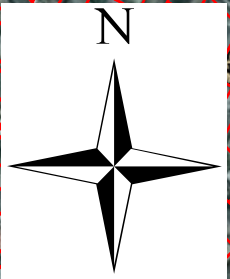
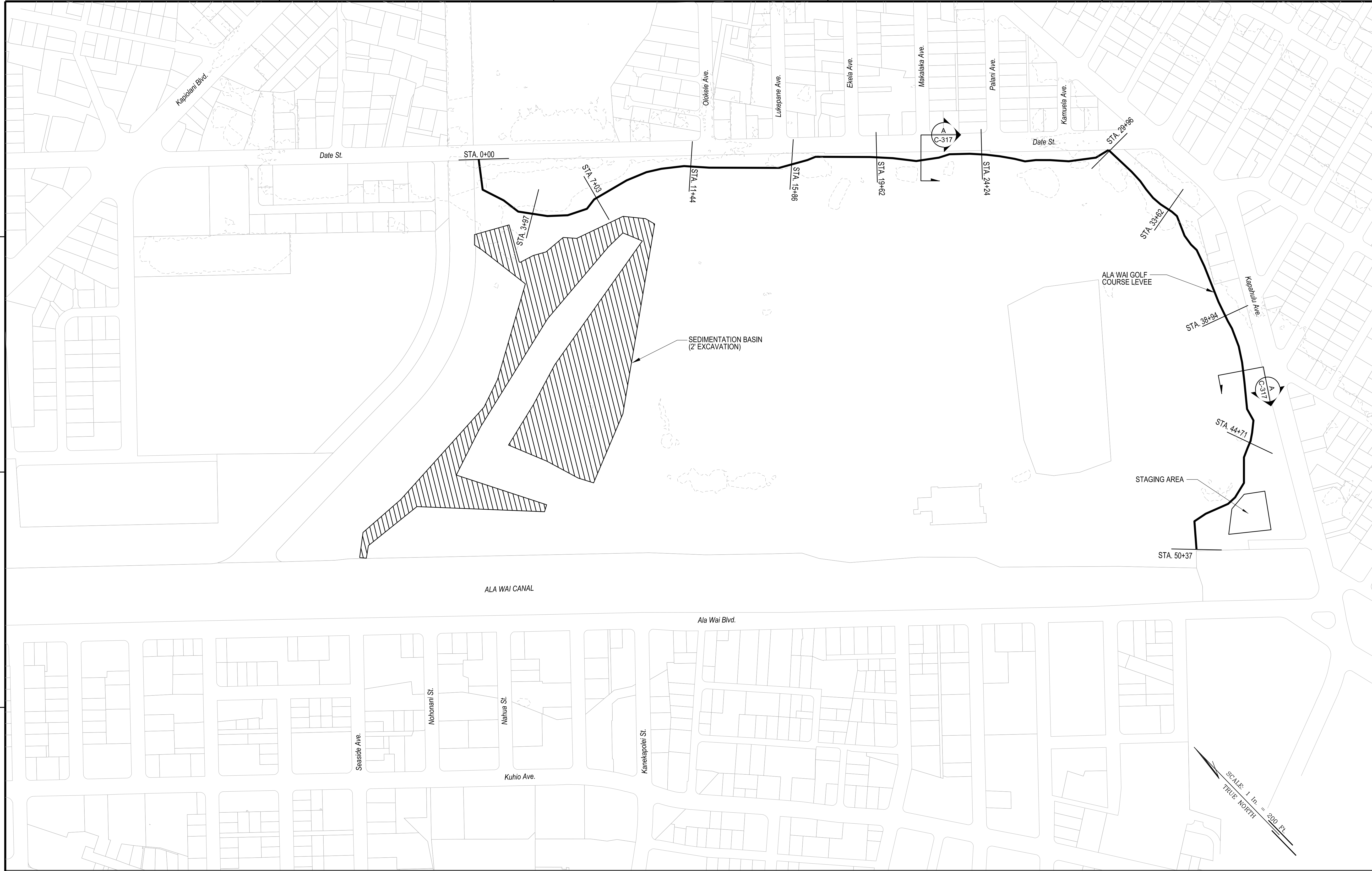


Brief Description of Measure
Earthen berm around entire outside perimeter of existing golf course property; passive drainage back into Canal



Ala Wai Golf Course Multi-purpose Detention

- Ala Wai Golf Course Levees (5,037 ft)
- Golf Course Sedimentation Basin (541,300 sq ft)
- Golf Course Cross Sections
- Ala Wai Golf Course Staging Area (25,730 sq ft)
- 2011 TMK (Parcels)



NOTES:

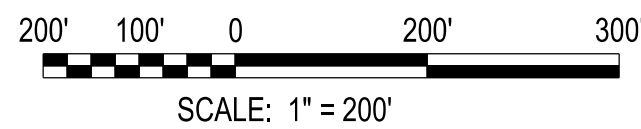
1. THE STAGING AREA WILL HAVE GEOTEXTILE AND 3" OF SURGE MATERIAL.




ALA WAI GOLF COURSE MULTI-PURPOSE DETENTION

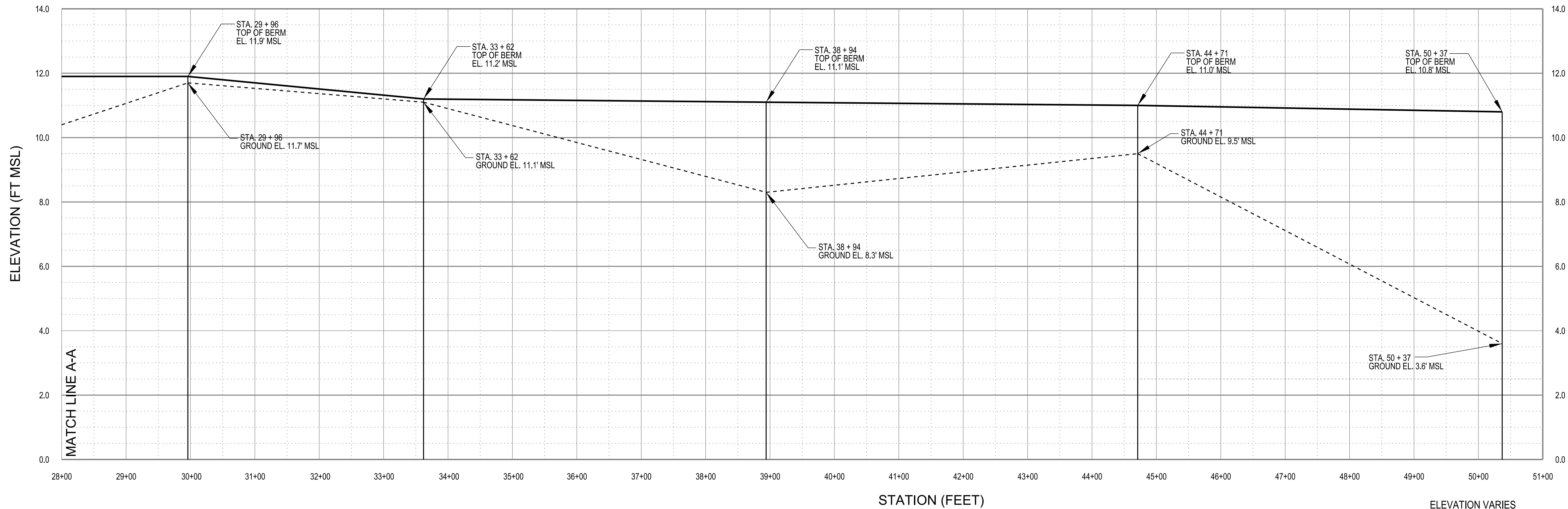
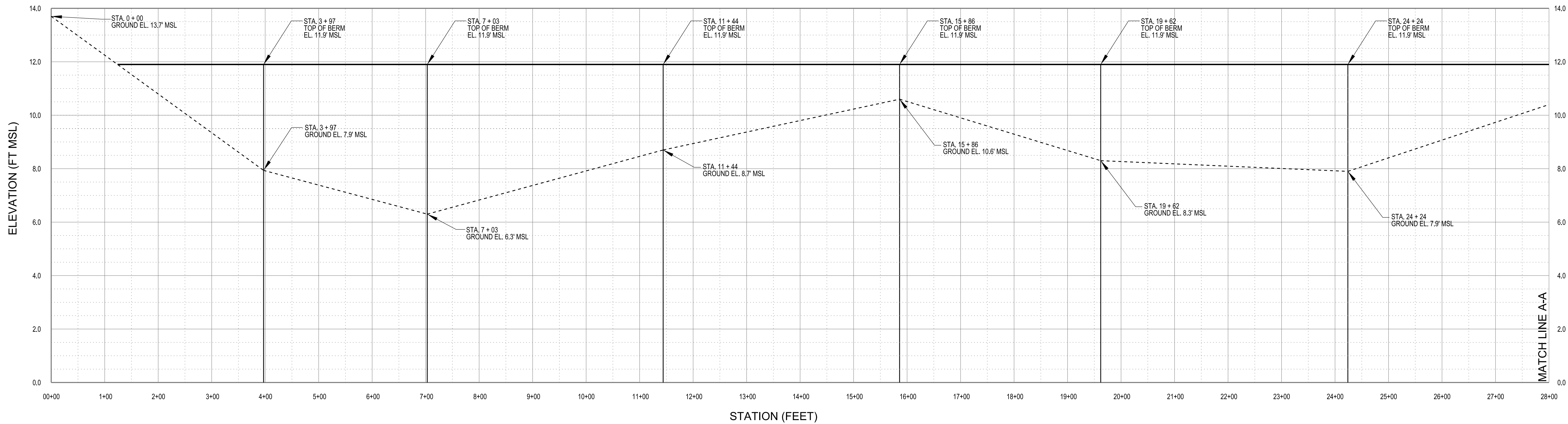
PLAN

SCALE: 1"=200'

