	0.0				0.0	6.9	23.3	0.0	26.8	0.0
Prop In Lane	0.36		0.00				0.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	903	2976	0				0	1384	510	0	1384	0
V/C Ratio(X)	0.85	0.77	0.00				0.00	0.30	0.79	0.00	0.86	0.00
Avail Cap(c_a), veh/h	912	3006	0				0	1517	559	0	1517	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00				0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	19.0	17.9	0.0				0.0	18.1	23.1	0.0	24.2	0.0
Incr Delay (d2), s/veh	7.3	1.2	0.0				0.0	0.1	6.8	0.0	5.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.5	11.2	0.0				0.0	3.4	9.3	0.0	13.9	0.0
LnGrp Delay(d),s/veh	26.4	19.1	0.0				0.0	18.2	29.9	0.0	29.2	0.0
LnGrp LOS	C	B						B	C		C	
Approach Vol, veh/h		3050						814			1194	
Approach Delay, s/veh		20.9						24.0			29.2	
Approach LOS		C						C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		47.6		38.8				38.8
Change Period (Y+Rc), s		5.0		5.0				5.0
Max Green Setting (Gmax), s		43.0		37.0				37.0
Max Q Clear Time (g_c+I1), s		33.3		28.8				25.3
Green Ext Time (p_c), s		9.3		5.0				3.7

Intersection Summary	
HCM 2010 Ctrl Delay	23.4
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	565	112	137	1359	207	181	596	69	204	927	223
Future Volume (veh/h)	0	565	112	137	1359	207	181	596	69	204	927	223
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.93	1.00		0.92	1.00		0.93	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	0	595	118	144	1431	218	191	627	73	215	976	0
Adj No. of Lanes	0	2	0	1	3	0	1	2	1	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	811	160	173	1860	283	222	1062	441	246	1110	497
Arrive On Green	0.00	0.28	0.28	0.10	0.42	0.42	0.13	0.30	0.30	0.14	0.31	0.00
Sat Flow, veh/h	0	3001	575	1774	4400	669	1774	3539	1471	1774	3539	1583
Grp Volume(v), veh/h	0	361	352	144	1102	547	191	627	73	215	976	0
Grp Sat Flow(s),veh/h/ln	0	1770	1713	1774	1695	1679	1774	1770	1471	1774	1770	1583
Q Serve(g_s), s	0.0	20.0	20.2	8.6	30.1	30.2	11.4	16.3	4.0	12.9	28.3	0.0
Cycle Q Clear(g_c), s	0.0	20.0	20.2	8.6	30.1	30.2	11.4	16.3	4.0	12.9	28.3	0.0
Prop In Lane	0.00		0.34	1.00		0.40	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	0	494	478	173	1433	710	222	1062	441	246	1110	497
V/C Ratio(X)	0.00	0.73	0.74	0.83	0.77	0.77	0.86	0.59	0.17	0.87	0.88	0.00
Avail Cap(c_a), veh/h	0	539	522	213	1596	790	278	1176	489	295	1209	541
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	35.4	35.4	48.0	26.7	26.8	46.5	32.2	27.9	45.7	35.2	0.0
Incr Delay (d2), s/veh	0.0	4.6	4.9	20.0	2.1	4.2	19.3	0.7	0.2	21.2	7.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	10.5	10.2	5.2	14.5	14.8	6.8	8.1	1.6	7.8	14.9	0.0
LnGrp Delay(d),s/veh	0.0	40.0	40.4	68.0	28.9	31.0	65.8	32.9	28.1	66.9	42.5	0.0
LnGrp LOS		D	D	E	C	C	E	C	C	E	D	
Approach Vol, veh/h		713			1793			891			1191	
Approach Delay, s/veh		40.2			32.7			39.6			46.9	
Approach LOS		D			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s		50.8	20.0	37.5	15.6	35.2	18.6	39.0
Change Period (Y+Rc), s		5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s		51.0	18.0	36.0	13.0	33.0	17.0	37.0
Max Q Clear Time (g_c+I1), s		32.2	14.9	18.3	10.6	22.2	13.4	30.3
Green Ext Time (p_c), s		11.2	0.2	4.5	0.1	3.4	0.2	3.7

Intersection Summary		
HCM 2010 Ctrl Delay		38.9
HCM 2010 LOS		D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1447	142	0	964	125	211	639	198	265	935	135
Future Volume (veh/h)	0	1447	142	0	964	125	211	639	198	265	935	135
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.89	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1900	0	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	0	1539	151	0	1026	133	224	680	211	282	995	0
Adj No. of Lanes	0	3	0	0	3	0	1	2	1	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	0	1803	177	0	1742	225	257	1058	423	317	1177	527
Arrive On Green	0.00	0.38	0.38	0.00	0.38	0.38	0.14	0.30	0.30	0.18	0.33	0.00
Sat Flow, veh/h	0	4865	460	0	4706	587	1774	3539	1416	1774	3539	1583
Grp Volume(v), veh/h	0	1110	580	0	766	393	224	680	211	282	995	0
Grp Sat Flow(s),veh/h/ln	0	1695	1767	0	1695	1736	1774	1770	1416	1774	1770	1583
Q Serve(g_s), s	0.0	32.4	32.5	0.0	19.4	19.5	13.4	18.0	13.3	16.8	28.2	0.0
Cycle Q Clear(g_c), s	0.0	32.4	32.5	0.0	19.4	19.5	13.4	18.0	13.3	16.8	28.2	0.0
Prop In Lane	0.00		0.26	0.00		0.34	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	0	1302	678	0	1302	666	257	1058	423	317	1177	527
V/C Ratio(X)	0.00	0.85	0.85	0.00	0.59	0.59	0.87	0.64	0.50	0.89	0.85	0.00
Avail Cap(c_a), veh/h	0	1380	719	0	1380	706	345	1146	459	427	1309	586
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	30.5	30.5	0.0	26.5	26.5	45.3	32.9	31.2	43.4	33.5	0.0
Incr Delay (d2), s/veh	0.0	5.2	9.5	0.0	0.6	1.2	16.7	1.1	0.9	16.3	4.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	16.0	17.6	0.0	9.1	9.5	7.7	8.9	5.3	9.7	14.6	0.0
LnGrp Delay(d),s/veh	0.0	35.7	40.0	0.0	27.1	27.7	62.0	34.0	32.1	59.7	38.4	0.0
LnGrp LOS		D	D		C	C	E	C	C	E	D	
Approach Vol, veh/h		1690			1159			1115			1277	
Approach Delay, s/veh		37.2			27.3			39.3			43.1	
Approach LOS		D			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		46.5	24.3	37.3		46.5	20.7	41.0
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s		44.0	26.0	35.0		44.0	21.0	40.0
Max Q Clear Time (g_c+I1), s		21.5	18.8	20.0		34.5	15.4	30.2
Green Ext Time (p_c), s		8.2	0.5	5.1		7.0	0.3	5.0

Intersection Summary		
HCM 2010 Ctrl Delay		36.9
HCM 2010 LOS		D

Intersection	
Int Delay, s/veh	31.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	282	380	0	0	268	0
Future Vol, veh/h	282	380	0	0	268	0
Conflicting Peds, #/hr	67	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	-	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	92	92	96	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	294	396	0	0	279	0

Major/Minor	Major1		Minor2	
Conflicting Flow All	67	0	1051	-
Stage 1	-	-	67	-
Stage 2	-	-	984	-
Critical Hdwy	3.1	-	5.4	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	4.4	-
Follow-up Hdwy	2.218	-	2.5	-
Pot Cap-1 Maneuver	1564	-	419	0
Stage 1	-	-	-	0
Stage 2	-	-	597	0
Platoon blocked, %		-		
Mov Cap-1 Maneuver	1464	-	~ 273	-
Mov Cap-2 Maneuver	-	-	~ 273	-
Stage 1	-	-	-	-
Stage 2	-	-	559	-

Approach	EB	SB
HCM Control Delay, s	3.4	101.3
HCM LOS		F

Minor Lane/Major Mvmt	EBL	EBT	SBLn1
Capacity (veh/h)	1464	-	273
HCM Lane V/C Ratio	0.201	-	1.023
HCM Control Delay (s)	8.1	0	101.3
HCM Lane LOS	A	A	F
HCM 95th %tile Q(veh)	0.7	-	10.6

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	13.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	78	565	0	0	319	0
Future Vol, veh/h	78	565	0	0	319	0
Conflicting Peds, #/hr	77	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	-	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	82	595	0	0	336	0

Major/Minor	Major1		Minor2	
Conflicting Flow All	77	0	836	-
Stage 1	-	-	77	-
Stage 2	-	-	759	-
Critical Hdwy	3.1	-	5.4	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	4.4	-
Follow-up Hdwy	2.218	-	2.5	-
Pot Cap-1 Maneuver	1555	-	542	0
Stage 1	-	-	-	0
Stage 2	-	-	733	0
Platoon blocked, %		-		
Mov Cap-1 Maneuver	1441	-	426	-
Mov Cap-2 Maneuver	-	-	426	-
Stage 1	-	-	-	-
Stage 2	-	-	679	-

Approach	EB	SB
HCM Control Delay, s	0.9	38.4
HCM LOS		E

Minor Lane/Major Mvmt	EBL	EBT	SBLn1
Capacity (veh/h)	1441	-	426
HCM Lane V/C Ratio	0.057	-	0.788
HCM Control Delay (s)	7.6	0	38.4
HCM Lane LOS	A	A	E
HCM 95th %tile Q(veh)	0.2	-	6.9

Intersection	
Int Delay, s/veh	5.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	366	23	0	0	0	338
Future Vol, veh/h	366	23	0	0	0	338
Conflicting Peds, #/hr	0	55	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	-	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	92	92	92	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	381	24	0	0	0	352

Major/Minor	Major1			Minor1	
Conflicting Flow All	0	0		-	448
Stage 1	-	-		-	-
Stage 2	-	-		-	-
Critical Hdwy	-	-		-	5.2
Critical Hdwy Stg 1	-	-		-	-
Critical Hdwy Stg 2	-	-		-	-
Follow-up Hdwy	-	-		-	2.5
Pot Cap-1 Maneuver	-	-		0	877
Stage 1	-	-		0	-
Stage 2	-	-		0	-
Platoon blocked, %	-	-			
Mov Cap-1 Maneuver	-	-		-	831
Mov Cap-2 Maneuver	-	-		-	-
Stage 1	-	-		-	-
Stage 2	-	-		-	-

Approach	EB	NB
HCM Control Delay, s	0	12.5
HCM LOS		B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR
Capacity (veh/h)	831	-	-
HCM Lane V/C Ratio	0.424	-	-
HCM Control Delay (s)	12.5	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	2.1	-	-

Intersection	
Int Delay, s/veh	7.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	497	32	0	0	0	386
Future Vol, veh/h	497	32	0	0	0	386
Conflicting Peds, #/hr	0	65	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	-	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	523	34	0	0	0	406

Major/Minor	Major1			Minor1	
Conflicting Flow All	0	0		-	605
Stage 1	-	-		-	-
Stage 2	-	-		-	-
Critical Hdwy	-	-		-	5.2
Critical Hdwy Stg 1	-	-		-	-
Critical Hdwy Stg 2	-	-		-	-
Follow-up Hdwy	-	-		-	2.5
Pot Cap-1 Maneuver	-	-		0	736
Stage 1	-	-		0	-
Stage 2	-	-		0	-
Platoon blocked, %	-	-			
Mov Cap-1 Maneuver	-	-		-	690
Mov Cap-2 Maneuver	-	-		-	-
Stage 1	-	-		-	-
Stage 2	-	-		-	-

Approach	EB	NB
HCM Control Delay, s	0	17.4
HCM LOS		C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR
Capacity (veh/h)	690	-	-
HCM Lane V/C Ratio	0.589	-	-
HCM Control Delay (s)	17.4	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q(veh)	3.9	-	-

APPENDIX F

TRANSIT LOS CALCULATIONS

Multimodal Transit LOS Calculation

	From	Beretania St WB	Ward Ave SB	King St EB
	To	Victoria St	Kinau St	Cooke St
		Alapai St	Kapiolani Blvd	Victoria St
Inputs		**1**	**2**	**3**
	TRANSIT OPERATIONS INFORMATION			
	Number of local buses on street segment per hour (bus/h)	9	1	9
	Number of express buses stopping in segment per hour (bus/h)	0	0	8
t_{ex}	Average excess wait time (min)	4.3	0.5	3.8
L_f	Average passenger load factor (p/seat)	0.7	0.1	0.7
S	Average transit travel speed (mi/h)	9.7	10.7	12.6
l_{pt}	Average passenger trip length (mi)	2.9	2.3	3.2
	Is the segment in the CBD of a metro area of 5 million or more?	No	No	No
	TRANSIT AMENITY DATA			
p_{sh}	Percent stops in segment with a shelter	0%	0%	100%
p_{be}	Percent stops in segment with a bench	100%	70%	100%
	PEDESTRIAN ENVIRONMENT DATA			
W_A	Sidewalk width (ft) (Enter 0 if no sidewalk)	10.0	10.0	12.0
W_{buf}	Buffer width from sidewalk to street (ft)	0.0	0.0	0.0
	Does a continuous barrier exist between the street and sidewalk?	No	No	No
	Is the street divided?	Yes	Yes	No
	Are parking spaces striped?	Yes	Yes	Yes
p_{pk}	Proportion of on-street parking occupied	50%	50%	50%
W_{bl}	Bicycle lane width (ft)	6.0	0.0	6.0
W_{os}	Shoulder/parking lane width (ft)	0.0	8.0	8.0
W_{ol}	Outside travel lane (closest to sidewalk) width (ft)	11.0	11.0	10.0
v_m	Outside lane demand flow rate at midsegment (veh/h)	530	385	560
S_R	Average vehicle running speed, including intersection delay (mi/h)	25.0	25.0	25.0