SOLID LINE = 50' CONTOURS
DOTTED LINE = 10' CONTOURS

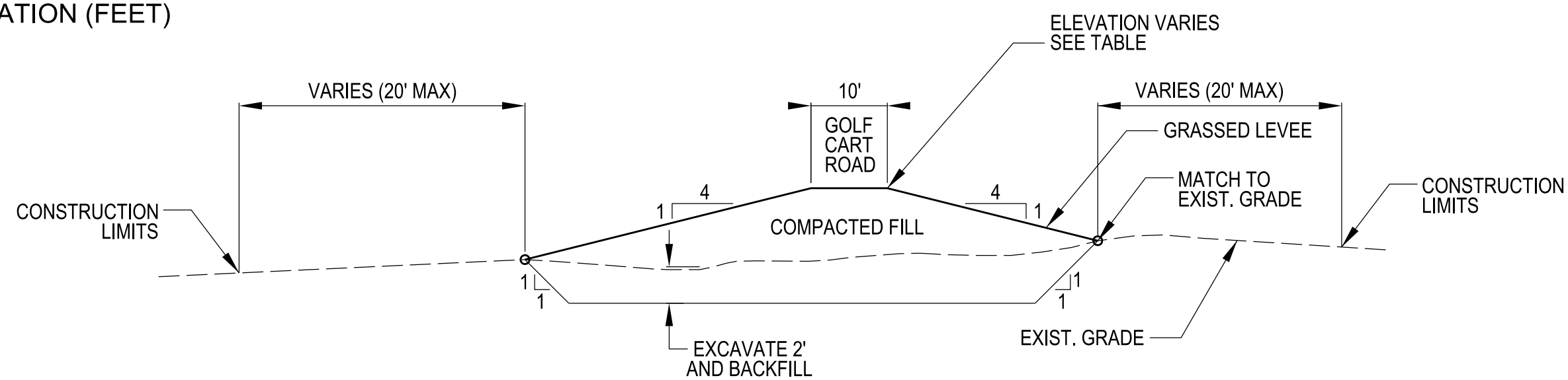


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SHEET IDENTIFICATION <div style="font-size: 2em; font-weight: bold; margin: 5px 0;">C-103</div> <div style="display: flex; justify-content: space-between; font-size: 0.8em;"> SHEET 5 OF 25 </div>		10% DESIGN		MARK		DATE		APPR. MARK		DESCRIPTION		DATE		APPR.		DESCRIPTION		DATE		APPR.		DESCRIPTION		DATE		APPR.		DESCRIPTION		DATE		APPR.		DESCRIPTION		DATE		APPR.		DESCRIPTION		DATE		APPR.		DESCRIPTION		DATE		APPR.		DESCRIPTION		DATE		APPR.		DESCRIPTION		DATE		APPR.		DESCRIPTION		DATE		APPR.		DESCRIPTION		DATE		APPR.		DESCRIPTION		DATE		APPR.		DESCRIPTION		DATE		APPR.		DESCRIPTION		DATE		APPR.		DESCRIPTION		DATE		APPR.		DESCRIPTION		DATE		APPR.		DESCRIPTION		DATE		APPR.		DESCRIPTION		DATE		APPR.		DESCRIPTION		DATE		APPR.		DESCRIPTION		DATE		APPR.		DESCRIPTION		DATE		APPR.		DESCRIPTION		DATE		APPR.		DESCRIPTION		DATE		APPR.		DESCRIPTION		DATE		APPR.		DESCRIPTION </	



ALA WAI GOLF COURSE BERM PROFILE

SCALE:
HORIZONTAL: 1" = 100'
VERTICAL: 1" = 2'



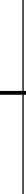
TYPICAL LEVEE SECTION

NOT TO SCALE

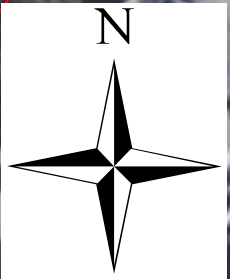
ALA WAI GOLF COURSE BERM STA 0 + 00 TO 50 + 37		
STATION	WALL HEIGHT (FT)	FINISHED WALL ELEVATION (FT MSL)
0 + 00	-	-
3 + 97	4.0	11.9
7 + 03	5.6	11.9
11 + 44	3.2	11.9
15 + 86	1.3	11.9
19 + 62	3.6	11.9
24 + 24	4.0	11.9
29 + 96	0.2	11.9
33 + 62	0.1	11.2
38 + 94	2.8	11.1
44 + 71	1.5	11.0
50 + 37	7.2	10.8

NOTES:

1. NEW GOLF CART ROAD IS 2' THICK AC PAVEMENT.

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ALA WAI WATERSHED PROJECT		PLOT SCALE: AS SHOWN PLOT DATE: 15/2014		FILE NAME: C-317 ALA WAI GOLF COURSE PROFILE & SECTION
ALA WAI GOLF COURSE BERMING PROFILE AND SECTION ALTERNATIVE 2		SIZE: ANS/D		DESCRIPTION DATE APPR. MARK

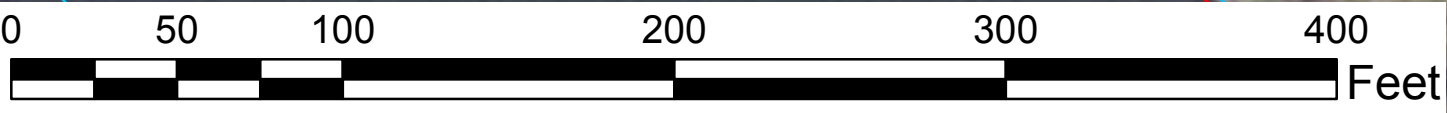
Brief Description of Measure
Need to determine how the water from the ditch gets into the golf course



Hausten Ditch Bridge

Hausten Ditch Detention

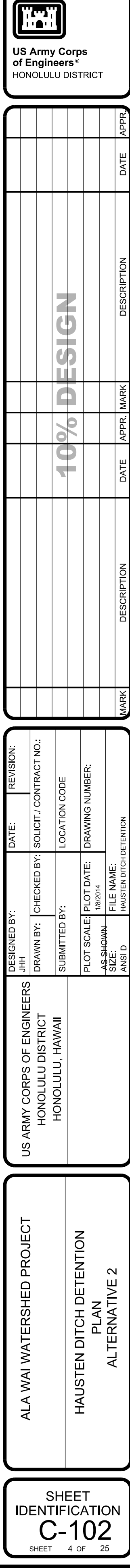
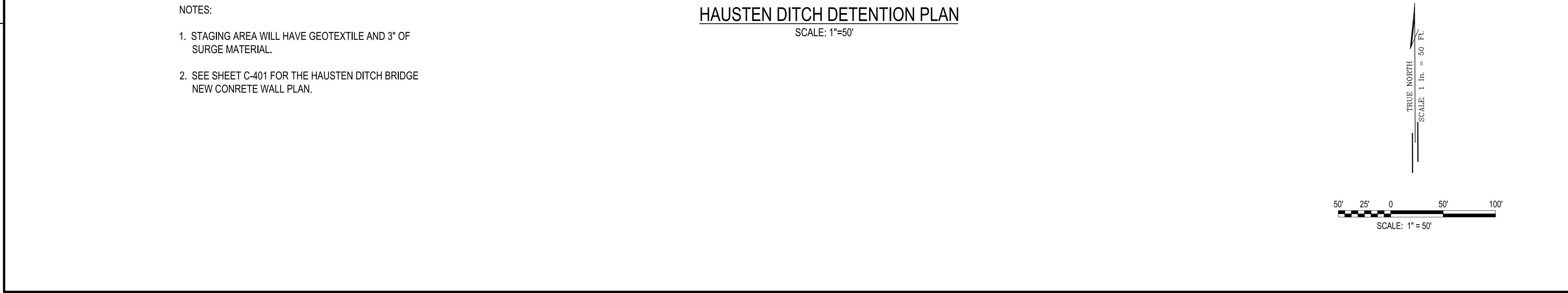
- Hausten Floodwalls (920 ft)
- Hausten Ditch Construction Limits
- Hausten Berm (705 ft)
- Hausten Staging Area (5,950 sq ft)
- 2011 TMK (Parcels)



ERS
-ICM

101.