Calculations				
f	Transit frequency (bus/h)	9	1	17
f_h	Headway factor	3.41	0.95	3.68
f_{pl}	Passenger load weighting factor	1.00	1.00	1.00
T_{at}	Perceived amenity time rate (min/mi)	0.1	0.1	0.5
T_{ex}	Excess wait time rate due to late arrivals (min/mi)	1.5	0.2	1.2
T_{ptt}	Perceived travel time rate (min/mi)	9.1	6.0	6.7
T_{btt}	Base travel time rate (min/mi)	4.0	4.0	4.0
f_{tt}	Perceived travel time factor	0.73	0.85	0.82
$s_{w\text{-}r}$	Transit wait-ride score	2.49	0.81	3.01
f_s	Motorized vehicle speed adjustment factor	0.25	0.25	0.25
f_v	Motorized vehicle volume adjustment factor	1.21	0.88	1.27
W_{aA}	Adjusted available sidewalk width (ft)	10.0	10.0	10.0
f_{sw}	Sidewalk width coefficient	3.00	3.00	3.00
f_b	Buffer area coefficient	1.00	1.00	1.00
W_t	Total width of outside lane, bike lane, and parking lane/shoulder (ft)	17.0	11.0	16.0
W_v	Effective total width as a function of traffic volume (ft)	17.0	11.0	16.0
W_1	Effective width of combined bike lane and shoulder (ft)	6.0	8.0	14.0
f_w	Cross-section adjustment factor	-5.30	-5.22	-5.35
I_p	Pedestrian environment score	2.20	1.96	2.22
	Pedestrian LOS	B	A	B
I_t	Transit LOS score	2.59	5.07	1.82

Output				
	Transit LOS	***B***	***F***	***A***

From:	Andrade, Kamakaokalani M
To:	"Sherman Wong"
Cc:	Pete Pascua; Debbie Akau; Grace Wolff; Kimi Yuen; Jennylyn Tapat; Joe Marshall (jmarshall@flansburgh.com); Robyn Ito
Subject:	RE: LC - TIR Transmittal
Date:	Thursday, April 7, 2022 4:53:38 PM
Attachments:	image019.png image022.png image026.png image028.png image030.png image031.png image032.png image033.png

Sherman,

Trash activities should be done on-site not on Ward Ave. DTS has been getting complaints about trash activities on the roads. Also there have been accidents in which vehicles have struck trash can left on the roadway and so all trash activities to be done on-site or at an off-site location. Please continue to work with WOC and SSFM regarding traffic impacts due to site operations and providing the proper format of the TMP/CMP for the site. Also should include recommendations from WOC regarding the porte-cochere use and operation. I believe the proposal is to change the movement from a clockwise operation to a counter-clockwise operation which will be better for drop-off/pick-up of the students. If you have any questions then let me know.

Kamaka Andrade, P.E.
City & County of Honolulu
Traffic Review Branch
(808) 768-8080

From: Sherman Wong [mailto:swong@onipaa.org]
Sent: Thursday, April 07, 2022 11:50 AM
To: Andrade, Kamakaokalani M
Cc: Pete Pascua; Debbie Akau; Grace Wolff; Kimi Yuen; Jennylyn Tapat; Joe Marshall (jmarshall@flansburgh.com); Robyn Ito
Subject: Re: LC - TIR Transmittal

Hi Kamaka,
Forwarding along some exhibits we are preparing for our HCDA Development Approval packet showing the onsite circulation patterns. I added some notes to describe how operations will be handled at the drop offs, loading, and service areas. Let me know if you want to meet with WOC and SSFM to go over any concerns or comments on the proposed circulation.

Sherman Wong
Director, Design and Construction

LILI'UOKALANI TRUST

Lili'uonamoku

1100 Alakea Street • Suite 1100
• Honolulu, HI 96813
(o) 808-466-7924 | (m) 808-342-8708
swong@onipaa.org

From: Sherman Wong <swong@onipaa.org>
Date: Monday, April 4, 2022 at 10:14 AM
To: Andrade, Kamakaokalani M <kandrade1@honolulu.gov>
Cc: Pete Pascua <ppascua@wilsonokamoto.com>, Debbie Akau <dakau@onipaa.org>, Grace Wolff <gwolff@pbrhawaii.com>, Kimi Yuen <kyuen@pbrhawaii.com>, Jennylyn Tapat <JTapat@wilsonokamoto.com>, Joe Marshall (jmarshall@flansburgh.com) <jmarshall@flansburgh.com>
Subject: Re: LC - TIR Transmittal

Hi Kamaka,
I'm responding to a couple of questions that came up on the TIR that Wilson Okamoto has prepared for Liliuokalani Trust.

1) King Street Loading Dock – We intend to use the passenger loading loop for loading and unloading of students on the LT shuttle vans. For other daily deliveries, we will use the loading area inside the first level parking entrance from Ward avenue. The King Street dock is not intended to be used for loading and unloading. That area will be used as a service dock for fueling/servicing the building's emergency generator and pumping of the oil-water separator. Our intention is to have the fuel and pump trucks reverse into the dock from the first lane on King Street (Commercial Vehicle Loading zone). LT staff will also be available to direct traffic while the service vehicle is reversing into the stall. These occurrences would take place very infrequently – probably 2-4 times per year.

2. LC Facility Use – Lili'uokalani Center will operate a day program (the Academy) and afterschool program (the Olino Pathways). The programs will use the same spaces. During weekdays, the Academy will operate 7a-2:15p and afterschool program will operate 2p-7p. The arrivals for the afterschool program participant may stagger as students will be arriving from various schools within the community. Most afterschool program participants will be arriving in groups via LT shuttle vans utilizing the Ward drop off loop. For those arriving and departing in personal vehicles, drivers will be directed to the second floor of the parking garage for individual drop off and pickup.

I hope this helps clarify your questions. Please let me know if you need further information.
Mahalo!

Sherman Wong

Director, Design and Construction

LILI'UOKALANI TRUST

Lili'uonamoku

1100 Alakea Street • Suite 1100
• Honolulu, HI 96813

(o) 808-466-7924 | (m) 808-342-8708

swong@onipaa.org

From: Jennylyn Tapat <JTapat@wilsonokamoto.com>
Date: Thursday, March 31, 2022 at 2:49 PM
To: Kimi Yuen <kyuen@pbrhawaii.com>, Grace Wolff <gwolff@pbrhawaii.com>, Sherman Wong <swong@onipaa.org>
Cc: Pete Pascua <ppascua@wilsonokamoto.com>
Subject: RE: LC - TIR Transmittal

Hi All,

I was able to talk to Kamaka via phone yesterday afternoon. He indicated Lance is still reviewing the study, but they had a couple of preliminary questions/comments:

1. Confirm all loading/delivery activities will occur via the driveways off Ward Avenue with no loading activities to occur off the existing S. King Street loading area. If the intent is not to utilize the existing loading area off S. King Street, TRB would like the sidewalk modified to remove the driveway apron off S. King Street. If the project intends to utilize that loading area, TRB would like more information on how the loading area will be used since access to that loading area requires vehicles to reverse into the driveway.

2. TRB would like clarification on the daily functions of the project site how the spaces will interact with one another. Will the after school program spaces use the same spaces as the academy or will the areas be separate from one another?

Thank you,

Jenny Tapat, P.E.
Associate Project Manager

WILSON OKAMOTO CORPORATION 75

1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826
T (808) 946-2277 F (808) 946-2253

FLOOR AREA - Per MAR Description					
Floor Area (SF)					
Level	**Classroom**	**Office**	**Support**	**Circulation**	**Total**
Basement	0	0	3,909	803	4,712
1st Floor	7,606	1,560	2,845	3,181	15,192
2nd Floor	0	0	629	279	908
3rd Floor	0	0	629	308	937
4th Floor	6,358	196	3,617	5,298	15,469
5th Floor	9,026	714	4,228	7,098	21,066
6th Floor	1,390	1,262	1,040	6,121	9,813
7th Floor	5,259	3,190	2,974	7,701	19,124
8th Floor	8,504	186	807	934	10,431
Mechanical	0	0	0	0	0
Total	**38,143**	**7,108**	**20,678**	**31,723**	**97,652**

Parking Spaces Provided				
Level	**Standard**	**Compact**	**Handicap**	**Combined**
Basement	36	6	3	45
1st Floor	3	1	0	3
2nd Floor	37	11	2	50
3rd Floor	42	11	2	55
4th Floor	9	5	0	15
Total Provided	**127**	**34**	**7**	**168**

Legend (Proposed)

- Floor Area
- Classroom
- Office
- Support

Standard Parking ≥ 8.5' Wide x 18' Deep
Compact Parking ≥ 7.5' Wide x 18' Deep
Accessible Parking ≥ 9' Wide x 18' Deep
Large Loading ≥ 12' Wide x 35' Deep x 13'6 High
Small Loading (South) ≥ 8.5' Wide x 18' Deep x 9' High
Small Loading (North) ≥ 8.5' Wide x 18' Deep x 10' High

* REMOVEABLE BOLLARDS - STAFF TO REMOVE PRIOR TO LT PASSENGER VAN ARRIVAL.
* PORTE COCHERE FOR USE FOR DROP OFF AND PICKUP BY LT VANS ONLY. PERSONAL VEHICLE DROP OFF/PICKUP QUEUE ON 2ND LEVEL - SEE FIGURE 12.

DUMPSTER TO BE ROLLED OUT TO WARD AVENUE FOR COLLECTION ONCE A WEEK DURING AM NON-PEAK HOURS

* NO BASEMENT PARKING ACCESS WHILE LARGE LOADING IS IN USE.
* STAFFED TRAFFIC MANAGEMENT IN USE DURING ARRIVAL AND DEPARTURE

* SERVICE BAY FOR USE BY GREASE COLLECTION AND GENERATOR FUELING ONLY.
* STAFFED TRAFFIC MANAGEMENT IN USE DURING ARRIVAL AND DEPARTURE

LILI'UOKALANI TRUST

Lili'uokalani Center

FIGURE 10: 1ST FLOOR - PROPOSED

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03.01.2022

LEVEL 2 PARKING -
MAIN DROP OFF FOR PERSONAL VEHICLES

FLOOR AREA - Per MAR Description					
Floor Area (SF)					
Level	**Classroom**	**Office**	**Support**	**Circulation**	**Total**
Basement	0	0	3,909	803	4,712
1st Floor	7,606	1,560	2,845	3,181	15,192
2nd Floor	0	0	629	279	908
3rd Floor	0	0	629	308	937
4th Floor	6,358	196	3,617	5,298	15,469
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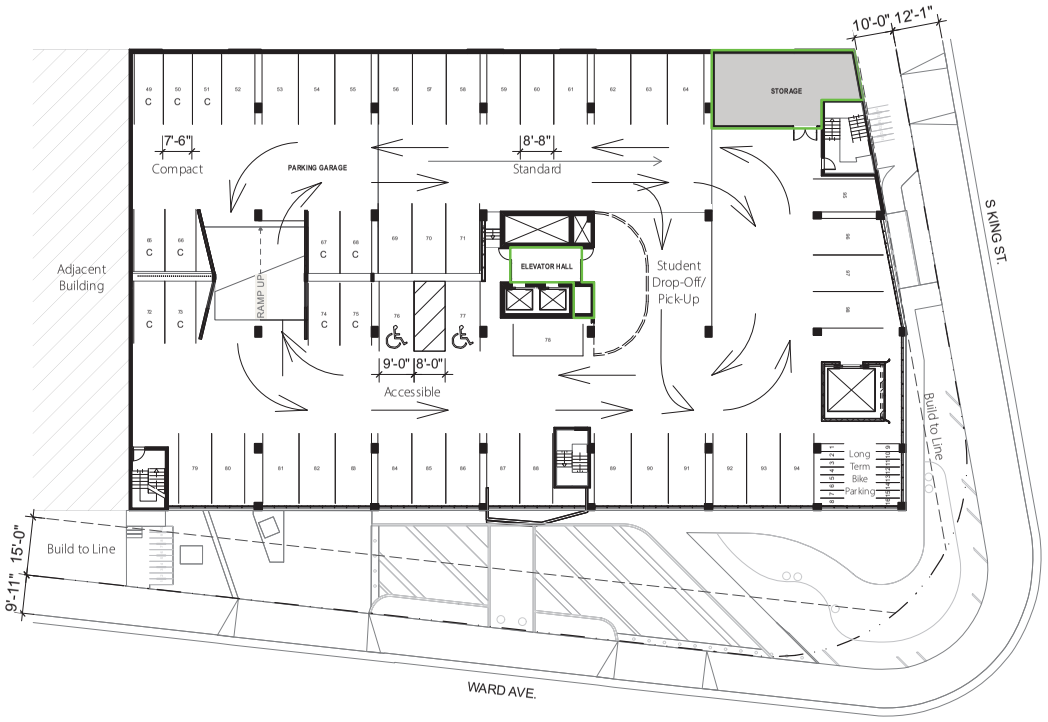
7th Floor	5,259	3,190	2,974	7,701	19,124
8th Floor	8,504	186	807	934	10,431
Mechanical	0	0	0	0	0
Total	**38,143**	**7,108**	**20,678**	**31,723**	**97,652**

Parking Spaces Provided				
Level	**Standard**	**Compact**	**Handicap**	**Combined**
Basement	36	6	3	45
1st Floor	3	1	0	3
2nd Floor	37	11	2	50
3rd Floor	42	11	2	55
4th Floor	9	5	0	15
Total Provided	**127**	**34**	**7**	**168**



Legend (Proposed)

- Floor Area
- Classroom
- Office
- Support

Standard Parking ≥ *8.5' Wide x 18' Deep*
Compact Parking ≥ *7.5' Wide x 18' Deep*
Accessible Parking ≥ *9' Wide x 18' Deep*
Large Loading ≥ *12' Wide x 35' Deep x 13'6 High*
Small Loading (South) ≥ *8.5' Wide x 18' Deep x 9' High*
Small Loading (North) ≥ *8.5' Wide x 18' Deep x 10' High*

LILI'UOKALANI TRUST

Lili'uokalani Center

FIGURE 12: 2ND FLOOR - PROPOSED

FLANSBURGH
03.01.2022

APPENDIX K

Preliminary Engineering Report

PRELIMINARY ENGINEERING REPORT
For
Lili‘uokalani Center

932 Ward Ave.
Honolulu, Oahu, Hawaii 96814

April 2022

SUBMITTED TO:

Hawai‘i Community Development Authority
547 Queen Street
Honolulu, Hawaii 96813

SUBMITTED BY:

SSFM International, Inc.
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817
(808) 531-1308

www.ssfm.com

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I. INTRODUCTION

The proposed Lili‘uokalani Center on TMK: 2-1-044:005 is located at the intersection of Ward Avenue and South King Street, both under the jurisdiction of City and County of Honolulu (see Figure 1).

Lili‘uokalani Trust is proposing to renovate the existing building to develop a facility to foster exploration, creativity, and innovative thinking to prepare Hawaiian youth for a rapidly changing future.

The objectives of this preliminary engineering investigation are to present information on infrastructure requirements for the proposed improvements. Specifically, this report will address:

1. Background information on the proposed project;
2. Existing conditions;
3. Proposed development modifications; and
4. Potential impacts due to improvements and proposed mitigating measures

II. BACKGROUND

EXISTING USES

TMK: 2-1-044:005

The existing building is seven stories high, approximately 80,000 square feet, and includes a parking garage with 200 spaces. The Honolulu Club previously occupied portions of the building until 2020, when it closed due to the COVID-19 pandemic. The building was completed in 1980. Other spaces were occupied by medical tenants.

There are three (3) existing access driveways to the property. There are two along Ward Avenue: One is a 20-foot wide exit only for a drop off area under the existing port cochere, approximately 100 feet south of the Ward Avenue/South King Street intersection; and the second is the 34-foot wide two-way main entrance and exit approximately 190 feet south of the Ward Avenue/South King Street intersection. The third driveway is a 12-foot wide driveway on South King Street, approximately 175 feet west of the Ward Avenue/South King Street intersection, that serves as an access for the building’s loading bay.

LAND USE AND ZONING

The property is within the Kaka’ako Community Development District (KCDD) under the City and County of Honolulu’s Chapter 21 Land Use Ordinance (LUO) zoning code. The Kaka’ako Special Design District (KSDD) has been superseded by the Kaka’ako Community Development Plan as of 1982. All development within the KSDD located mauka of Ala Moana Boulevard is administered by the Hawai‘i Community Development Authority (HCDA) via the KCDD Mauka Area Rules (MAR).

Per the MAR, the intent of the KCDD includes guiding growth towards a mixture of residential, commercial and industrial uses, amongst other purposes. The proposed improvements are consistent with the intent of the district and zoning.

FLOOD ZONE

The entire project’s property is designated to be within flood zone X under the Federal Emergency Management Agency (FEMA). The FEMA Flood Insurance Rate Map (FIRM) for the site is shown in Figure 4, release date January 19, 2011, Map 15003C0362G.

Zone X corresponds to the flood areas determined to be outside the 0.2% annual chance floodplain.

CLIMATE

The project site is located in the Metro Oahu Region. The climate is relatively warm and humid. Trade winds from the northeast occur much of the time, with occasional Kona winds. The normal temperature range for the region varies from the high 60’s (degrees Fahrenheit) to the high 80’s. Rainfall ranges between light and moderate, with mean annual rainfall of about 14 inches in Honolulu (source: www.weather-us.com).

SITE TOPOGRAPY

The project site property ranges from about 11 to 13 feet mean sea level (MSL) elevation per the topographic survey by ControlPoint Surveying, Inc.

SOILS

The soil type within the project site is identified in the U.S. Department of Agriculture, National Resources Conservation Service Web Survey Soil as Makiki Clay Loam, 0 to 2 percent slopes (MkA). This type of soil consists of well-drained soils on uplands that developed in material weathered from alluvium mixed with ash and cinders. In the MkA portion of the series, runoff is slow with moderately rapid permeability.

III. DRAINAGE

EXISTING CONDITIONS

The overall project site property occupies approximately 0.75 acres. In the existing condition, the storm water runoff flows to a drain manhole via downspouts within the building, connected to a 24-inch drain pipe along South King Street, which then connects to a 6' x 5' box drain on Ward Avenue, both City owned systems. Ultimately, the storm water drains into Kewalo Basin.

MODIFICATIONS AS A RESULT OF DEVELOPMENT

It is anticipated that renovations will be limited to the interior of the building and landscaping. There is no change to the storm water quantity and quality features. According to the landscape drawings, the amount of permeable surface will approximately double. It is anticipated that the site will continue to drain along the existing drainage pattern and through the existing storm drainage infrastructure after the site improvements are completed. There will not be any drainage improvements outside of the project site as the proposed improvements should not alter nor impact the downstream system flows.

IV. GRADING AND SOIL EROSION

GRADING

It is anticipated that no major grading will occur within the property boundary. Minor grading will occur as a result of landscape improvements.

IMPACTS AND MITIGATION

Generation of erosion, dust and noise due to construction operations will be mitigated in accordance with the project requirements and all applicable Administrative Rules of the State Department of Health and further identified during the design and construction phases.

V. ROADS

EXISTING CONDITIONS

The existing project site abuts the signalized 4-leg intersection of South King Street and Ward Avenue. South King Street is a one-way, 5-lane street with a posted speed limit of 30 miles per hour (mph). There are sidewalks on both sides of South King Street as well as a two-way bike lane and metered parking stalls. Ward Avenue is a two-way undivided, 4-lane (2 lanes north/mauka, 2 lanes south/makai) street with a posted speed limit of 25 mph. There are sidewalks on both sides of Ward Avenue as well as a one-way bike lane and metered parking stalls.

The main access point into the project site is along Ward Avenue via a two-way driveway and porte cochere located approximately 190' makai of the South King Street/Ward Avenue intersection. There is also an exit onto Ward Avenue from the porte cochere, approximately 100' makai of the South King Street/Ward Avenue intersection. Both South King Street and Ward Avenue are under the jurisdiction of the City and County of Honolulu. No significant traffic impacts are anticipated to occur during the construction of the project improvements in the area.

IMPACTS AND MITIGATION

Impacts related to construction will be limited within the facility and its users. It is anticipated to be short term (approximately 1-2 years) and may include vehicle and pedestrian traffic disturbances. These short-term impacts can be mitigated by coordinating construction with the City and County of Honolulu if street usage is required.

MODIFICATIONS AFTER DEVELOPMENT

The Traffic Impact Report has been prepared to adequately assess the traffic-related impacts of the proposed project development on the existing and planned future development. With the proposed project, traffic operations in the vicinity, including nearby intersections, are expected to remain similar to the existing condition, and future traffic projects without the proposed renovations. All modifications related to pedestrian access will be completed in accordance with the American with Disabilities Act (ADA).

VI. WATER

EXISTING CONDITIONS

The Board of Water Supply (BWS) system provides water service to the existing project site property; TMK: 2-1-044:005. Based on BWS system as-built plans, potable water service is currently provided to the site by three 6-inch laterals (meter no. 04124012, 80129609, and 03124053) for fire protection connected to an existing 12-inch water main along Ward Avenue and two ¾-inch laterals for domestic water connected to an existing 12-inch water main along King Street.

PROJECTED WATER DEMAND

Water demand estimates for this project are based upon BWS Water System Standards 2002 (BWS Standards) guidelines and should provide an adequate water consumption system. BWS has confirmed that the existing system is adequate to accommodate the proposed renovation (see attached letter). Therefore, the domestic lateral and fire laterals will remain the same as existing.

The final decision on the availability of water for domestic, fire, and irrigation demand will be confirmed when the building permit application is submitted for approval.

FIRE PROTECTION

The on-site fire protection requirements will be coordinated with the Fire Prevention Bureau of the Honolulu Fire Department. Fire requirements related to water consumption will include the construction of in-property connection laterals to the proposed buildings and associated occupied structures including the installation of building fire sprinkler system to meet National Fire Protection Association (NFPA) requirements. There are two existing fire hydrants at the frontage of the property along Ward Avenue and one on South King Street. These fire hydrants will be able to serve the proposed development and meet fire hydrant location and servicing requirements per NFPA. Based on early correspondence with the Fire Department, these locations are still compliant with Access Road requirements. Also, based on letter received from the Board of Water Supply dated April 27, 2021 it has been assessed that the existing system is adequate to accommodate the proposed development.

Building fire sprinklers will be provided for all new buildings and retrofitted as required for existing spaces. The existing fire flow, duration and hydrant spacing is assumed to be compliance with the BWS Fire Flow Requirements and are summarized below:

Land Use	*Flow (gpm)/Duration (hrs.)/Fire Hydrant Spacing (ft.)*
Schools/Neighborhood Business	2000/2/250

IMPACTS AND MITIGATION

The final decision on the availability of water will be confirmed when the building permit application is submitted for approval. When water is made available, the project development will be required to pay BWS water system facilities charges for resource development, transmission and daily storage.

VII. WASTEWATER

EXISTING CONDITIONS

Two existing gravity sewer system laterals (size unknown) currently service the project site on TMK: 2-1-044:005. This gravity sewer system lateral connects to the existing City's Wastewater Branch 18-inch sewer main along King Street.

PROJECTED WASTEWATER FLOWS

A sewer connection application for the program's current enrollment of 330 students was submitted to the City's Wastewater Branch. The approval for this application is attached.

IMPACTS AND MITIGATION

The final decision and approval on the availability of sewer capacity will be confirmed when the building permit application is submitted for approval.

VIII. SOLID WASTE

EXISTING CONDITIONS

The facility, which generates solid waste daily, is currently served by West O'ahu Aggregate (WOA), a private waste collection company.

PROJECTED SOLID WASTE GENERATION

Solid waste will be generated at the project site during construction and post-construction. Collection will continue to be through the same private collection company.

During Construction

The construction wastes will primarily be made up of construction packing and materials, vegetation, pavement, rocks, and debris resulting from the proposed renovation.

Post-Construction

It is anticipated that the refuse generated by the proposed improvements once the renovation is complete will continue to be collected by WOA. Recycling will be part of their refuse program including locating convenient recycling bins throughout the facility and managing the recycled materials with appropriate handlers. The solid waste generation from the proposed development is estimated to remain the same as existing. It is anticipated that garbage collection will continue to be collected by WOA, and recycling can be coordinated through a private refuse hauling service.

IMPACTS AND MITIGATION

It is not anticipated the proposed development will be an additional generator of solid waste. Generation of construction wastes due to clearing and construction activities of the site will be a short-term impact and should not cause major impact to the existing landfills.

The City and County is currently operating a landfill site in Waimanalo Gulch and the H-POWER waste energy recovery facility on the leeward side of Oahu. It is understood that the City is currently exploring alternative means of handling solid waste as an ongoing city-wide concern.

VII. GAS

EXISTING CONDITIONS

Two existing meters (size unknown) currently service the project site on TMK: 2-1-044:005. This connects to The Gas Company's main along South King Street.

PROJECTED GAS DEMAND

It is anticipated that the new service will use one of the existing meters and there will not be additional demand on The Gas Company. Construction plans will be sent to The Gas Company during the building permit process.

IMPACTS AND MITIGATION

Since only one meter is needed, it is anticipated the second meter can be demolished as part of this project. Due to the demand not increasing, there should be no impact to the existing system.

IX. ELECTRICAL AND TELECOM UTILITIES

ELECTRICAL

The site is fed from an existing 750kVA, 480/277V, 3-phase pad-mounted Hawaiian Electric Company (HECo) transformer. Per HECo recommendation, the utility transformer shall be upgraded to a 1000kVA to provide 480/277-volt, 3-phase, power to a new 2,000A indoor main switchboard. Primary feeders to the transformer can be reused. Furthermore, based of existing Core & Shell drawings dated 11/22/1978, secondary feeders could be reused once proper field verification is taken place.

Based on preliminary load calculations:

- It is estimated that the main switchboard will feed an 800A high voltage distribution panel which will distribute 480/277V, 150A to each floor and sub-feed an 800A, 208/120V, low voltage distribution panel feeding 200A panels that will account for those loads rated at 208/120V.
- There will be (2) dedicated mechanical panels located on the 3rd Floor (400A) and 8thFloor (800A) that will account for the major mechanical and plumbing loads.
- A dedicated 208/120V, 250A Kitchen Panel will be provided for power kitchen loads.
- A 208/120V, 800A panel will be provided to accommodate dedicated theatre loads.
- AV Equipment will be provided through a 500A, 208/120V panel.

An electrical service request was submitted in order to initiate the service upgrade process with HECo.

TELECOM

The project is not anticipated to include additional telecommunication services for Telephone and CATV. The existing telecommunication service providers are Hawaiian Telcom and Spectrum Inc.. Hawaiian Telcom does not have high speed internet at this time. Spectrum currently provides CATV and internet service to the facility. The facility is eligible for an upgrade to high speed internet from both providers. Telephone access will be through Voice Over Internet Protocol (VOIP).

X. REFERENCES

1. City and County of Honolulu's Chapter 21 Land Use Ordinance (LUO) – www.honolulu.gov/ocs/roh/193-site-ocs-cat/975-roh-chapter-21.html.

2. Design Standards of the Department of Wastewater Management, Volume I, Department of Wastewater Management, City and County of Honolulu, Hawaii, July 1993

3. Federal Emergency Management Agency (FEMA), Flood Insurance Rate Map (FIRM), January 19, 2011, Map 15003C0362G.

4. Honolulu, HI – Detailed climate information and monthly weather – www.weather-us.com.

5. Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii. U.S. Department of Agriculture, Soil Conservation Service, August 1972.