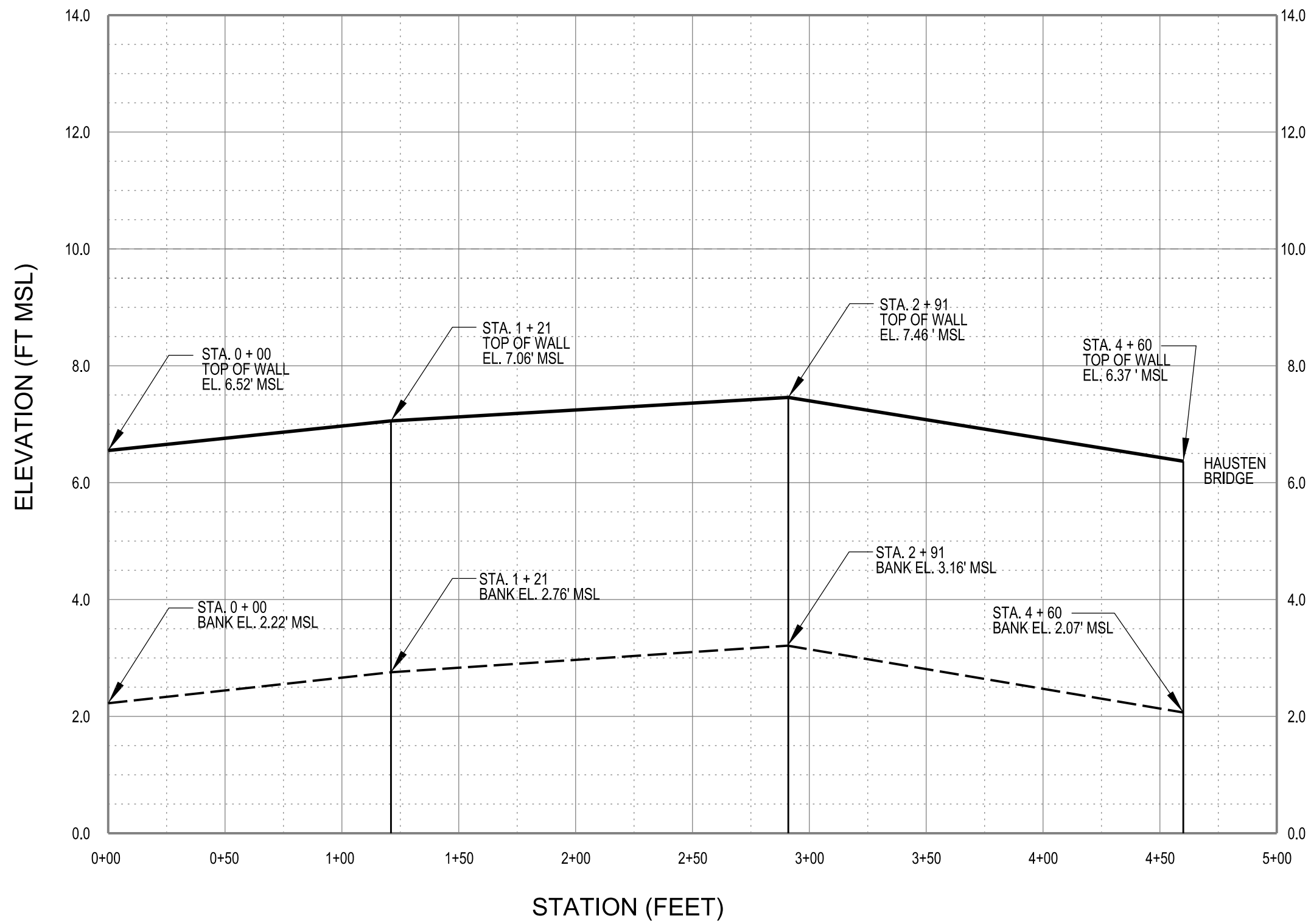
D



FILE: n:\w\DOH\AP07\TS.pol\ds.usace.army.mil\poh-ap07\tsDocuments\11 Other Locations\2 - Oahu\Civil Works\Ala Wai Canal\Ala Wai Flood Study\01-Drawings\Civil\Final\Alternative 2\C-316 HAUSTEN DITCH PROFILE & SECTIONS
PLOTDRIVER: \\poh-nelapp2\cad\misc\MSC-WORKSPACE\standards\plc\printer.plt
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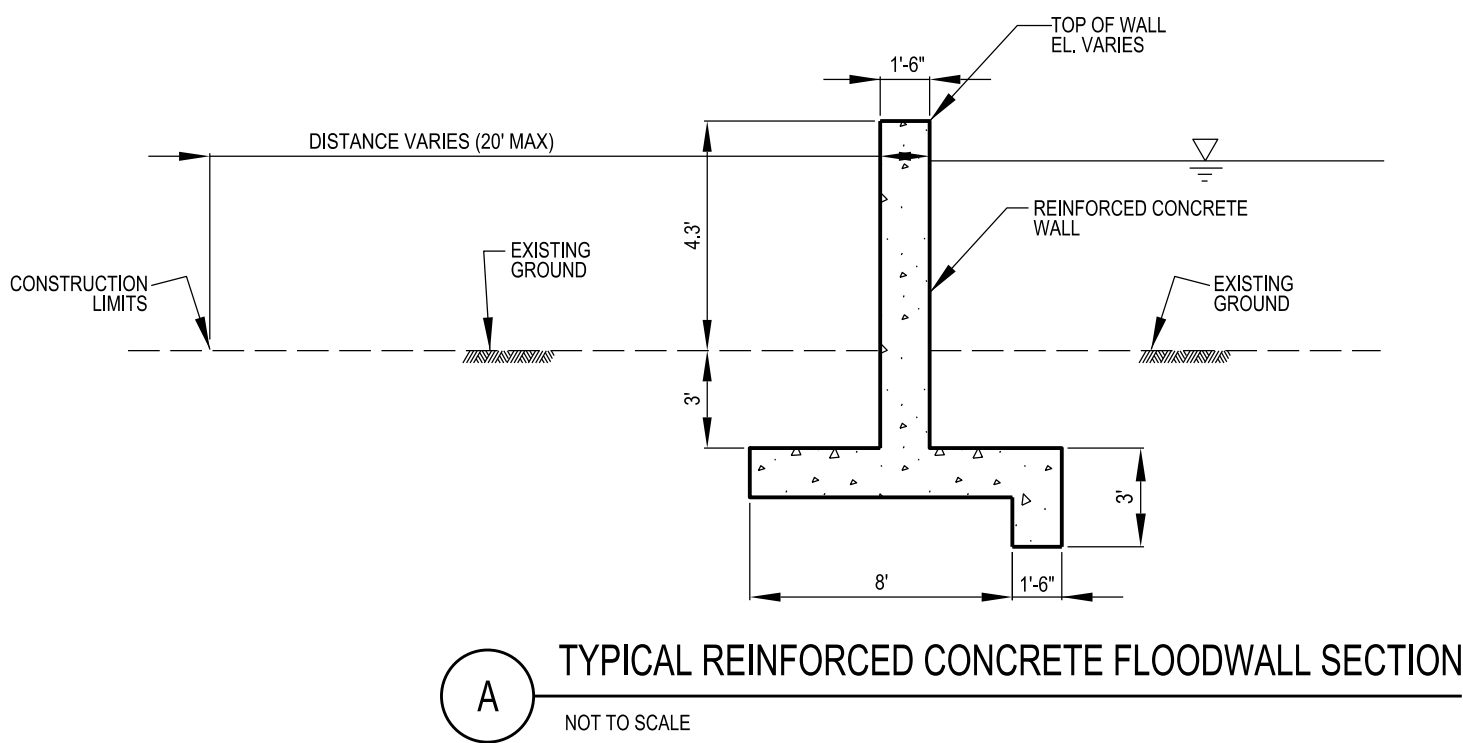
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C

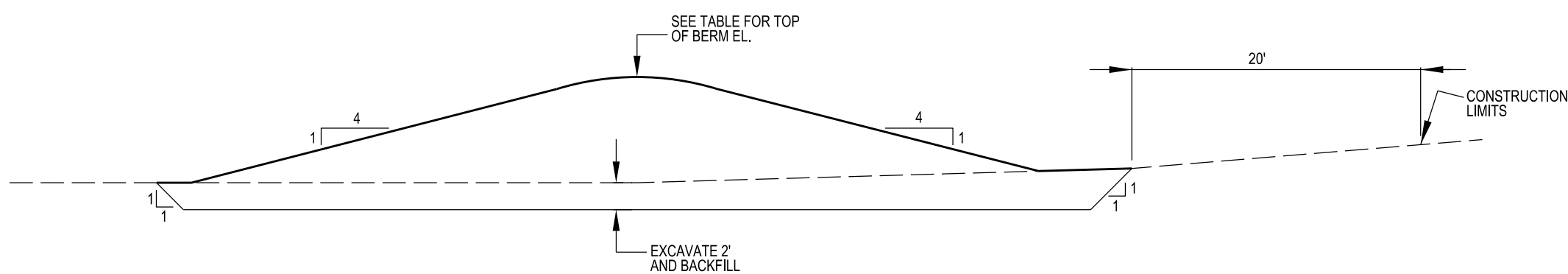


PROFILE
HAUSTEN DITCH RIGHT BANK FLOODWALL

SCALE:
HORIZONTAL: 1" = 50'
VERTICAL: 1" = 2'

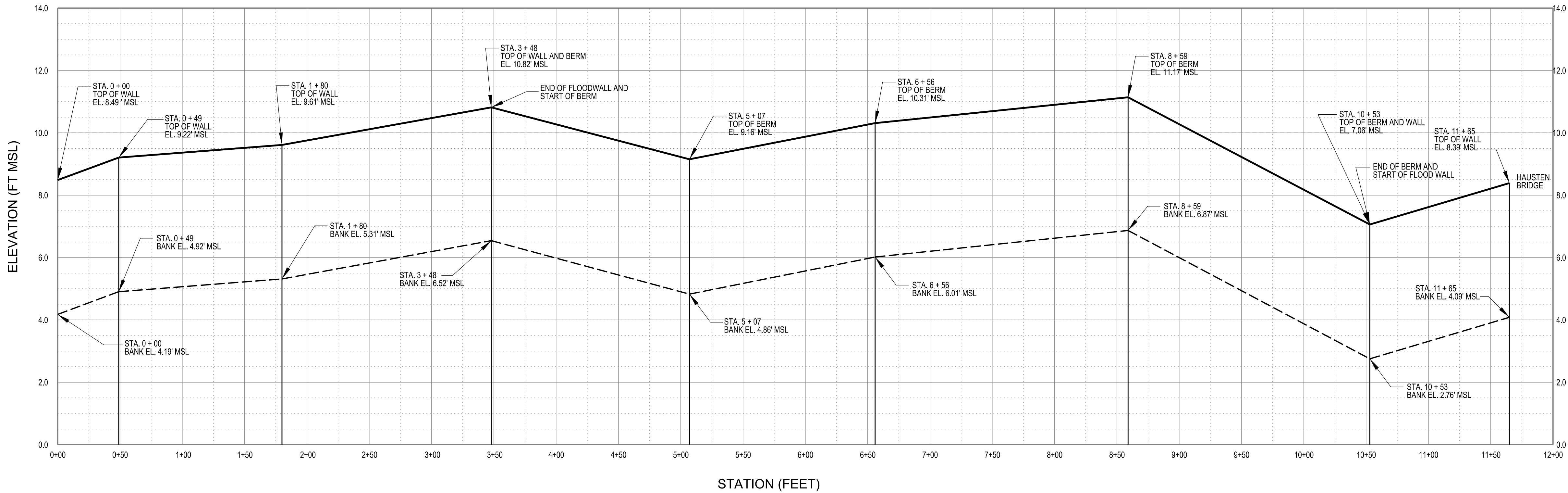


B
HAUSTEN TYPICAL EARTHEN BERM SECTION



HAUSTEN DITCH RIGHT BANK FLOODWALL STA TO 0 + 00 TO 4 + 60		
STATION	WALL HEIGHT (FT)	FINISHED WALL ELEVATION (FT MSL)
0 + 00	4.30	6.52
1 + 21	4.30	7.06
2 + 91	4.30	7.46
4 + 60	4.30	6.37
HAUSTEN BRIDGE		

HAUSTEN DITCH LEFT BANK FLOODWALL AND BERM STA TO 0 + 00 TO 11 + 65		
STATION	WALL HEIGHT (FT)	FINISHED WALL ELEVATION (FT MSL)
0 + 00	4.30	8.49
0 + 49	4.30	9.22
1 + 80	4.30	9.61
3 + 48	4.30	10.82
END OF FLOODWALL AND START OF BERM		
3 + 48	4.30	10.82
5 + 07	4.30	9.16
6 + 56	4.30	10.31
8 + 59	4.30	11.17
10 + 53	4.30	7.06
END OF BERM AND START OF FLOODWALL		
10 + 53	4.30	7.06
11 + 65	4.30	8.39
HAUSTEN BRIDGE		



PROFILE
HAUSTEN DITCH LEFT BANK FLOODWALL AND BERM

SCALE:
HORIZONTAL: 1" = 50'
VERTICAL: 1" = 2'