6. Topographic Survey Map, Honolulu Club at Kewalo, Honolulu, Oahu, Hawaii TMK: 2-1-44:5, June 2021 (Controlpoint Surveying, Inc)

7. Water System Standards, Board of Water Supply, City and County of Honolulu, Hawaii 2002.

FIGURES

FIGURE 1: Project Location Map

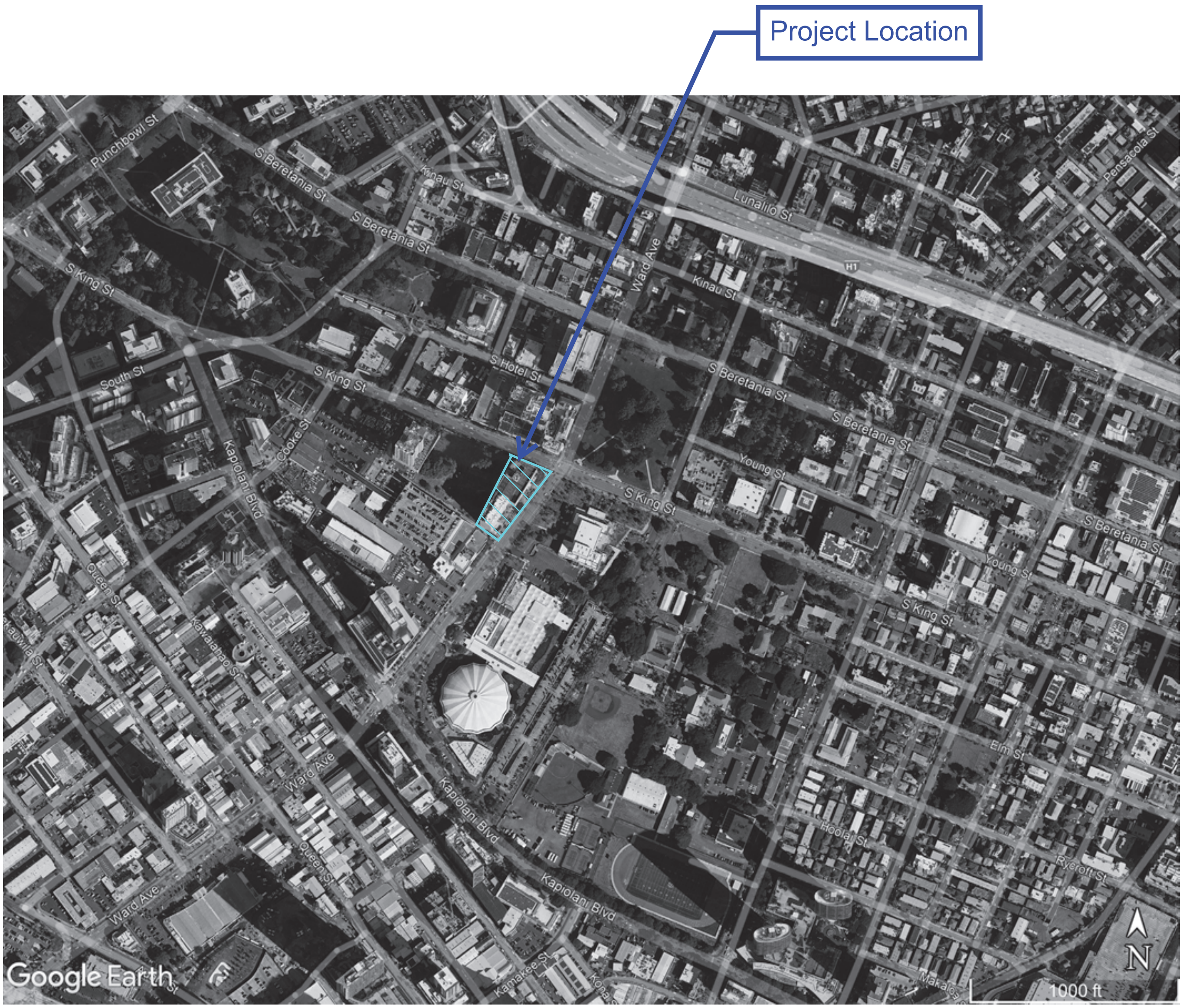

Project Location
Punchbowl St
S Beretania St
Kinau St
Lunalilo St
Pensacola St
S King St
Ward Ave
S Hotel St
South St
Kapiolani Blvd
Cooke St
Young St
Queen St
Kawaiahao St
Elm St
Hoolai St
Rycroft St
Kamakee St
Google Earth
N
1000 ft

FIGURE 2: FEMA FIRM Location

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0 (Local Tidal Datum). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Hawaii State Plane Zone 3 (FIPSZONE 5103). The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the Local Tidal Datum. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. No conversion factor is needed to convert Local Tidal Datum to the National Geodetic Vertical Datum of 1929, therefore Local Tidal Datum is equivalent to the National Geodetic Vertical Datum of 1929. For more information, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or co-mail the National Geodetic Survey at the following address:

NGS Information Services
NOAA, NNGS13
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was derived from rectified 2-foot ground resolution satellite imagery that meets 1:12,000 scale horizontal accuracy standards provided by DigitalGlobe and the United States Department of Agriculture Natural Resources Conservation Service. This information was collected between April 2005 and July 2006.

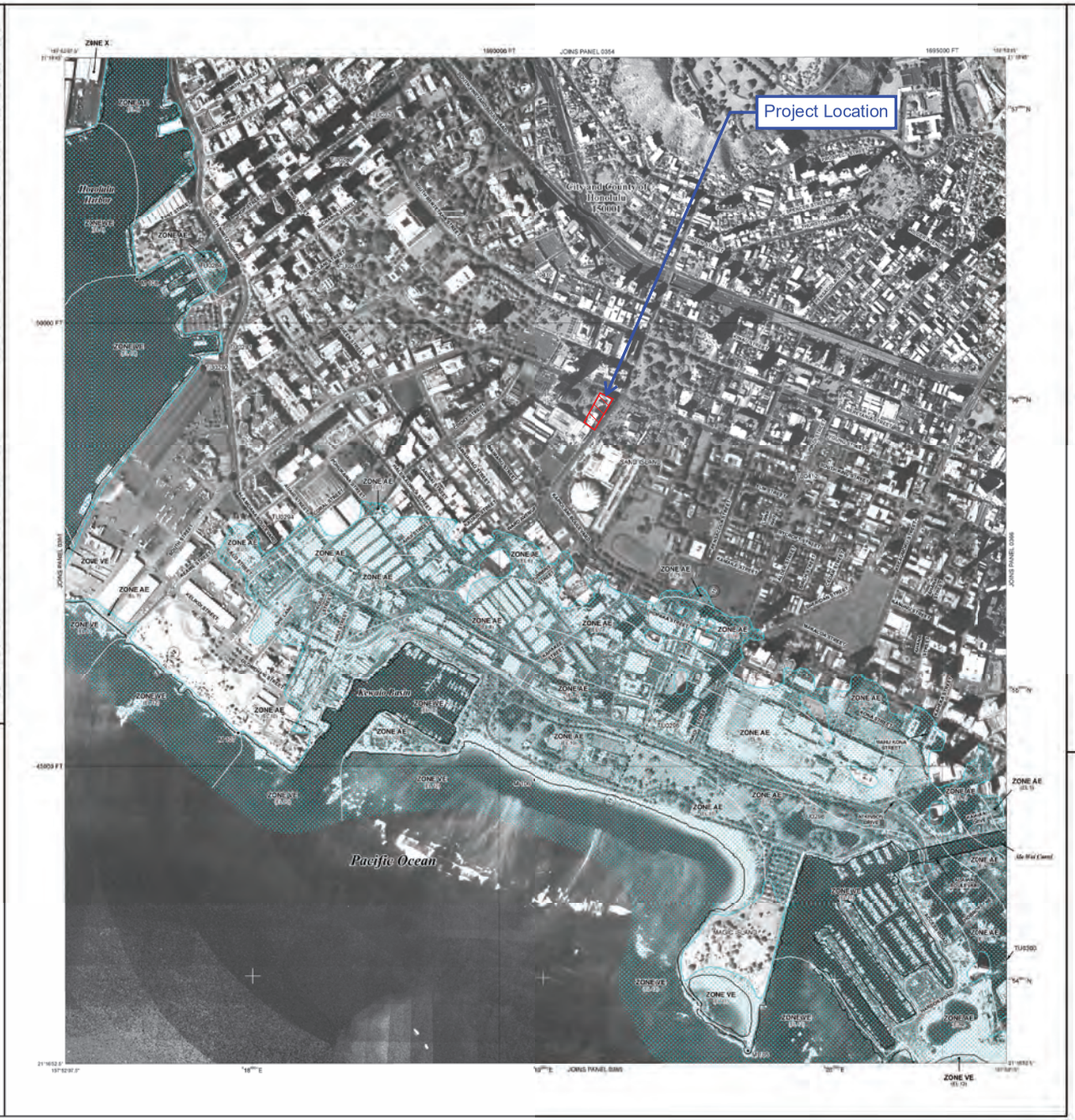
This map may reflect more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information on available products associated with this FIRM visit the **Map Service Center (MSC)** website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

If you have **questions about this map**, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange (FMIX) at **1-877-FEMA-MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equalled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A — No Base Flood Elevations determined.
- ZONE AE — Base Flood Elevations determined.
- ZONE AH — Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR — Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99 — Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V — Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE — Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- Limit of Moderate Wave Action
- (EL 987) — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

- Cross section line
- Transect line
- Culvert, Flume, Pendock or Aqueduct
- Road or Railroad Bridge
- Footbridge
- 87°07'45", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 3975000 N — 1000-meter Universal Transverse Mercator grid values, zone 4
- 600000 FT — 5000-foot grid values: Hawaii State Plane coordinate system, zone 3 (FIPSZONE 5103), Transverse Mercator projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
November 20, 2000

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
September 30, 2004 - January 19, 2011: to change Base Flood Elevations, to add and change Special Flood Hazard Areas, to incorporate coastal hurricane storm surge and wave height analysis, and to incorporate previously issued Letters of Map Revision.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0362G

FIRM

FLOOD INSURANCE RATE MAP

CITY AND COUNTY OF HONOLULU, HAWAII

PANEL 362 OF 395

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS

COMMUNITY	NUMBER	PANEL	SUFFIX
HONOLULU (CITY AND COUNTY OF)	150001	0362	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
15003C0362G

MAP REVISED
JANUARY 19, 2011

Federal Emergency Management Agency

APPENDIX

Board of Water Supply: Water Capacity Pre-Approval Letter

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843
www.boardofwatersupply.com

April 27, 2021

Mr. Victor Valdez
SSFM International Inc.
501 Sumner Street, #620
Honolulu, Hawaii 96817

Dear Mr. Valdez:

Subject: Your Email Dated April 8, 2021 Requesting Water Availability on the Proposed Queen Liliuokalani Trust Improvement of the Former Honolulu Club Building, located at the Intersection of King Street and Ward Avenue, Tax Map Key: 2-1-044: 005

Thank you for your email regarding the proposed renovation project.

The existing water system is adequate to accommodate the proposed renovation and improvements. However, please be advised that this information is based upon current data, and therefore, the Board of Water Supply (BWS) reserves the right to change any position or information stated herein up until the final approval of the building permit application. The final decision on the availability of water will be confirmed when the building permit application is submitted for approval.

When water is made available, the applicant will be required to pay our Water System Facilities Charges for resource development, transmission and daily storage.

Water conservation measures are required for all proposed developments. These measures include utilization of nonpotable water for irrigation using rain catchment, drought tolerant plants, xeriscape landscaping, efficient irrigation systems, such as a drip system and moisture sensors, and the use of Water Sense labeled ultra-low flow water fixtures and toilets.

The proposed project is subject to BWS Supply Cross-Connection Control and Backflow Prevention requirements prior to the issuance of the Building Permit Applications.

The on-site fire protection requirements should be coordinated with the Fire Prevention Bureau of the Honolulu Fire Department.

If you have any questions, please contact Robert Chun, Project Review Branch of our Water Resources Division at 748-5443.

Very truly yours,

ERNEST Y. W. LAU, P.E.
Manager and Chief Engineer

City and County of Honolulu Department of Planning and Permitting:
Sewer Connection Application

DEPARTMENT OF PLANNING AND PERMITTING

CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET * HONOLULU, HAWAII 96813
Phone: (808) 768-8209 * Fax: (808) 768-4210

SSFM INTERNATIONAL, INC.
RECEIVED
APR 12 2022
VDV
FILE COPY

SEWER CONNECTION APPLICATIO

APPLICATION NO.: **2022/SCA-0513** STATUS: **Approved**

DATE RECEIVED: **04/07/2022** IWDP APP. NO.:

PROJECT NAME: **2022/SCA-0513 The Liliuokalani Innovative Center - Renovations and Improvements**

LOCATION:

Zone	Section	Plat	Parcel
2	1	044	005

930 WARD AVE Honolulu / Downtown 96814 **32,725** Sq. Ft.

SPECIFIC LOCATION: **930 WARD AVENUE**

APPLICANT: **Victor Valdez**
501 Sumner Street Suite 620
Honolulu, HI 96817

DEVELOPMENT TYPE: **Schools (other)** SEWER CONNECTION WORK DESIRED: **Existing**

OTHER USES: **330 students**

NON-RESIDENTIAL AREA: s.f. APPROXIMATE DATE OF CONNECTION:

PROPOSED UNITS	EXISTING UNITS	UNITS TO BE DEMOLISHED
No. of New Units: **0**	No. of Existing Units: **0**	No. of Units to be Demolished: **0**
Studios:	Studios:	Studios:
1-Bedroom:	1-Bedroom:	1-Bedroom:
2-Bedroom:	2-Bedroom:	2-Bedroom:
3-Bedroom:	3-Bedroom:	3-Bedroom:
4-Bedroom:	4-Bedroom:	4-Bedroom:
5-Bedroom:	5-Bedroom:	5-Bedroom:
6-Bedroom:	6-Bedroom:	6-Bedroom:

REMARKS

APPROVAL DATE: **04/07/2022**

EXPIRATION DATE: **04/06/2024**

Valid 2-years after approval date. Construction plans shall be completed and approved within this 2-year period. Construction shall commence within 1-year after approval of plans.
** Applicable WSFC shall be collected at the prevailing rate in accordance with ROH 1990, Chapter 14, Sections 14-10.3, 14-10.4, 14-10.5 and Appendix 14-D.*

REVIEWED BY: ***Jing Meng***

Site Development Division, Wastewater Branch

ExternalID: **101009227-001** JobId: **101009227**

Honolulu Fire Department: Access Road Correspondence

Robyn Ito

From: Zapata, Ricardo A <rzapata@honolulu.gov>
Sent: Friday, February 25, 2022 12:56 PM
To: Robyn Ito
Subject: RE: Liliuokalani Trust at 930 Ward Ave.

Categories: Filed by Newforma

OK. Well, all the fire access and water supply distances look good. Just a reminder that if any portion of the sprinkler system is out of service for than 4 hours then a bona fide fire watch would be required.
Mahalo

From: Robyn Ito [mailto:rito@ssfm.com]
Sent: Friday, February 25, 2022 8:38 AM
To: Zapata, Ricardo A <rzapata@honolulu.gov>
Subject: RE: Liliuokalani Trust at 930 Ward Ave.

Hi Ricardo – yes, that's correct, it's the old Honolulu Club Building. The sprinkler system is being retrofitted/renovated for the new use and spaces of the building, but it will still be sprinklered.

Thanks,
Robyn

From: Zapata, Ricardo A <rzapata@honolulu.gov>
Sent: Friday, February 25, 2022 12:31 PM
To: Robyn Ito <rito@ssfm.com>
Subject: RE: Liliuokalani Trust at 930 Ward Ave.

Robin,
Looks like we're talking about the Honolulu Club Building. So, will the sprinkler system remain fully operational?
Ricardo

From: Robyn Ito [mailto:rito@ssfm.com]
Sent: Friday, February 25, 2022 8:18 AM
To: Zapata, Ricardo A <rzapata@honolulu.gov>
Subject: Liliuokalani Trust at 930 Ward Ave.

Hi Ricardo,

I got your information on someone who can assist with giving feedback on fire truck access. Attached is a figure of the civil site with dimensions. The building walls and shell are remaining and renovations are mostly interior and landscaping. The building will be sprinklered. Could you take a look at the figure and let me know if you see any issues with your operations?

Thanks for your time!
Robyn

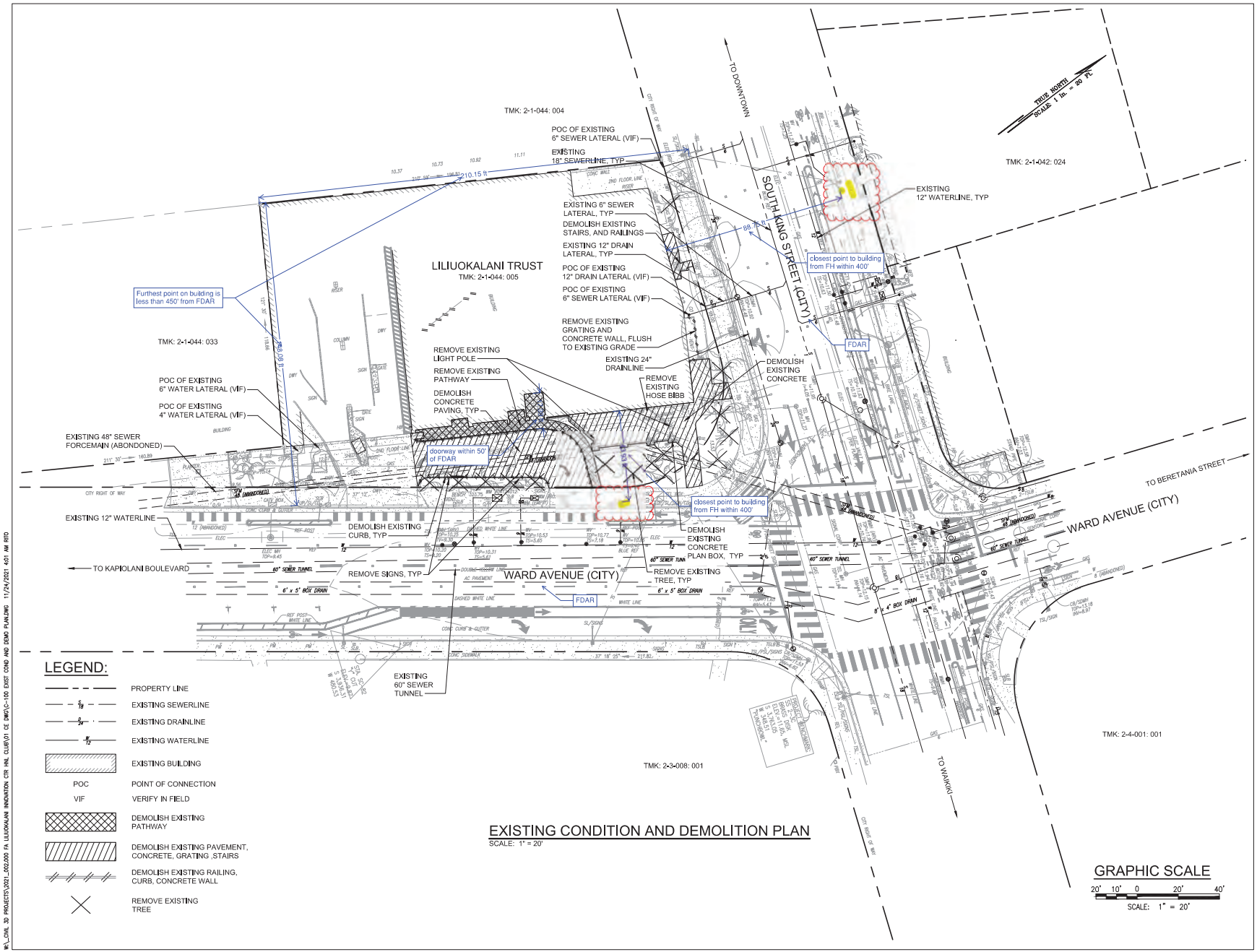
Robyn Ito, P.E., PMP | Senior Project Engineer

SSFM International
PROGRESSIVE - INTEGRITY - NURTURING - CLIENT FOCUSED

Innovate | Adapt | Sustain

99 Aupuni Street, Suite 202 | Hilo, Hawaii 96720
T 808.933.2727 | D 808.356.1276 | F 855.329.7736
rito@ssfm.com | www.ssfm.com

SSFM Receives Three APA, Hawai'i Chapter Awards



EXISTING CONDITION AND DEMOLITION PLAN

SCALE: 1" = 20'

GRAPHIC SCALE

20' 10' 0 20' 40'

SCALE: 1" = 20'

W:_CIVIL 3D PROJECTS\2021_DD\2000 IA LILIUOKALANI INNOVATION CTR HNL CLUB\01 CE DWG\C-100 EXIST COND AND DEMO PLAN.DWG 11/24/2021 4:01 AM RITO

LILI'UOKALANI CENTER

Lili'uokalani Trust

S Beretania St, Honolulu, HI

FLANSBURGH

77 NORTH WASHINGTON STREET
BOSTON, MA 02114-1910
FLANSBURGH.COM

Consultants

SSFM International
Civil/Structural Engineers
501 Sumner Street, Suite 620
Honolulu, HI 96817

Ki Concepts
Landscape Architects
677 Ala Moana Blvd. Suite 905
Honolulu, HI 96813

Buro Happold
MEP & Fire Protection Engineers
1 S. Dearborn, 20th Fl
Chicago, IL 60603

P&PFC, Inc.
Theatrical Consultant
121 Gates Avenue
Brooklyn, NY 11238

CENSEO AV+Acoustics
Acoustician/Audio Visual
155-C Hamakua Dr
Kailua, HI 96734

Matsumoto & Associates
Food Service
50 Hauoli St. #108
Wailuku, HI 96793

Future Communications Consulting
Technology & Data/Communication
95 1109 Aholea Street
Mililani, HI 96789

No.	Date	Note
		REVISIONS

No.	Date	Note
		ISSUE

Stamp

Construction Documents

DD PROGRESS SET

Key Plan

Sheet Title

Existing Condition and Demolition Plan

Drawn By: EL	Project ID: 1810.00
Reviewed By: VV	Scale: 1" = 20'-0"
Issue Date: 04.17.20	Plot Date: 11.24.21
Sheet No.	C-100

Hawaiian Electric Company (HECo): Electrical Service Request Form

Robyn Ito

From: Shimono, Eric <eric.shimono@hawaiianelectric.com>
Sent: Monday, January 3, 2022 9:23 PM
To: Giovana Zavaglia
Subject: FW: Electrical Service Request - Lili'uokalani Center

Follow Up Flag: Follow up
Flag Status: Flagged

****External Email. This email originated from outside Buro Happold.****

Hi Giovana,

Based on the data you sent, we have determined a load demand of approximately 1000 kva. Therefore, the existing 750 kva transformer would need to be changed to a larger unit.

Thanks

Eric

From: Shimono, Eric
Sent: Monday, January 03, 2022 7:58 AM
To: 'Giovana Zavaglia' <Giovana.Zavaglia@BuroHappold.com>
Subject: RE: Electrical Service Request - Lili'uokalani Center

Hi Giovana,

Happy New Year!
I should have it done by end of this week or earlier.

Thanks

Eric

From: Giovana Zavaglia <Giovana.Zavaglia@BuroHappold.com>
Sent: Monday, January 03, 2022 3:58 AM
To: Shimono, Eric <eric.shimono@hawaiianelectric.com>
Subject: RE: Electrical Service Request - Lili'uokalani Center

[This email is coming from an EXTERNAL source. Please use caution when opening attachments or links in suspicious email.]

Hi Eric - Happy New Year!
I wanted to check in to see if you have an estimate date that we can have the HECo calculations.
Please let me know if there's anything else you need from us.
Thanks,

Giovana Zavaglia, E.I.T.
Electrical Engineer
Buro Happold | Chicago Building Services
M: +1 (224) 283-9616
E: giovana.zavaglia@burohappold.com
Pronouns: she/her/hers
www.burohappold.com | LinkedIn | Twitter | Instagram

From: Giovana Zavaglia
Sent: Friday, December 17, 2021 2:23 PM
To: 'Shimono, Eric' <eric.shimono@hawaiianelectric.com>
Subject: RE: Electrical Service Request - Lili'uokalani Center

Hi Eric,
Just wanted to follow up and see if you were able to review the information that I sent on Tuesday.
Let me know if there's anything else I can do to help.
Thanks,

Giovana Zavaglia, E.I.T.
Electrical Engineer
Buro Happold | Chicago Building Services
M: +1 (224) 283-9616
E: giovana.zavaglia@burohappold.com
Pronouns: she/her/hers
www.burohappold.com | LinkedIn | Twitter | Instagram

BURO HAPPOLD

From: Giovana Zavaglia
Sent: Tuesday, December 14, 2021 1:38 PM
To: Shimono, Eric <eric.shimono@hawaiianelectric.com>
Cc: Kaye Palomo <Kaye.Palomo@BuroHappold.com>; Jeff Glaspie <Jeff.Glaspie@BuroHappold.com>; Adam Whitt <Adam.Whitt@BuroHappold.com>; Joe Marshall <jmarshall@flansburgh.com>
Subject: FW: Electrical Service Request - Lili'uokalani Center
Importance: High

Eric,
Thanks again for jumping on that call with us.
Per our conversation, I'm attaching the Lili'uokalani Center Load Letter Packet. On page #3 you'll find the electrical load estimate with a breakdown of each area's square footage, the total connected load per space per category and the diversified load per NEC demand factors.
Please let me know if this is sufficient for HECO to produce calculations regarding the existing service or if you need any additional information. The packet also includes a series of questions, preliminary one line diagram, switchboard elevation and the site plan showing the location of the existing service.
Thanks so much for your help and feel free to reach out if you have any issues.

Giovana Zavaglia, E.I.T.
Electrical Engineer
Buro Happold | Chicago Building Services
M: +1 (224) 283-9616
E: giovana.zavaglia@burohappold.com
Pronouns: she/her/hers
www.burohappold.com | LinkedIn | Twitter | Instagram

BURO HAPPOLD

From: Giovana Zavaglia
Sent: Monday, November 15, 2021 8:57 AM
To: engineeringhawaiiisland@hawaiianelectric.com
Cc: Joe Marshall <jmarshall@flansburgh.com>; Adam Whitt <Adam.Whitt@BuroHappold.com>; Tri Tran <Tri.Tran@BuroHappold.com>; Kaye Palomo <Kaye.Palomo@BuroHappold.com>
Subject: Electrical Service Request - Lili'uokalani Center

To whom it may concern,
We have been appointed as consulting engineers for the Lil'uokalani Center project, to be located at 925 Ward Ave., Honolulu, HI 96814.
We're planning on reusing the existing 750kW utility transformer located on site, but we would like feedback from your team to make sure the transformer can handle the new load to be installed.
I just finished submitting the online Electrical Service Request, therefore I wanted to submit the supporting documents for this request. Attached you'll find (2) PDFs:

- Electrical Service Request Form
- Lili'uokalani Center Load Letter Packet:
    - Electrical Load Letter
    - Electrical Load Estimation
    - One line diagram
    - Switchboard elevation showing meter
    - Site plan showing existing transformer and underground service

Please let me know if there's anything else you need from us in order to have these questions resolved.
Thank you,

Giovana Zavaglia, E.I.T.
Electrical Engineer
Buro Happold | Chicago Building Services
M: +1 (224) 283-9616
E: giovana.zavaglia@burohappold.com
Pronouns: she/her/hers
www.burohappold.com | LinkedIn | Twitter | Instagram

BURO HAPPOLD

Hawaiian Electric

Date : 3/1/2022

Please review these requirements before submitting your request:

- Form submission requirements (PDF)

I. PROJECT MANAGER:

(Party who will manage this project and provide information, updates, and/or is the point of contact for this project)

(*) Required Fields

A. Company Name: (Indicate Company Name if you are a consultant, contractor, electrician, or architect.)

Buro Happold

B. Requestor Name:

*First Name: Giovana *Last Name: Zavaglia

*Street #: 1 *Street Name: S Dearborn St. Unit / Apt. #: 21

*City: Chicago *State: Illinois *Zip Code: 60603

C. Contact Information:

*Phone (224) 283 9616 ext. * ○ Home ◉ Work ○ Cell ○ Other

Alt Phone ( ) ext. ○ Home ○ Work ○ Cell ○ Other

*Email: giovana.zavaglia@burohappold.com

D. Requestor Is: (Select one)*

○ Owner ◉ Consultant / Licensed Contractor ○ Architect

○ Tenant ○ Licensed Electrician ○ Authorized Agent

○ Other

II. PROJECT INFORMATION:

*A. Project Name: (Project name should be Last Name, First Name or Company Name.)