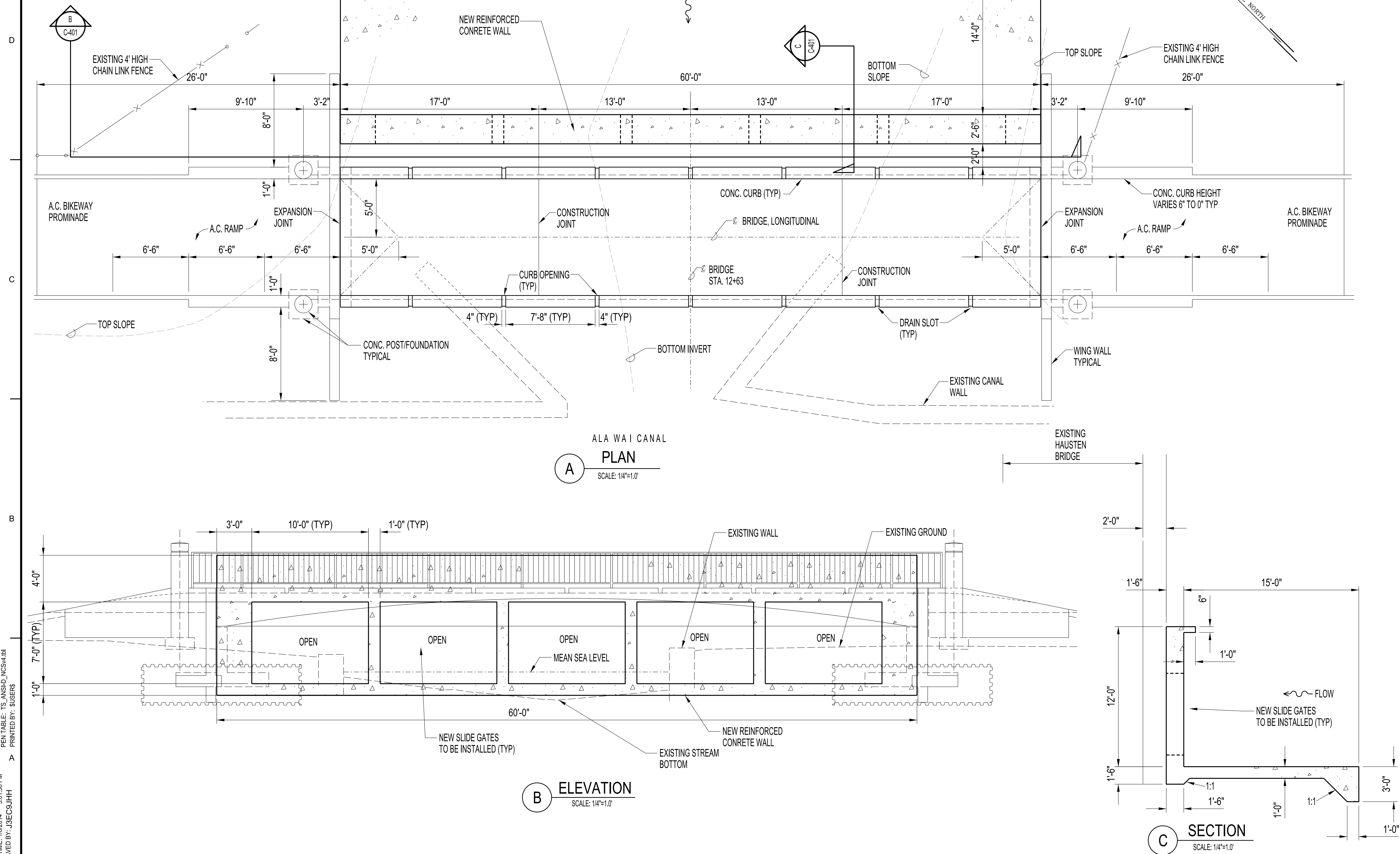


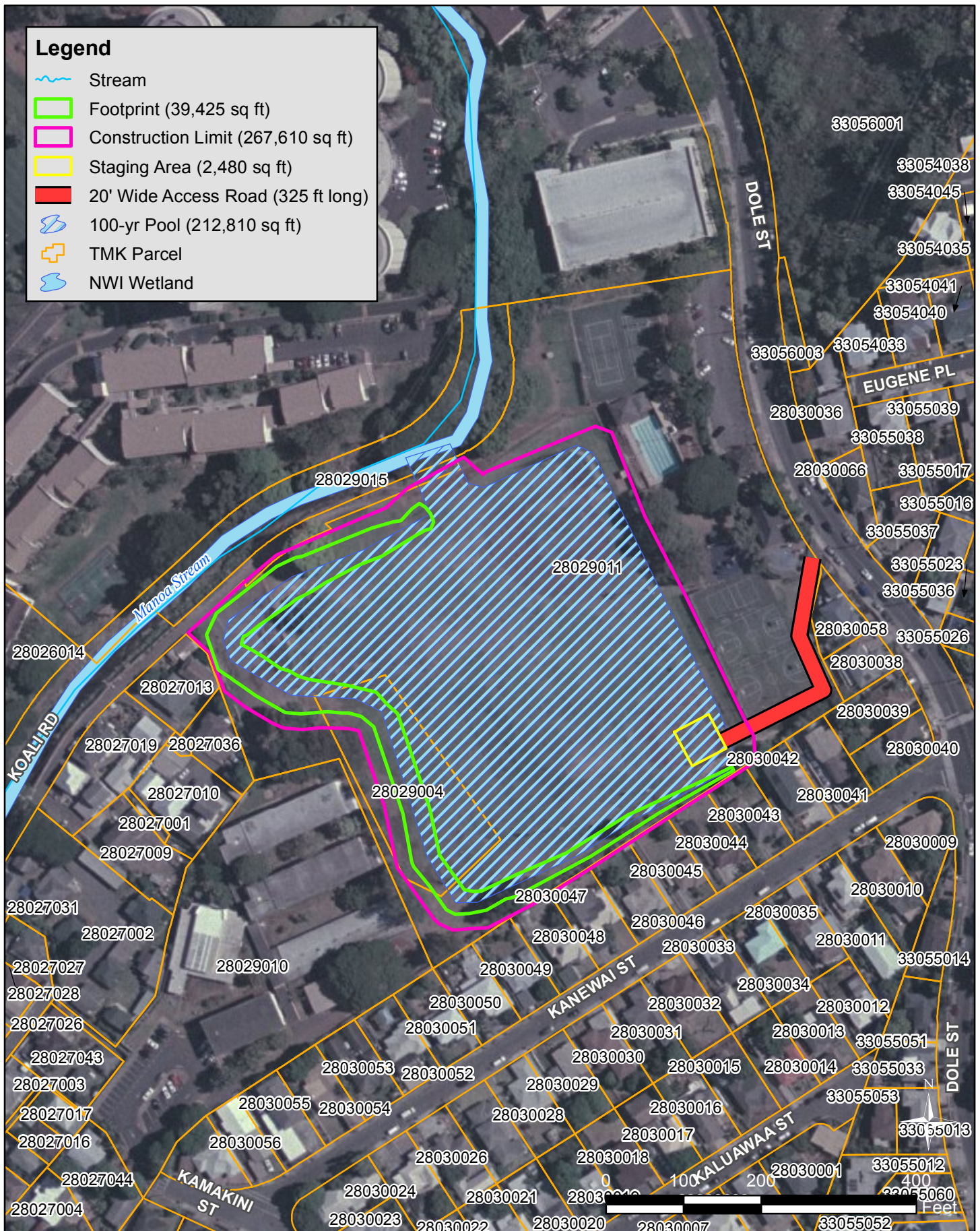
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HONOLULU DISTRICT

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JPH									
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ALA WAI WATERSHED PROJECT
HAUSTEN DITCH FLOODWALL AND BERM
PROFILE AND SECTIONS
ALTERNATIVE 2

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IDENTIFICATION
C-316
SHEET 19 OF 25