Lili'uokalani Center

B. Project Address / Location:

*Select Your Island Region: Hawaii Island

*Street #: 930 *Street Name: Ward Ave Unit / Apt. #:

*City Honolulu *State Hawaii *Zip Code 96814

Gate Code

C. Building Permit #: (Additional costs may apply for service requests without permits)

Building Permit #

Select an option:

- ◯ Ready for Hawaiian Electric to inspect
- ◯ Will call when ready for Hawaiian Electric to inspect

D. Property Information:

*Tax Map Key Number 1-2-1-044-005 (e.g. 1-1-1-333-333)

Lot #

E. Owner Name:

Are you an existing customer?*

◯ Yes ◉ No Last 4 SSN or FEIN

Account # (e.g. 44444444333)

*First Name Liliuokalani *Last Name Trust

*Meter # 0 (e.g. PX999999999) (use 0 if no existing Meter #)

Phone ( ) ext. ◯ Home ◯ Work ◯ Cell ◯ Other

Email

F. Consultant / Licensed Contractor: (First, Middle Initial, Last)

Licensed Electrician Licensed Electrician Phone ( ) ext.

Architect

Other

G. Type of Request: (Select one)*

◯ New Service (Select one)*

- ◯ Temporary Service (select service equipment, if applicable)
- ◯ Permanent Service
- ◯ Permanent Service - Swing Over
  - ◯ Service Equipment at the house (Hawaii Island only)
  - ◯ Service Equipment at the meter pole/pedestal (Hawaii Island only)

◉ Existing Service (Select one)

* (●) Service Upgrade ( ) Repair/Replace ( ) Removal of Service
( ) PV Upgrade ( ) Relocate
Customer Interconnection Tool ID#: ( ) To new, permanent location ( ) To temporary pole

( ) Other Services (Select one)

* ( ) Master Planning/Project Requirements ( ) Subdivision (Site Work Only) ( ) Line Extension ( ) Infrastructure
( ) Automates (Oahu only) ( ) Street Lights ( ) Electric Vehicle (EV) ( ) Feed in Tariff (FIT)
( ) Other

H. Type of Project: (Select one)*

( ) Single Family
( ) Multi-Family (Select one)
- ( ) Duplex
- ( ) Low Rise Walkup
- ( ) Mid Rise (< 15 Floors)
- ( ) Mid Rise (> 15 Floors)
- ( ) Townhouse

(●) Commercial (Non-Residential) (Service Includes but not limited to: Government, Street Lights, General Service, Barn, Storage, Hotels, Health Care, Education, Agricultural Pumping, Manufacturing, Food Processing, Restaurant, Retail-Food, Retail-Non-Food, Wholesale, Communications, Cold Storage, Amusement)

I. Type of Service: (Complete A-C)

* A.	( ) Overhead	(●) Underground			
B.	( ) 100 amps	( ) 200 amps	(●) CT	( ) 400 amps (residential only)	
C.	All Electric?	(●) Yes	( ) No		

J. Voltage: (Complete A-C. Complete D if applicable)

A.	( ) Single Phase	(●) 3-Phase			
B.	( ) 2 Wire	( ) 3 Wire	(●) 4 Wire		
C.	( ) Secondary (V)	( ) 120	( ) 240	( ) 120/208	
		( ) 120/240	(●) 277/480		
D.	(●) Primary (kV)	( ) 2.4	( ) 2.4/4.16	( ) 4.16	( ) 6.6/11.5
		( ) 7.2	( ) 7.2/12.47	( ) 11.5	( ) 12.47
		( ) 24.94	( ) 44	( ) 132	

III. ALTERNATE POWER:

A. Indicate if other / future source of power will be utilized or is being considered:

Have you considered non-wire alternatives for your project such as EV charging, rooftop solar, battery storage, energy efficiency, demand response/grid services or Community-Based Renewable Energy (shared solar)? (●) Yes ( ) No

IV. CONSULTANT REQUESTS ONLY: (Complete this section)

A. Load / Generation: (Provide load or generation information.)

Description **Total**

Total Connected (KVA) 1648

Total Demand (KVA) 1735

Total Generation (KW) 500

Load will consist of: (select all applicable)

☑ Building ☑ Equipment ☐ Other

B. Building: (Provide square footage.)

Description	Total
Total Square Footage (Sq Ft)	171257
Square Footage w/ AC (Sq Ft)	171257

C. Equipment:

List equipment type & rating (e.g., lighting, AC, refrigeration, heating (water or space), cooking, elevators, pumps, pool, etc.; Attach separate sheet for additional equipment.)

Equipment Type	Rating (HP/KW)	#Units	Total Load (rating x #units)
Lighting	117	1	117
Receptacle	128	1	128
Mechanical/Equipment	1403	1	1403

D. Services Need by Date:

Need by Date(mm/dd/yyyy)

06/01/2023

V. BILLING INFORMATION: **Energy Usage** (Party responsible for energy usage after meter is installed)

A. Name to Appear on Bill:

First Name Last Name

Name of business Lili'uokalani Trust

Are you an existing customer?

◉ Yes ○ No

Account # 2010-1727-0582/2010-1727-0525 (e.g. 4444-4444-333)

B. Billing Contact Information:

Phone (808) 203 6150 ext. ○ Home ◉ Work ○ Cell ○ Other

Alt Phone ( ) ext. ○ Home ○ Work ○ Cell ○ Other

Email info@onipaa.org

C. Billing Address:

Street # 1100 Street Name Alakea St Unit / Apt. # 1100

City Honolulu State Hawaii Zip Code 96813

D. Responsible Party Is: (Select one)

- (●) Owner
- ( ) Consultant / Licensed Contractor
- ( ) Architect
- ( ) Tenant
- ( ) Licensed Electrician
- ( ) Authorized Agent
- ( ) Other

E. For New Residential Customers:

Occupation of party responsible for bill

Employer Years employed

Spouse's Name

F. For New Commercial Customers:

Type of business Number of years in business

Tax ID no.

Hawaii General Excise Tax No.

Business Type: (Select one)

- ( ) Individual
- ( ) Sole Proprietor
- ( ) Partnership
- ( ) Corporation
- ( ) Limited Liability Company
- ( ) Government Agency
- ( ) Other

VI. BILLING INFORMATION: **Construction Cost** (Party responsible for construction costs)

IF SAME ABOVE, CHECK HERE: ☑

A. Name to Appear on Bill:

First Name Last Name

Name of business

Are you an existing customer?

- ( ) Yes
- ( ) No

Account # (e.g. 4444-4444-333)

B. Billing Contact Information:

Phone ( ) ext. ( ) Home ( ) Work ( ) Cell ( ) Other

Alt Phone ( ) ext. ( ) Home ( ) Work ( ) Cell ( ) Other

Email

C. Billing Address:

Street # | Street Name | Unit / Apt. #

City | State (Please Select) | Zip Code

D. Responsible Party Is: (Select one)

- ○ Owner
- ○ Consultant / Licensed Contractor
- ○ Architect
- ○ Tenant
- ○ Licensed Electrician
- ○ Authorized Agent
- ○ Other

E. For New Residential Customers:

Occupation of party responsible for bill

Employer | Years employed

Spouse's Name

F. For New Commercial Customers:

Type of business | Number of years in business

Federal Tax ID no.

Hawaii General Excise Tax No.

Business Type: (Select one)

- ○ Individual
- ○ Sole Proprietor
- ○ Partnership
- ○ Corporation
- ○ Limited Liability Company
- ○ Government Agency
- ○ Other

VII. SUBMITTALS: (Items that are being submitted to Hawaiian Electric Company)

A. Select All Items to be Submitted:

- ☑ Complete Service Request
- ☑ Meter Location & Elevation Drawing
- ☑ Site Plan
- ☐ Payment
- ☑ Electrical Single Line Diagram
- ☑ Other: Electrical Load Estimate

B. Type of Drawings:

- ☐ MicroStation V8 XM
- ☐ AutoCAD 2008
- ☑ PDF
- ☐ Other

C. Drawings will be Sent Via:

- ◉ Email Attachment
- ○ Courier
- ○ Other

Email:

Courier:

Attach a file.

Choose file 0048762 Hon…et_Rev2.pdf

Maximum file size is 20 MB.

Send drawings by courier as follows:

Oahu | Attn: Customer Relations
Hawaiian Electric Company, Inc.
820 Ward Avenue
Honolulu, Hawaii 96814

Hawaii Island | Attn: Customer Installations
Hawaiian Electric Company, Inc.
54 Halekauila Street
Hilo, Hawaii 96720

Maui County | Attn: Customer Installations
Hawaiian Electric Company, Inc.
210 W. Kamehameha Avenue
Kahului, Hawaii 96732

VIII. REMARKS: Please provide additional information that will help us complete your request.

Billing Acceptance and Acknowledgement

* ☑ I/we hereby authorize Hawaiian Electric to install the permanent service meter(s) and start a new billing agreement at the above-mentioned project location for the Customer of Record. Further, we affirm the following:

- This acknowledgement was made by someone who has the authority to make financial decisions for the Customer (owner, officer, board of director member, etc.)
- A deposit of the two highest consecutive bills (based on the projected load indicated in the project specifications) may be required if credit with Hawaiian Electric has not been established.
- The following is applicable if this Hawaiian Electric authorization form letter is utilized by the customer's/owner's contractor for the installation of the permanent meter(s); it is our understanding this authorization will be in effect until we notify your Customer Service Department to "lock" the meter(s). "We will notify the customer (developer or appropriate Federal, State and County Agency) regarding their furnishing your Company with similar acceptance of meter billing at the appropriate time."

SUBMIT RESET

BUROHAPPOLD ENGINEERING

October 15, 2021

By Email

Hawaiian Electric Company, Inc. 820
Ward Avenue
Honolulu, HI 96814

Electrical Load Letter – Lili'uokalani Center, 925 Ward Ave. Honolulu, HI 96814

Dear Sir/Madam:

We have been appointed as consulting engineers for the above project. The Lili'uokalani Center project is a 7-storey building and is planned for a complete renovation.

Please find attached the site plan of the project site, load calculations, single line diagram, and the preliminary switchgear elevation. It is anticipated that the existing service HECO transformer and HECO meter will remain, and a 2000A switchboard will replace the existing switchboard. Attached is the load calculations and a riser diagram of the new distribution.

Please confirm the existing service feeders and transformer are adequate for the proposed new loads or what upgrades will be required for the service. Future roof PV installation is being considered.

We are able to provide the following design information, which should be treated as provisional and subject to change.

Building type / use Educational classrooms and performing arts center
Total new floor area 171,257 ft^2

The supply required has been assessed as follows:

Item	Connected load (kW)	Anticipated max demand (kW)
Lighting	117	117
Small Power	128	69
Mechanical & Equipment Load	1403	2083
Totals	1648	2269

Buro Happold Engineering
1 S Dearborn Street, 20th
Floor Chicago, IL 60603
Telephone 312.541.9138

Based on an assumed power factor (PF) of 0.9 and an allowance for future development of 10%, the anticipated maximum demand (MD) becomes 1735 kW.

Could you please respond to the following queries / requests:

1. Are there any limitations in the existing network capacity that would restrict the use of your services for this project?
2. What would be the prospective short circuit fault level at the point of supply?
3. What type and rating of over-current protective device would you provide at the origin of the installation and at the point of supply?
4. What contribution to the cost, if any, will be levied to our client?
5. What notice would you require from our client to provide services to this site in the form proposed?

If you have any queries please do not hesitate to contact me at the address below.

We thank you in anticipation of an early reply to the aforementioned questions.

Best regards,
on behalf of Buro Happold Consulting Engineers

Giovana Zavaglia
Electrical Engineer
+1 (224) 283-9616
giovana.zavaglia@burohappold.com