Legend

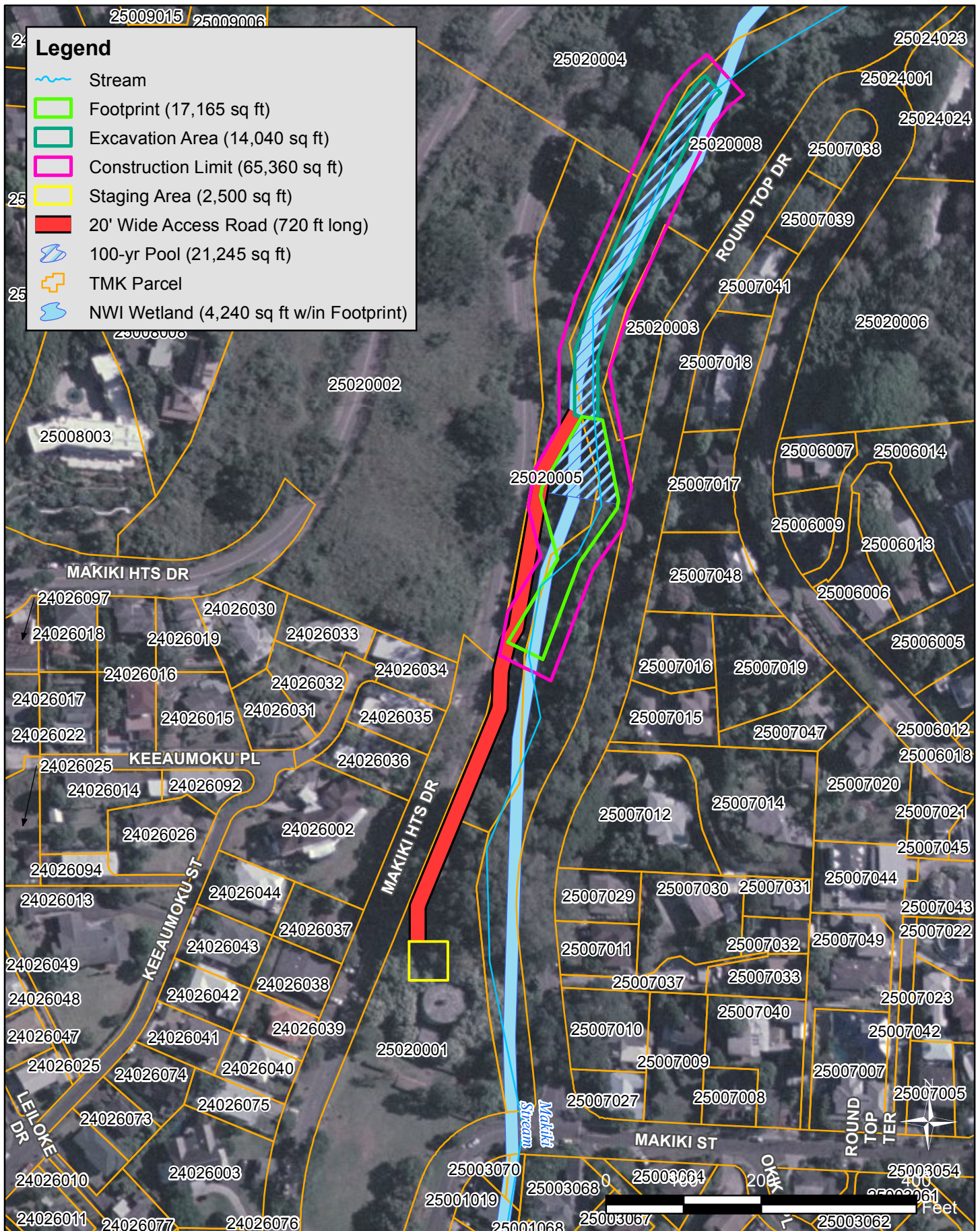
- ~~~~~ Stream
- Footprint (39,425 sq ft)
- Construction Limit (267,610 sq ft)
- Staging Area (2,480 sq ft)
- 20' Wide Access Road (325 ft long)
- 100-yr Pool (212,810 sq ft)
- TMK Parcel
- NWI Wetland



Ala Wai Watershed Project

Kanewai Field Multi-Purpose Detention Basin

Island of Oahu, Hawaii



Ala Wai Watershed Project

Makiki Debris and Detention Basin

Island of Oahu, Hawaii

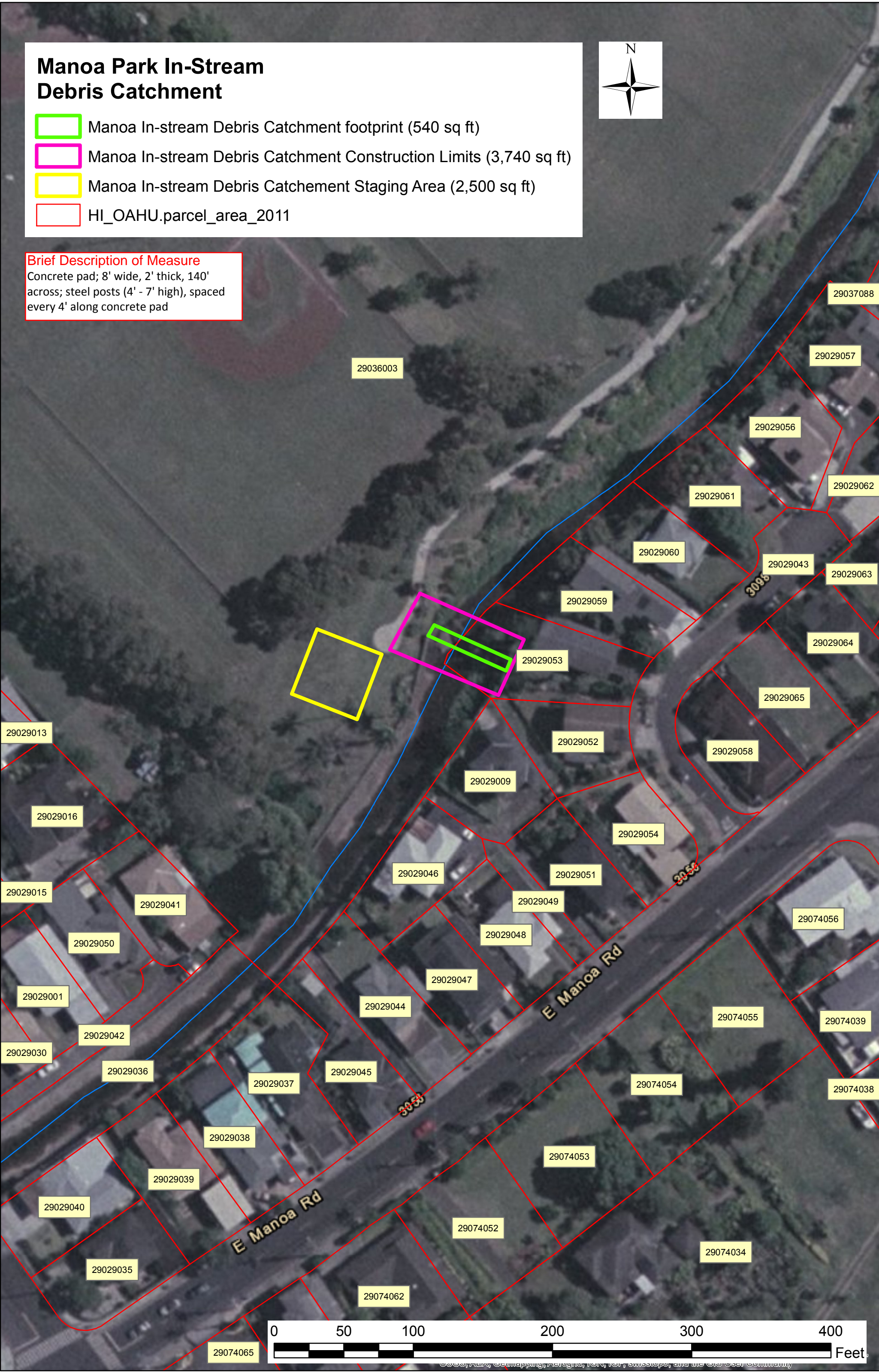
Manoa Park In-Stream Debris Catchment

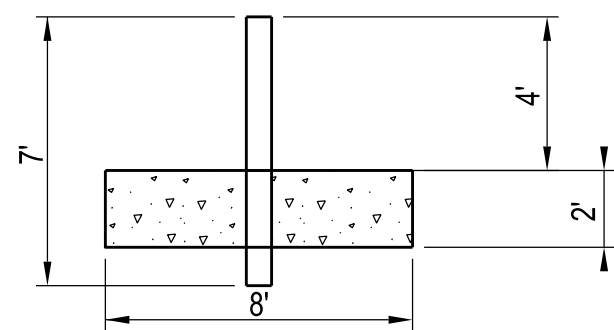
- Manoa In-stream Debris Catchment footprint (540 sq ft)
- Manoa In-stream Debris Catchment Construction Limits (3,740 sq ft)
- Manoa In-stream Debris Catchment Staging Area (2,500 sq ft)
- HI_OAHU.parcel_area_2011



Brief Description of Measure

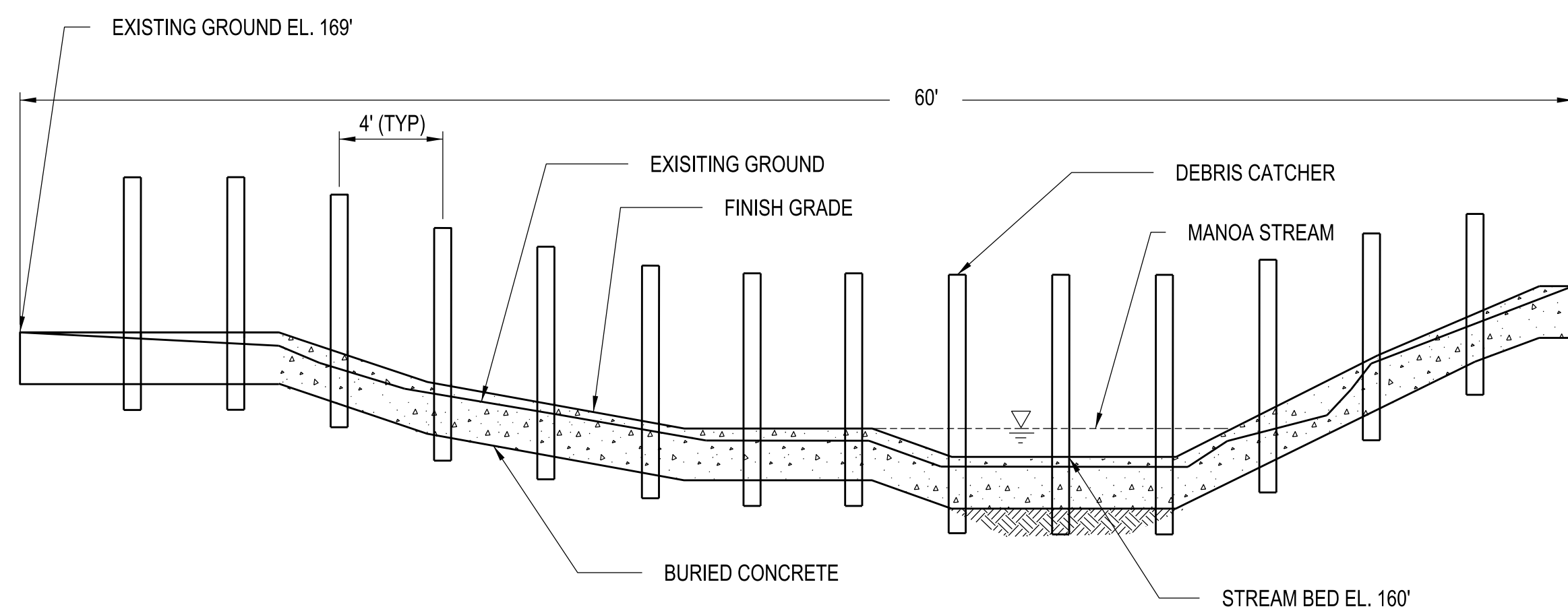
Concrete pad; 8' wide, 2' thick, 140' across; steel posts (4' - 7' high), spaced every 4' along concrete pad





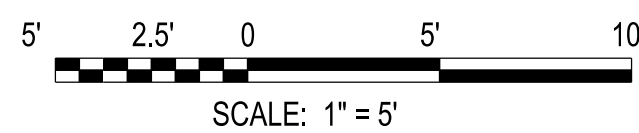
MANOA IN-STREAM DEBRIS CATHMENT
SECTION A-A

SCALE: 1"=5'

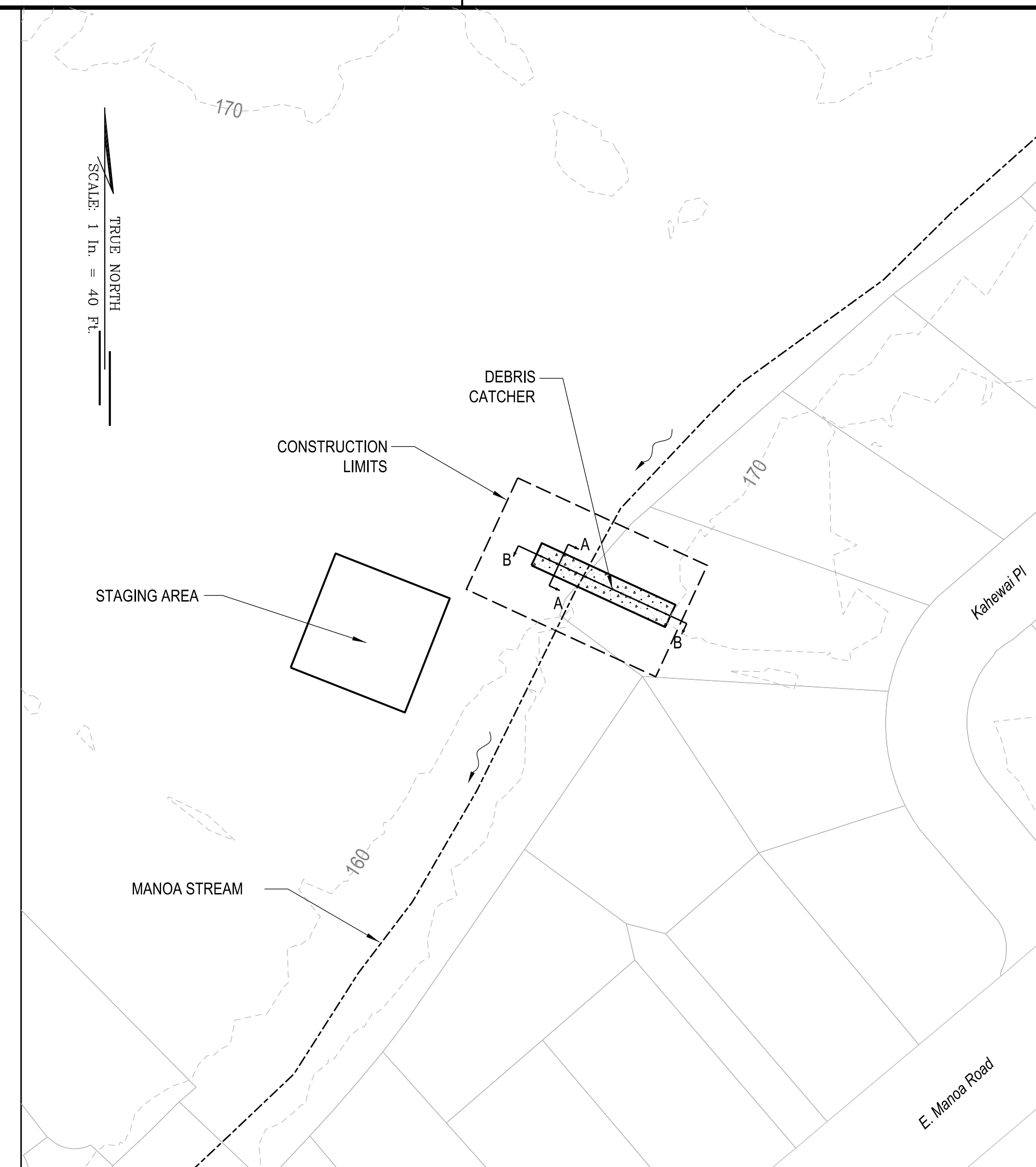


MANOA IN-STREAM DEBRIS CATCHMENT
SECTION B-B

SCALE: 1"=5'



Note: All elevations are feet MSL



PLAN

SCALE: 1"=40'

SOLID LINE = 50' CONTOURS
DOTTED LINE = 10' CONTOURS



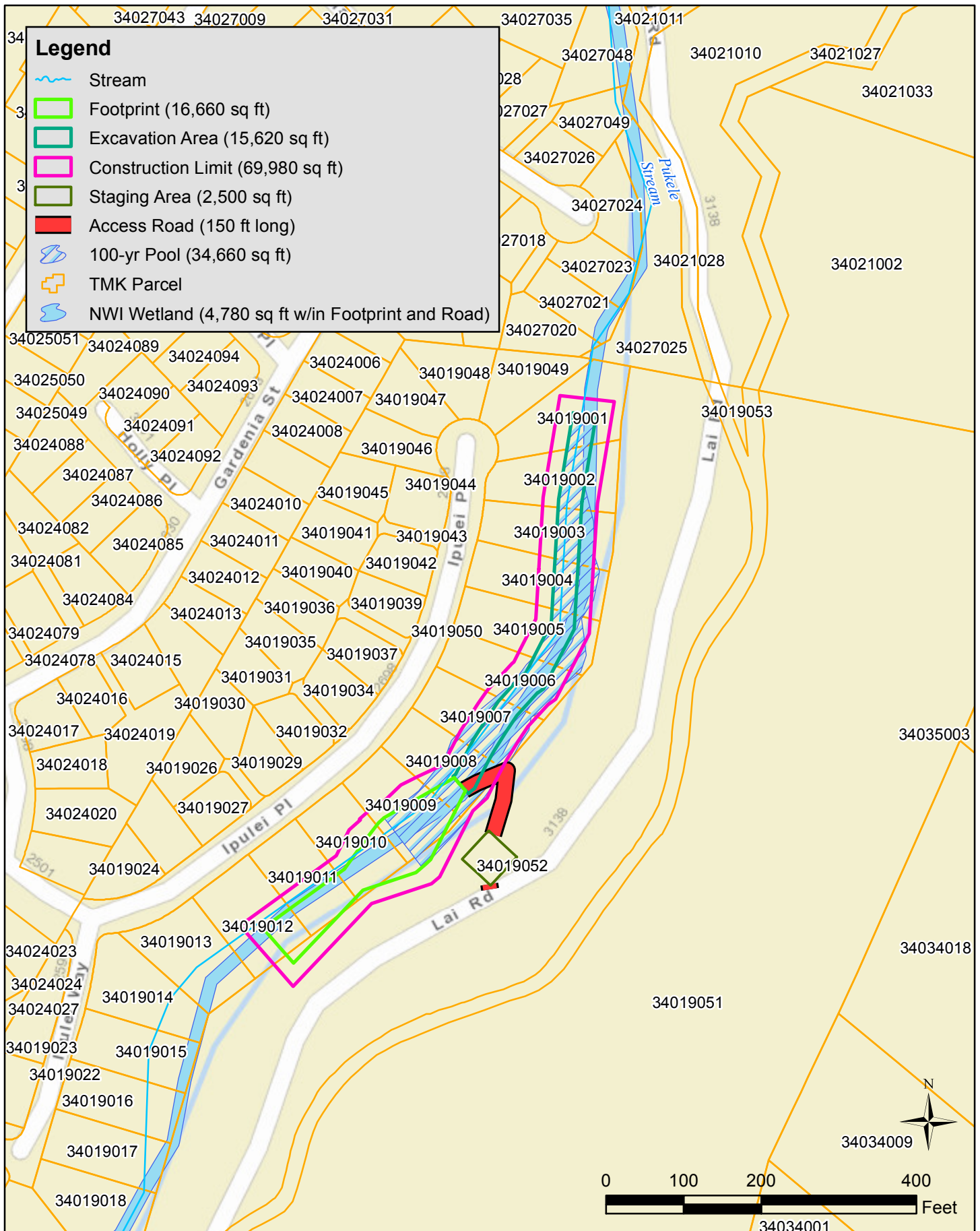
**US Army Corps
of Engineers®**
HONOLULU DISTRICT

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AS SHOWN 1/10/2014			
PROJECT NAME:		PROJECT NO.:	
PROJECT ADDRESS:		PROJECT CITY/STATE/ZIP:	
PROJECT PHONE:		PROJECT FAX:	
PROJECT E-MAIL:		PROJECT WEBSITE:	
PROJECT DESCRIPTION:		PROJECT COMMENTS:	

ALA WAI WATERSHED PROJECT	MANOA IN-STREAM DEBRIS CATCHMENT PLAN AND SECTIONS ALTERNATIVE 3
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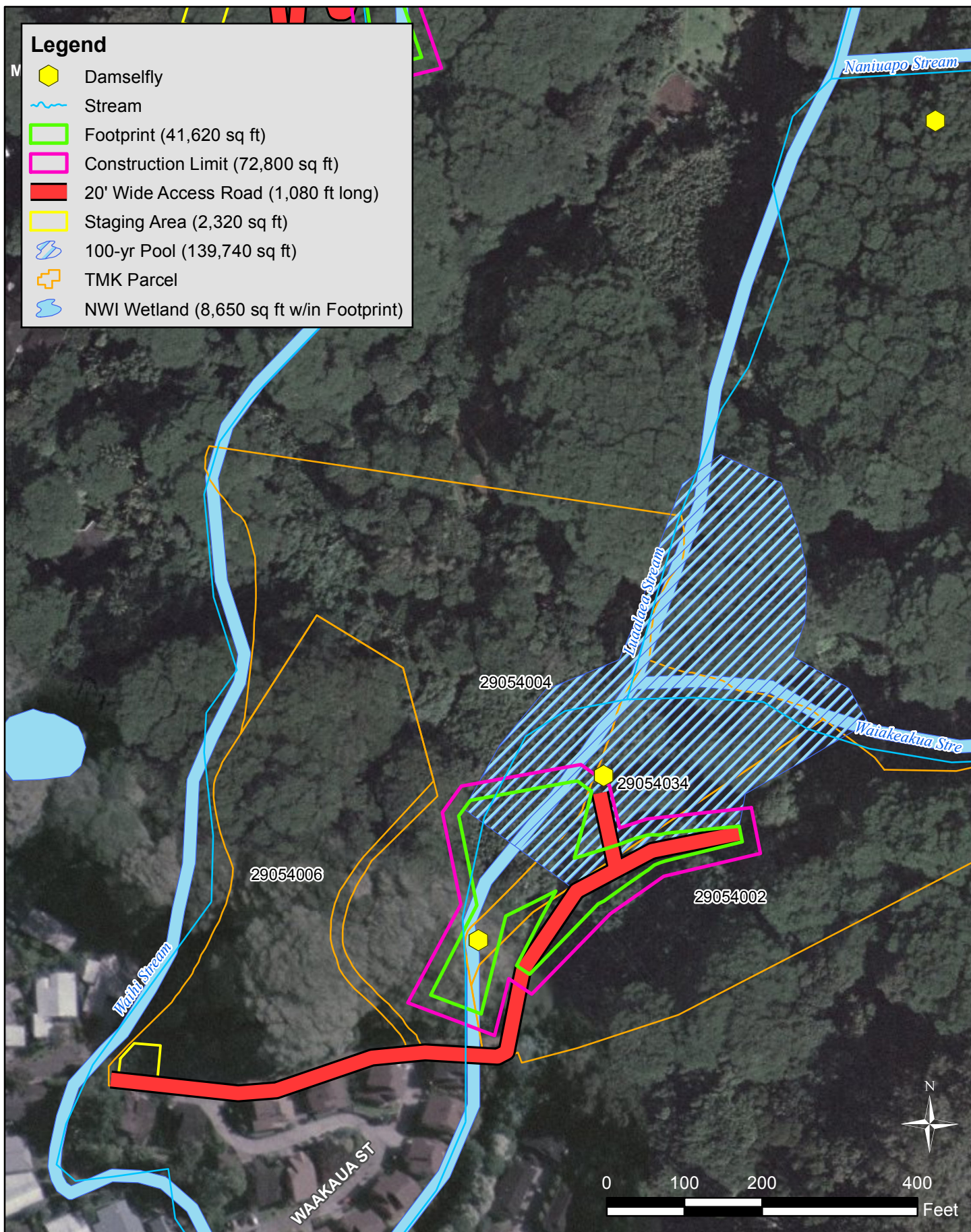
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IDENTIFICATION
C-318
SHEET 19 OF 19



Ala Wai Watershed Project

Pukele Debris and Detention Basin

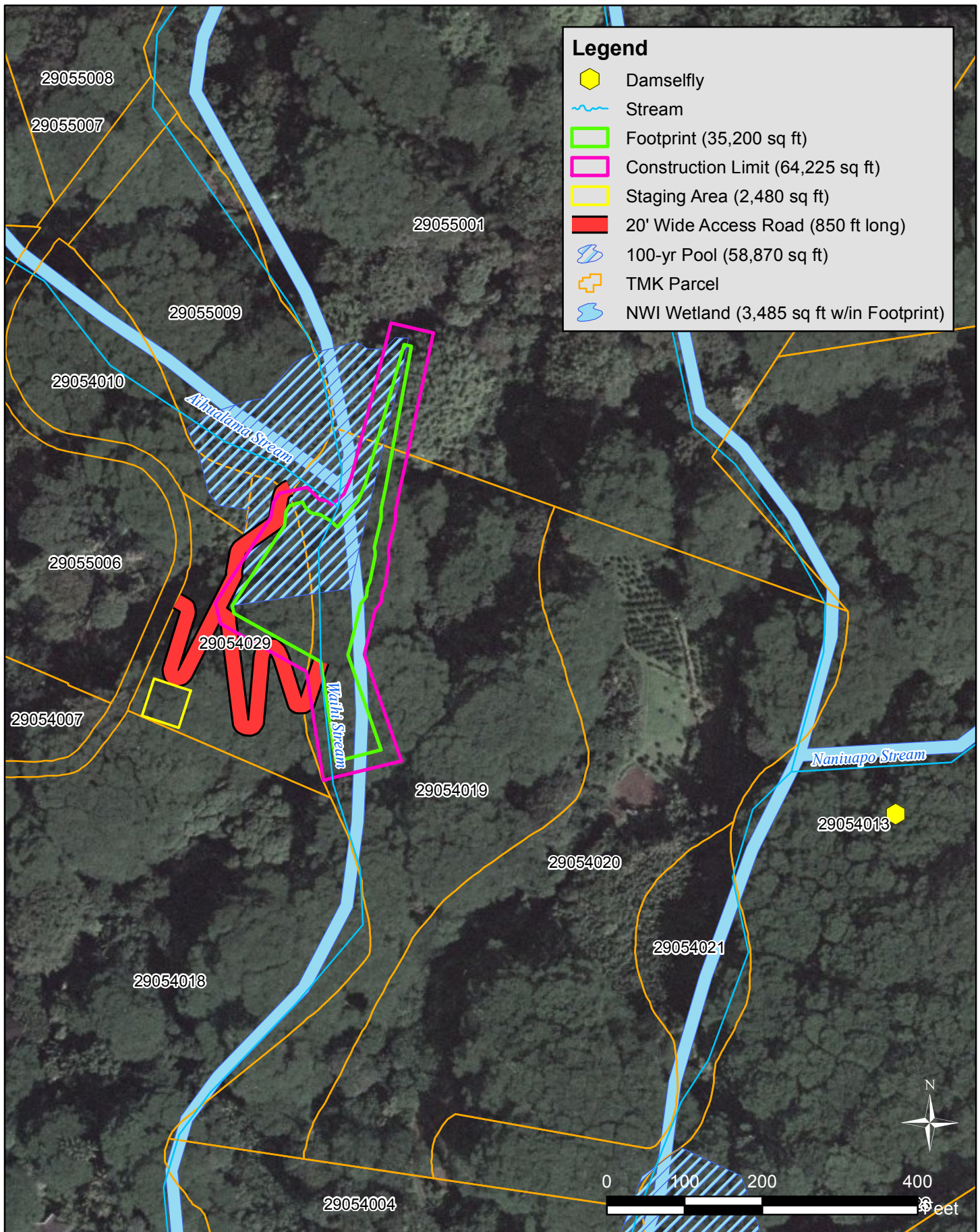
Island of Oahu, Hawaii



Ala Wai Watershed Project

Waiakeakua Debris and Detention Basin

Island of Oahu, Hawaii



Ala Wai Watershed Project

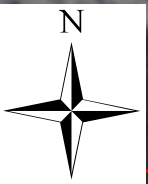
Waihi Debris and Detention Basin

Island of Oahu, Hawaii



Waiomao Debris and Detention Basin

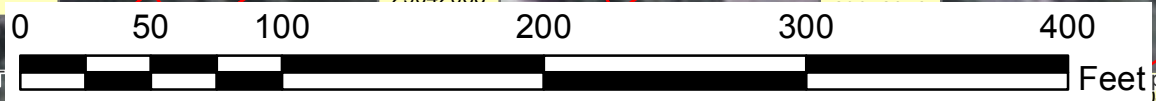
\\poh-netapp2\gis\Projects\Civil_Works\C0046\arcmxmaps\Waiomao_Debris_and_Detention_Basin_Alt3_20160627.mxd

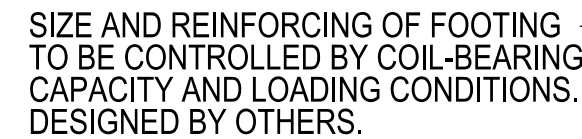


Brief Description of Measure
Three-sided berm; 20' high and 840' across; 5'x5' box culvert; concrete spillway (3'x80') above culvert; 18" of rip rap on downstream edge of spillway; 20-foot-wide perimeter to be maintained as cleared around around perimeter of berm; **NOTE: does NOT include diversion of flows via buried pipe along Woodlawn Drive (Measure #9 in Manoa Technical Report)

Woodlawn Ditch Detention Basin

- Woodlawn Dam (37,520 sq ft)
- Woodlawn Access Road (550 ft)
- Woodlawn Construction Limits (79,315 sq ft)
- Woodlawn Staging Area (25,000 sq ft)
- Woodlawn Detention 100-yr Pool (75,830 sq ft)
- 2011 TMK (Parcels)





SCALE: NTS



SCALE: 1"=15'



SCALE: 1"=15'



Note: All elevations are feet MSL



SCALE: 1"=60'

US ARMY CORPS OF ENGINEERS HONOLULU DISTRICT HONOLULU, HAWAII	DESIGNED BY:		DATE:	REVISION:
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	AS SHOWN	1/8/2014		
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ALA WAI WATERSHED PROJECT

SHEET IDENTIFICATION

SHEET 0 OF 0

DRAFT
UTILITY ASSESSMENT REPORT

Ala Wai Canal Project Honolulu, Hawaii

Contract No. W9128A-12-D-0009-0002

Prepared for:



**US Army Corps
of Engineers®**

U.S. Army Corps of Engineers
Honolulu District
Building 230 (CEPOH-PP-C)
Fort Shafter, Hawaii 96856

June 2016



Table of Contents

1.0	Introduction	1
1.1	Background	1
1.2	Purpose and Scope	2
2.0	Methodology.....	3
3.0	Results.....	5
4.0	Summary and Recommendations	9

Tables

1	Documentation Used for Identification of Existing Utilities
2	Categories of Potential Conflicts and Recommendations for Resolution
3	Summary of Key Utilities Requiring Relocation and/or Design Modifications

Attachments

1	Project Location Figure
2	Information Request Letters and Responses
3	Detailed Listing of Utilities with in the Project Construction Limits
4	Existing Utility Plan Drawings
5	Waikiki Buffer Zone Map

1.0 Introduction

The Ala Wai Canal Project is a flood risk management feasibility study being conducted by the U.S. Army Corps of Engineers, Honolulu District (USACE) under the authority of Section 209 of the Flood Control Act of 1962. The non-Federal sponsor is the State of Hawaii Department of Land and Natural Resources (DLNR) Engineering Division.

The project is currently in the feasibility phase of the USACE planning process, which consists of a study to investigate and determine the extent of Federal interest in a plan to reduce flood risk within the Ala Wai Canal watershed. Specifically, the study includes (1) an assessment of the risk of flooding, (2) analysis of a range of alternatives formulated to reduce flood risk, and (3) identification of a tentatively selected plan for implementation (with design drawings developed to a 35% level of design). The results of the feasibility study are presented in a report with an integrated Environmental Impact Statement (EIS), as needed to comply with the National Environmental Policy Act (NEPA) and Hawai'i Revised Statutes (HRS) Chapter 343.