Electrical Load Estimate

Version 6.00

Project Title: Honolulu Community Project Stage: SD

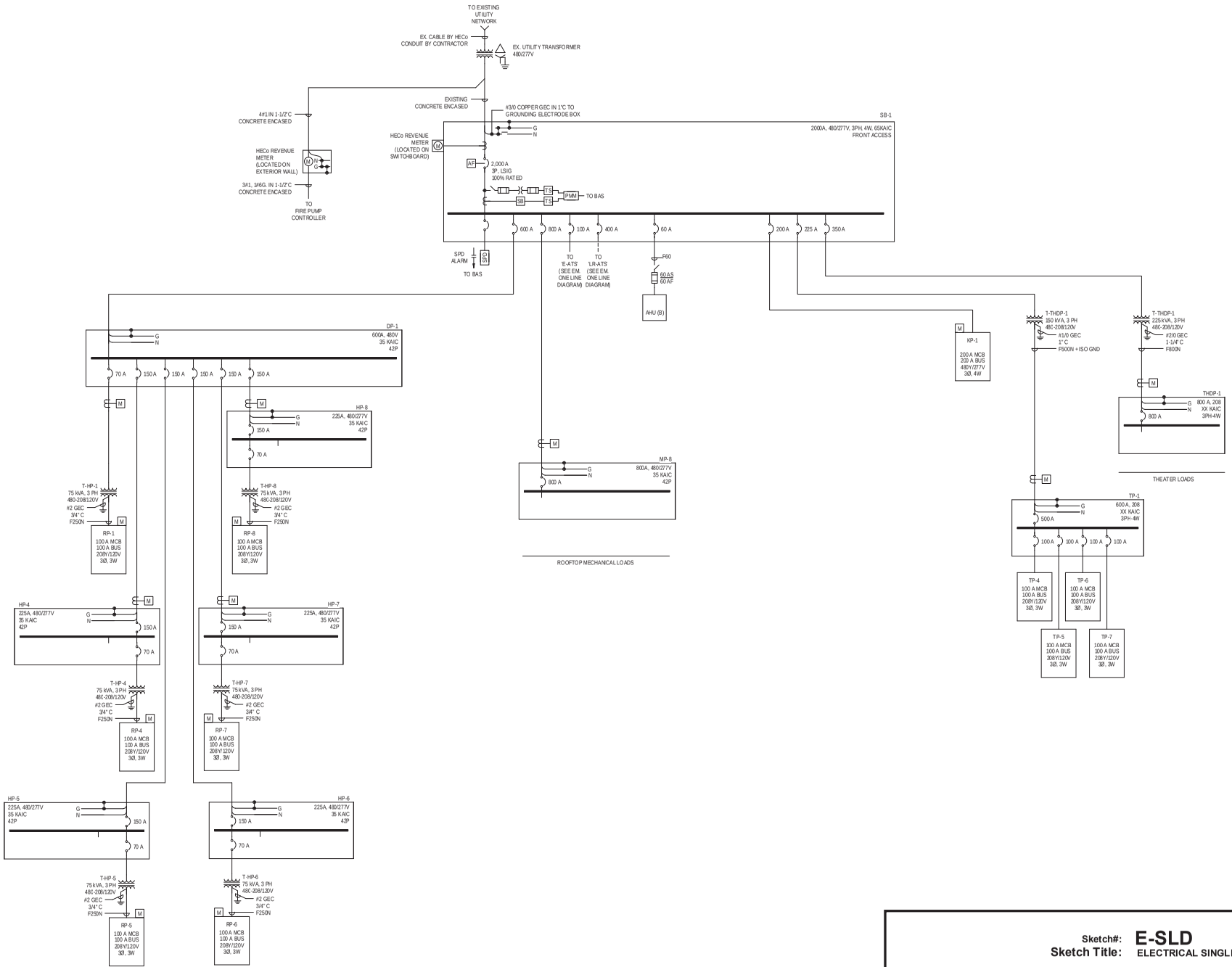
Project Number: 0048762

Service Voltage: 480 V

Project Square Footage		
	Complex	171257.2 sf
1	Office - Enclosed	3249 sf
2	Conf/Meeting / Multipurpose	6084 sf
3	Restrooms	3758.7 sf
4	Elevator Lobby	2025 sf
5	Office - Open	1789 sf
6	Lounge / Breakroom	7482 sf
7	Electrical/Mechanical Spaces	6072 sf
8	Stairwell	3477 sf
9	Corridor / Lobby	19377.52 sf
10	Storage	10418 sf
11	Examination / Treatment Room	231 sf
12	Exercise Area	10219 sf
13	Parking Garage	63827 sf
14	Food Prep (Kitchen)	1267 sf
15	Laundry	158 sf
16	Laboratory (Classroom)	1447 sf
17	Classroom / Lecture / Training	3736 sf
18	Workshop	1001 sf
19	Performing Arts Theater	3400 sf
20	Performing Arts Theater - Dressing Room	1204 sf
21	Recreation Room	21035 sf

	Units	V	DF	Total Connected Load		Diversified Load	
				kW	Amp	kW	Amp
Lighting - 2018 IECC							
Office - Enclosed	0.93 W/sf	H	1.00	3.0 kW	3.6 A	3.02 kW	3.6 A
Conf/Meeting / Multipurpose	1.07 W/sf	H	1.00	6.5 kW	7.8 A	6.51 kW	7.8 A
Restrooms	0.85 W/sf	H	1.00	3.2 kW	3.8 A	3.19 kW	3.8 A
Elevator Lobby	0.68 W/sf	H	1.00	1.4 kW	1.7 A	1.38 kW	1.7 A
Office - Open	0.81 W/sf	H	1.00	1.4 kW	1.7 A	1.45 kW	1.7 A
Lounge / Breakroom	0.62 W/sf	H	1.00	4.6 kW	5.6 A	4.64 kW	5.6 A
Electrical/Mechanical Spaces	0.43 W/sf	H	1.00	2.6 kW	3.1 A	2.61 kW	3.1 A
Stairwell	0.58 W/sf	H	1.00	2.0 kW	2.4 A	2.02 kW	2.4 A
Corridor / Lobby	0.92 W/sf	H	1.00	17.8 kW	21.4 A	17.83 kW	21.4 A
Storage	0.46 W/sf	H	1.00	4.8 kW	5.8 A	4.79 kW	5.8 A
Examination / Treatment Room	1.68 W/sf	H	1.00	0.4 kW	0.5 A	0.39 kW	0.5 A
Exercise Area	0.65 W/sf	H	1.00	6.6 kW	8.0 A	6.64 kW	8.0 A
Parking Garage	0.15 W/sf	H	1.00	9.6 kW	11.5 A	9.57 kW	11.5 A
Food Prep (Kitchen)	1.06 W/sf	H	1.00	1.3 kW	1.6 A	1.34 kW	1.6 A
Laundry	0.43 W/sf	H	1.00	0.1 kW	0.1 A	0.07 kW	0.1 A
Laboratory (Classroom)	1.2 W/sf	H	1.00	1.7 kW	2.1 A	1.74 kW	2.1 A
Classroom / Lecture / Training	0.96 W/sf	H	1.00	3.6 kW	4.3 A	3.59 kW	4.3 A
Workshop	1.14 W/sf	H	1.00	1.1 kW	1.4 A	1.14 kW	1.4 A
Performing Arts Theater	2.03 W/sf	H	1.00	6.9 kW	8.3 A	6.90 kW	8.3 A
Performing Arts Theater - Dressing Room	0.36 W/sf	H	1.00	0.4 kW	0.5 A	0.43 kW	0.5 A
Recreation Room	1.8 W/sf	H	1.00	37.9 kW	45.5 A	37.86 kW	45.5 A
Receptacle and Small Power							
Office - Enclosed	5 W/sf	L	0.54	16.2 kW	45.1 A	8.76 kW	24.3 A
Conf/Meeting / Multipurpose	3 W/sf	L	0.54	18.3 kW	50.7 A	9.84 kW	27.3 A
Restrooms	0.75 W/sf	L	0.54	2.8 kW	7.8 A	1.52 kW	4.2 A
Elevator Lobby	1 W/sf	L	0.54	2.0 kW	5.6 A	1.09 kW	3.0 A
Office - Open	4 W/sf	L	0.54	7.2 kW	19.9 A	3.86 kW	10.7 A
Lounge / Breakroom	1 W/sf	L	0.54	7.5 kW	20.8 A	4.03 kW	11.2 A
Electrical/Mechanical Spaces	0.5 W/sf	L	0.54	3.0 kW	8.4 A	1.64 kW	4.5 A
Stairwell	0.25 W/sf	L	0.54	0.9 kW	2.4 A	0.47 kW	1.3 A
Corridor / Lobby	0.25 W/sf	L	0.54	4.8 kW	13.4 A	2.61 kW	7.2 A
Storage	0.25 W/sf	L	0.54	2.6 kW	7.2 A	1.40 kW	3.9 A
Examination / Treatment Room	5 W/sf	L	0.54	1.2 kW	3.2 A	0.62 kW	1.7 A
Exercise Area	0.25 W/sf	L	0.54	2.6 kW	7.1 A	1.4 kW	3.8 A
Parking Garage	0.25 W/sf	L	0.54	16.0 kW	44.3 A	8.6 kW	23.9 A
Food Prep (Kitchen)	2 W/sf	L	0.54	2.5 kW	7.0 A	1.4 kW	3.8 A
Laundry	1 W/sf	L	0.54	0.2 kW	0.4 A	0.1 kW	0.2 A
Laboratory (Classroom)	4 W/sf	L	0.54	5.8 kW	16.1 A	3.1 kW	8.7 A
Classroom / Lecture / Training	4 W/sf	L	0.54	14.9 kW	41.5 A	8.1 kW	22.4 A
Workshop	3 W/sf	L	0.54	3.0 kW	8.3 A	1.6 kW	4.5 A
Performing Arts Theater	1 W/sf	L	0.54	3.4 kW	9.4 A	1.8 kW	5.1 A
Performing Arts Theater - Dressing Room	2 W/sf	L	0.54	2.4 kW	6.7 A	1.3 kW	3.6 A
Recreation Room	0.5 W/sf	L	0.54	10.5 kW	29.2 A	5.7 kW	15.7 A
Mechanical & Equipment Loads							
Mechanical Loads	5.00 W/sf	H	-	855.7 kW	1029.2 A	875.7 kW	1053.2 A
Equipment Loads	1.00 W/sf	L	-	359.2 kW	997.0 A	297.7 kW	826.3 A
Elevator Loads	1.10 W/sf	H	-	187.9 kW	226.0 A	169.1 kW	203.4 A

Spare Capacity	10%			
208/120V 3PH	618.3 kW	1716.3 A	457.0 kW	1268.6 A
	Est. Panel	2000.0 A		1600.0 A
480/277V 3PH	1276.7 kW	1535.7 A	1278.1 kW	1537.3 A
	Est. Panel	1600.0 A		1600.0 A
Grand Totals	1895.0 kW	2279.4 A	1735.1 kW	2087.0 A
	Est. Panel	2500.00 A		2500.00 A

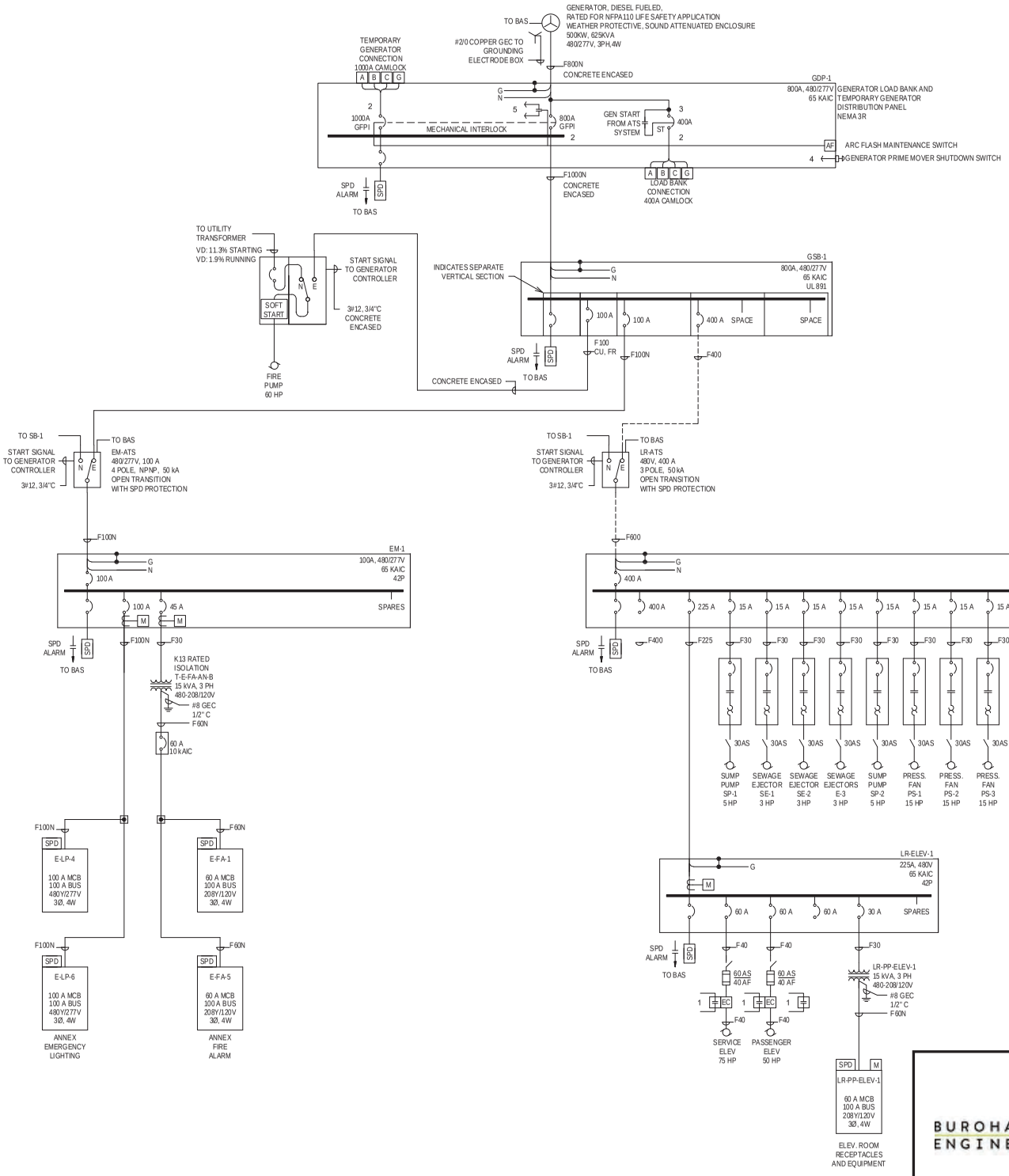


Sketch#: E-SLD
Sketch Title: ELECTRICAL SINGLE LINE DIAGRAM (NORMAL)

BUROHAPPOLD ENGINEERING

Author/Date: TT 10/15/2021
Rev Number: 0
Job Title: LILI'UOKALANI CENTER

Job Number: 0048762
Sheet Ref: N/A



BUROHAPPOLD ENGINEERING

Sketch#:	**E-SLD**
Sketch Title:	**ELECTRICAL SINGLE LINE DIAGRAM (EMERGENCY)**
Author/Date:	**TT 10/15/2021**
Rev Number:	**0**
Job Title:	**LILI'UOKALANI CENTER**
Job Number:	**0048762**
Sheet Ref:	**N/A**