The Draft Feasibility Report/EIS for the Ala Wai Canal Project was released for public review in the fall of 2015, and underwent concurrent public review, Agency Technical Review (ATR), USACE Headquarters Policy Review, and Independent External Peer Review (IEPR). The USACE is currently working to address comments received on the Draft Feasibility Report/EIS in preparation for the Final Feasibility Report/EIS. The Final Feasibility Report/EIS will be submitted to USACE Headquarters for review and approval; if approved, a Chief of Engineers Report would be sent to Congress recommending authorization of the Ala Wai Canal Project for construction.

In response to comments received on the Draft Feasibility Report/EIS and in support of the USACE's effort to prepare the Final Feasibility Report/EIS, CH2M has been contracted to collect and depict existing utility and subsurface drainage information to assess potential utility conflicts within the project construction limits. This report summarizes the approach and results of this task.

1.1 Background

The Ala Wai Canal watershed is located on the southeastern side of the island of Oahu, and includes Makiki, Manoa, and Palolo streams, all of which drain to the Ala Wai Canal. The Canal is a 2-mile-long waterway constructed during the 1920s to drain extensive coastal wetlands, thus allowing development of the Waikiki District. A large portion of the watershed, including most of Waikiki, is highly susceptible to flooding.

As presented in the Draft Feasibility Report/EIS, the USACE's tentatively selected plan to address flood risk in the Ala Wai Canal watershed consists of the following measures:

- Six in-stream debris and detention basins in the upper reaches of the watershed
- One standalone debris catchment feature
- Three multi-purpose detention basins in open space areas within the developed watershed
- Floodwalls along the Ala Wai Canal (including three associated pump stations)
- Improvements to the flood warning system (non-structural)
- Compensatory mitigation features

The location of each of the flood risk management measures in the tentatively selected plan is shown in Figure 1 (Attachment 1); a detailed description of each measure is provided in the Feasibility Report/EIS.

1.2 Purpose and Scope

The purpose of this assessment is to identify and depict the existing utilities and subsurface drainage structures within the project construction limits in order to better define the extent of potential conflicts and the need for utility and drainage relocations as part of project implementation. For the purposes of this report, all references to underground “utility” or “utilities” will be considered to include drainage facilities and associated pipelines, as applicable. The results of this assessment will be used to inform the USACE’s cost engineering and feasibility analysis. The tasks included in the scope of work (dated March 15, 2016; revised April 7, 2016) are summarized below.

- **Records Research:** Conduct appropriate investigations (e.g., utility owner records, USACE records, State records, County records, personal interviews, visual inspections, etc.) to help identify utility owners that may have facilities within the project construction limits or that may be affected by construction of the project.
- **Records Collection:** Collect applicable records (e.g., utility owner maps, "as built" or record drawings, permit records, field notes, geographic information system [GIS] data, oral histories, etc.) on the existence and approximate location of existing involved utilities.
- **Records Review:** Review records for evidence or indication of additional available records; duplicate or conflicting information; and/or need for clarification. Exercise professional judgment to correlate data from different sources, and to resolve conflicting information.
- **Conflict Assessment:** Determine conflict points between planned construction and existing or planned utility facilities.
- **Utility Depiction:** Incorporate utility information into project plans (drawings) and furnish documentation to USACE and/or utility owners as needed.
- **Conflict Resolution:** Develop and make recommendations on relocation alternatives, with emphasis on cost effectiveness and on minimizing conflicts.

Based on project schedule and budget limitations, and consistent with the principles of the USACE’s SMART planning process, this effort was based solely on a review and assessment of readily available documentation. A detailed utility mapping survey is beyond the current scope for this task, but a complete project survey including and identifying utilities should be a standard part of the future design process.

Although this approach is expected to yield sufficient information for feasibility planning purposes, it is important to note that it carries an inherent degree of uncertainty and will not necessarily result in complete and/or entirely accurate data. For example, the existing documentation does not provide continuous coverage nor consistent level of detail throughout the project construction limits. There are also instances of inconsistent or conflicting information. Missing information was identified and conflicts were resolved to the extent possible based on the accuracy and reliability of the source information. However, the future utility mapping survey will be critical to achieve the level of accuracy and confidence needed to support the detailed design process. It is recommended that this assessment report and supporting documentation be made available to the project survey team so they may better understand the locations that will require detailed validation and specific confirmation.

2.0 Methodology

As detailed above, the basis for this task was research, compilation and review of publically available documents and other information to support the assessment of utilities within the project area. The potential for utilities was considered within the construction limits for all of the proposed flood risk management measures included in the USACE's tentatively selected plan, but particular focus was given to the urbanized portions of the project area. Specifically, this included the area along the Ala Wai Canal (both for the Ala Wai Canal floodwalls, and the Husten Ditch and Ala Wai golf course detention measures) because of the density of urban development within the Waikiki district. Utilities in areas immediately adjacent to the construction limits were also noted, where identified.

Information regarding existing and future/planned utilities within the project area was obtained using the following methods:

- **Information Request Letters:** A comprehensive list of utility owners that could potentially have infrastructure within the project area was identified based on the providers included in the Hawaii "One-Call" Utility Notification Center "Call Before You Dig" service. An information request letter, including maps of the flood risk management measure locations was sent to each of the utility owners requesting information about any existing and/or future utilities in the project area. Given the aggressive timeline for completing the task, the letter requested a response within approximately 10 days. In cases where a response was not received from a utility owner, telephone calls were made to follow-up with the point of contact. Copies of the letters and responses received are contained in Attachment 2.
- **Document Research:** A thorough search was conducted for publically-available documents, with sources including repositories of hard-copy documents and online for electronic information. Specifically, this search included the following:
 - Asbuilt drawings on file at the City & County of Honolulu
 - State of Hawaii Office of Environmental Quality Control (OEQC) online library and map viewer for Environmental Assessments and Environmental Impact Statements
 - Utility distribution maps and relevant project documents stored in CH2M office library
- **GIS Database:** The City & County of Honolulu Department of Planning & Permitting (DPP) maintains the Honolulu Land Information System (HOLIS) Interactive GIS Web Map and Data Services (<http://gis.hicentral.com/>). This online tool includes a mapping tool as well as access to the geographic information system (GIS) database for a variety of information, including the City & County of Honolulu's sewer and storm water system. The mapping tool was used to review the type and extent of sewer and storm water facilities in the project area, and the GIS database was used to download the detailed GIS data for inclusion in the plan drawings.
- **Visual Inspection:** CH2M staff conducted multi-day site visits to the proposed flood risk management measure locations where construction is proposed. Only areas that are publically-accessible were visited. Photographs were taken and observations were recorded on a copy of the 35% design drawings.

The various documents obtained from these sources were compiled and reviewed for relevant utility information. This effort involved a systematic review of each document, with cross-checking between documents as needed. Priority was assigned to documents with verified and reputable source information, as well as an adequate level of detail and resolution. Documents with unknown source information were considered, but were generally only used as supporting (rather than primary)

documentation. The reference documents that were determined to have relevant information and were used to identify utilities within the project area are listed in Table 1.

TABLE 1
Documentation Used for Identification of Existing Utilities

Source	Citation	Quick Reference ^a
On file at the City & County of Honolulu	City & County of Honolulu, Department of Design and Construction (DDC) Wastewater Division, Asbuilt Drawings, Job No. W18-07, Plan and Profile Sheets, 2/9/2009.	DDC Asbuilt, Job No. W18-07
Office of Environmental Quality Control (OEQC) Document Library	Ala Wai Canal Dredging, Final Environmental Assessment. Federal Aid Project No. STP No. STP-0300(038). Prepared by Belt Collins. October 1998.	Ala Wai Canal Dredging FEA
CH2M Office Library	Board of Water Supply. Distribution Maps for Oahu (hard copy). Revised 1988.	BWS Dist. Map (1988)
Provided by Board of Water Supply	Board of Water Supply. Distribution Map for Waikiki Area (electronic), provided May 2016.	BWS Dist. Map (2016)
Provided by Board of Water Supply	Board of Water Supply. Asbuilt Drawings for the Replacement of 12" Water Main Along Ala Wai Boulevard, Job No. 78-100. February 7, 1978.	BWS Asbuilt, Job No. 78-100
Provided by Board of Water Supply	City & County of Honolulu, Department of Public Works (DPW). Asbuilt Drawings for Ala Wai Boulevard from Kalakaua Ave. to Ala Moana, Job No. 24-50. July 25, 1950.	DPW Asbuilt, Job No. 24-50
Provided by Board of Water Supply	Board of Water Supply. Asbuilt Drawings for Ala Wai Blvd: 16-Inch Water Main, Kaiulani Avenue to Kapahulu Avenue, Job No. 92-016, March 1991.	BWS Asbuilt, Job No. 92-016
Provided by Board of Water Supply	Asbuilt Drawings for Improvements of Kalakaua Ave. Fronting the Allure Waikiki Condo, CP Job# 2006/CP-278, Sheet C-4.2, 2010	Asbuilt for Allure Waikiki