REV	DESCRIPTION	BY	DATE								
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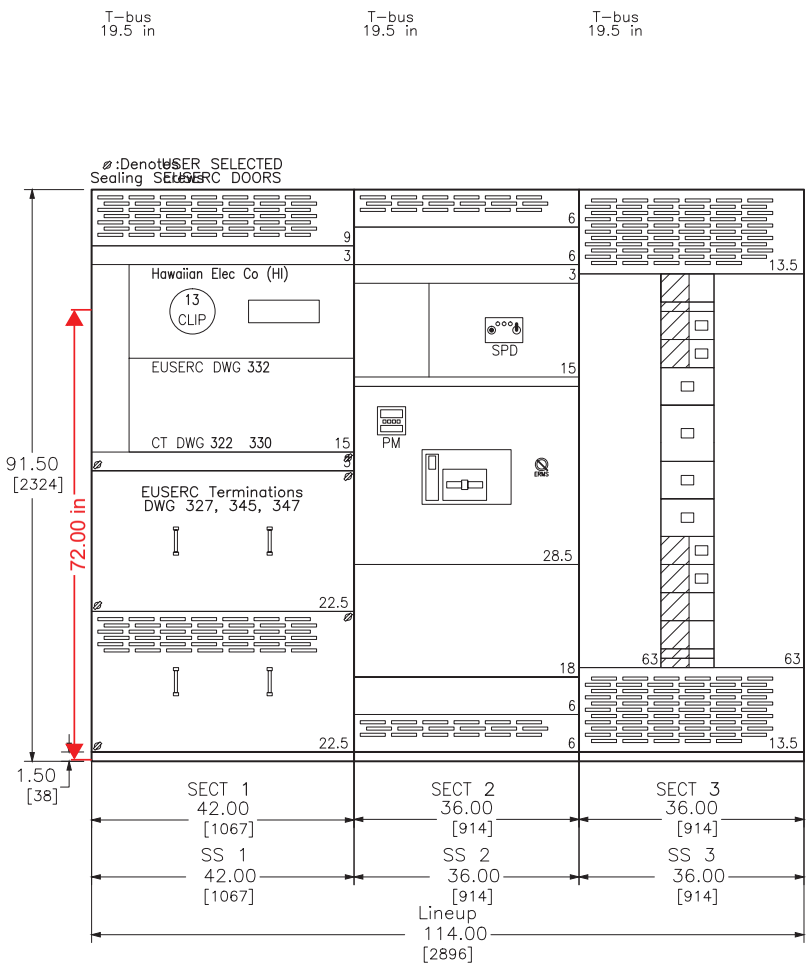
				–	----	--	--/--/--	–	----	--	--/--/--



SWITCHBOARD GENERAL NOTES

PRODUCT DESCRIPTION & RATINGS

Power System Data

480Y/277V 3Ph 4W 60Hz / 3 Phase Wye
Solidly Grounded
System Short Circuit Current Rating: 65kA RMS
Incoming Section 1 Cable Through the Bottom Left of Lineup

Bus System Data

2000A Silver Plated Copper Main Bus
(4) .25x1.50 IN/6x38 mm Cu Bus Bar Per Phase/Neutral
(1) .25x.875 IN/6x22 mm Cu Ground Bus

Enclosure Data

Type 1 Free Standing
Exterior Paint Color: ANSI 49
Front Accessibility Only Required
Handling: Rollers & Lifting Assemblies
Rodent barriers
Base channels cannot be removed from EUSERC switchboard line–ups
Utility sealing hardware installed for unmetered bus compartments

Estimated Shipping Weight

Shipping Split 1 890.00 lbs / 403.70 kgs
Shipping Split 2 680.00 lbs / 308.45 kgs
Shipping Split 3 920.00 lbs / 417.31 kgs
Complete Lineup 2490.00 lbs / 1129.46 kgs

Code Standards

U.L. Deadfront and suitable for use as Service Entrance
when not more than six (6) disconnecting means are provided.

Rating Nameplates

ST1– Deadfront – Section Bus 2000A
ST2– Service Entrance – Section Bus 2000A
ST3– Deadfront – Section Bus 2000A

PRODUCT INFORMATION

Wiring

All wiring to be Machine Tool Wire type

Instruction Bulletins

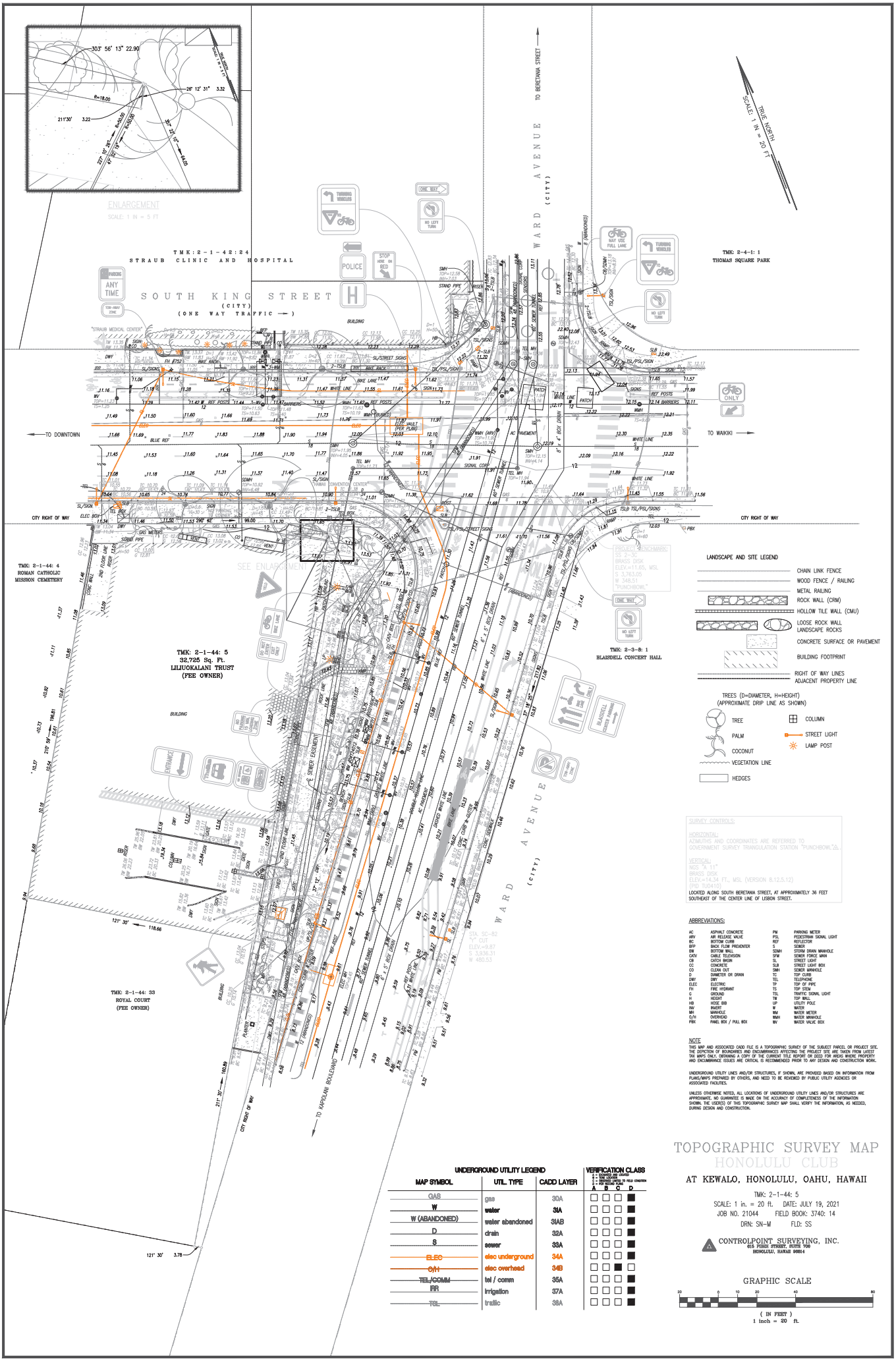
Reference 80043–055 For Handling, Installation,
Anchoring, Inspection And Maintenance Information

Product Accessories/Options

24V Trip Unit Display Power
Network Communications Only – Modbus RS485 to Ethernet Modbus TCP
Customer Ethernet Network – 10/100Mb Copper
Locally Mounted ERMS Switch

DUAL DIMENSIONS: INCHES
MILLIMETERS

JOB NAME:	LILI'UOKALANI CENTER	EQUIPMENT DESIGNATION:	SB–1
JOB LOCATION:		EQUIPMENT TYPE:	QED–2 Switchboard
DRAWN BY:	(Q2C)	DRAWING TYPE:	ELEVATION VIEW
ENGR:			SQUARE D
DATE:	October 12 2021		
DRAWING STATUS:	QUOTE **NOT FOR CONSTRUCTION**	DWG#	FQ–2850963–78926718–01
		PG	1 OF 2 REV –


ENLARGEMENT
SCALE: 1 IN = 5 FT
TRUE NORTH
SCALE: 1 IN = 20 FT
TMK: 2-1-42:24
STRAUB CLINIC AND HOSPITAL
SOUTH KING STREET
(CITY)
(ONE WAY TRAFFIC →)
TO DOWNTOWN
TO WAIKIKI
WARD AVENUE (CITY)
TO BERETANIA STREET
TMK: 2-4-1: 1
THOMAS SQUARE PARK
TMK: 2-1-44: 4
ROMAN CATHOLIC
MISSION CEMETERY
TMK: 2-1-44: 5
32,725 Sq. Ft.
LILIUOKALANI TRUST
(FEE OWNER)
TMK: 2-1-44: 33
ROYAL COURT
(FEE OWNER)
TMK: 2-3-8: 1
BLAISDELL CONCERT HALL
TO KAPIOLANI BOULEVARD
CITY RIGHT OF WAY
SEE ENLARGEMENT
PROJECT BENCHMARK:
SS 2-50
BRASS DISK
ELEV.=11.65, MSL
S 3,763.05
W 348.51
"PUNCHBOWL"
LANDSCAPE AND SITE LEGEND
CHAIN LINK FENCE
WOOD FENCE / RAILING
METAL RAILING
ROCK WALL (CRM)
HOLLOW TILE WALL (CMU)
LOOSE ROCK WALL
LANDSCAPE ROCKS
CONCRETE SURFACE OR PAVEMENT
BUILDING FOOTPRINT
RIGHT OF WAY LINES
ADJACENT PROPERTY LINE
TREES (D=DIAMETER, H=HEIGHT)
(APPROXIMATE DRIP LINE AS SHOWN)
TREE
PALM
COCONUT
VEGETATION LINE
HEDGES
COLUMN
STREET LIGHT
LAMP POST
SURVEY CONTROLS:
HORIZONTAL:
AZIMUTHS AND COORDINATES ARE REFERRED TO GOVERNMENT SURVEY TRIANGULATION STATION "PUNCHBOWL".
VERTICAL:
NGS "A 11"
BRASS DISK
ELEV.=14.34 FT., MSL (VERSION 8.12.5.12)
(PID TD0410)
LOCATED ALONG SOUTH BERETANIA STREET, AT APPROXIMATELY 36 FEET SOUTHEAST OF THE CENTER LINE OF LISBON STREET.
ABBREVIATIONS:
AC ASPHALT CONCRETE
ARV AIR RELEASE VALVE
BC BOTTOM CURB
BFP BACK FLOW PREVENTER
BW BOTTOM WALL
CATV CABLE TELEVISION
CB CATCH BASIN
CC CONCRETE
CO CLEAN OUT
D DIAMETER OR DRAIN
DWY DRIVEWAY
ELEC ELECTRIC
FH FIRE HYDRANT
G GROUND
H HEIGHT
HB HOSE BIB
INV INVERT
MH MANHOLE
O/H OVERHEAD
PBX PANEL BOX / PULL BOX
PM PARKING METER
PSL PEDESTRIAN SIGNAL LIGHT
REF REFLECTOR
S SEWER
SDMH STORM DRAIN MANHOLE
SFM SEWER FORCE MAIN
SL STREET LIGHT
SLB STREET LIGHT BOX
SMH SEWER MANHOLE
TC TOP CURB
TEL TELEPHONE
TP TOP OF PIPE
TS TOP SIDEWALK
TSL TRAFFIC SIGNAL LIGHT
TW TOP WALL
UP UTILITY POLE
W WATER
WM WATER METER
WMH WATER MANHOLE
WV WATER VALVE BOX
NOTE
THIS MAP AND ASSOCIATED CADD FILE IS A TOPOGRAPHIC SURVEY OF THE SUBJECT PARCEL OR PROJECT SITE. THE DEPICTION OF BOUNDARIES AND ENCUMBRANCES AFFECTING THE PROJECT SITE ARE TAKEN FROM LATEST TAX MAPS ONLY. OBTAINING A COPY OF THE CURRENT TITLE REPORT OR DEED FOR AREAS WHERE PROPERTY AND ENCUMBRANCE ISSUES ARE CRITICAL IS RECOMMENDED PRIOR TO ANY DESIGN AND CONSTRUCTION WORK.
UNDERGROUND UTILITY LINES AND/OR STRUCTURES, IF SHOWN, ARE PROVIDED BASED ON INFORMATION FROM PLANS/MAPS PREPARED BY OTHERS, AND NEED TO BE REVIEWED BY PUBLIC UTILITY AGENCIES OR ASSOCIATED FACILITIES.
UNLESS OTHERWISE NOTED, ALL LOCATIONS OF UNDERGROUND UTILITY LINES AND/OR STRUCTURES ARE APPROXIMATE. NO GUARANTEE IS MADE ON THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. THE USER(S) OF THIS TOPOGRAPHIC SURVEY MAP SHALL VERIFY THE INFORMATION, AS NEEDED, DURING DESIGN AND CONSTRUCTION.
UNDERGROUND UTILITY LEGEND
MAP SYMBOL | UTIL. TYPE | CADD LAYER | VERIFICATION CLASS A B C D
GAS | gas | 30A
W | water | 31A
W (ABANDONED) | water abandoned | 31AB
D | drain | 32A
S | sewer | 33A
ELEC | elec underground | 34A
O/H | elec overhead | 34B
TEL/COMM | tel / comm | 35A
IRR | irrigation | 37A
TGL | traffic | 38A
TOPOGRAPHIC SURVEY MAP
HONOLULU CLUB
AT KEWALO, HONOLULU, OAHU, HAWAII
TMK: 2-1-44: 5
SCALE: 1 in. = 20 ft. DATE: JULY 19, 2021
JOB NO. 21044 FIELD BOOK: 3740: 14
DRN: SN-M FLD: SS
CONTROLPOINT SURVEYING, INC.
815 PUAHOU STREET, SUITES 900
HONOLULU, HAWAII 96814
GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

24 X 36