Provided by Board of Water Supply	City & County of Honolulu, Department of Parks and Recreation (DPR), Site and Utility Plan for New Clubhouse at the Ala Wai Golf Course (Addendum No. 1), Job No. 89-009c, October 1988.	DPR Utility Plan, Job No. 89-009c
Provided by Board of Water Supply	City & County of Honolulu, Department of Parks and Recreation (DPR), Asbuilt Drawings for Ala Wai Golf Course Maintenance Facility, Job No. 96-011C, November 1996.	DPR Asbuilt, Job No. 96-011C
Provided by City and County of Honolulu, Department of Design and Construction	City & County of Honolulu, Department of Design and Construction. Waikiki Buffer Zone Map. 2009.	Waikiki Buffer Zone Map
Provided by City and County of Honolulu, Department of Design and Construction	City & County of Honolulu, Department of Design and Construction. Future Projects (Nos. 08-0107, 08-0108, 13-0062), Provided May 20, 2016.	DDC Future Projects
Provided by City and County of Honolulu, Department of Design and Construction	City & County of Honolulu, Department of Design and Construction. Hillside Terrace at Palolo, Provided May 20, 2016.	Hillside Terrace at Palolo
Provided by City and County of Honolulu, Department of Design and Construction	City & County of Honolulu, Department of Design and Construction (DDC) Division of Wastewater Management. Asbuilt Drawings for Relocation of Sewer for Hillside Terrace Subdivision. Job No. 3-04-19. May 1989.	DDC Asbuilt for Hillside Terrace Subdivision Sewer Relocation
Provided by City and County of Honolulu, Department of Design and Construction	City & County of Honolulu, Department of Public Works (DPW) Division of Sewers. Asbuilt Drawings for Waiomao Sewers Improvement District No. 238, Job No. 47-72, December 1972.	DPW Asbuilt, Job No. 47-72
Provided by City and County of Honolulu, Department of Design and Construction	City & County of Honolulu, Department of Environmental Services (DES) Division of Collection System Maintenance. Asbuilt Drawings for Moiliili Area 3. June 2013.	DES Asbuilt, Moiliili Area 3

TABLE 1

Documentation Used for Identification of Existing Utilities

Source	Citation	Quick Reference ^a
Provided by City and County of Honolulu, Department of Design and Construction	City & County of Honolulu, Department of Environmental Services (DES) Division of Collection System Maintenance. Asbuilt Drawings for Palolo Area 3.1. June 2013.	DES Asbuilt, Palolo Area 3.1
Provided by Hawaii Gas	Hawaii Gas. Distribution Map for project area (electronic), provided May 2016.	Hawaii Gas distribution map
Provided by HECO	Documentation for Ala Wai 46kV Underground Cable Relocation Project (schematic figure), provided May 2016.	46kV Relocation Project documentation
City & County of Honolulu GIS Database	City & County of Honolulu, Department of Planning & Permitting, Honolulu Land Information System (HOLIS), Interactive GIS Web Map and Data Services.	C&C GIS database
N/A	Visual Inspection by CH2M staff, May 2016.	Visual inspection

NOTES:

^a The quick reference for each piece of documentation was used to track the source of information for each utility listed in the detailed spreadsheets contained in Attachment 3.

The utility information derived from the source documents was then transferred to Microstation and depicted together with the USACE's 35% design information in a set of plan drawings. Data showing the sewer and storm water system were imported from the City & County of Honolulu's GIS database. The locations of other utilities were identified based on the range of asbuilt drawings, which were scanned and imported as raster images in Microstation, allowing the utility locations to be traced. Based on some of the source information, the presence of a utility was determined, but detailed location information was not obtained. In some cases, these were shown schematically in the plan drawings. In other cases, the utility was noted as being present, but was not displayed in the plan drawings. These instances are noted in the tabular listing of utilities present in the project area.

The plan drawings were then reviewed, in parallel with visual observations of the proposed measure locations to identify potential conflicts between the planned construction and utility infrastructure. Categories were assigned based on the type and degree of potential conflict, to allow the results to be more easily interpreted. For each category of potential conflict, a recommended approach to resolve the conflict was also identified. The categories of the anticipated degree of conflict and recommendation for conflict resolution are listed in Table 2.

TABLE 2

Categories of Potential Conflicts and Recommendations for Resolution

Category	Anticipated Degree of Conflict	Recommendations for Conflict Resolution
	Proposed design conflicts with utility; it is likely that utility will require relocation	Recommend utility relocation (or make design adjustments to accommodate utility, where possible)
	Proposed design conflicts with utility; it is likely that design can be (or will need to be) adjusted to avoid utility	Recommend design adjustments be made as part of detailed design process to accommodate utility (or avoid utility, where possible)
	Proposed design may conflict with utility; need for design modifications and/or avoidance measures to be determined	Recommend design adjustments and/or utility relocation be considered, if needed, once more detailed information is available
	Proposed design does not appear to conflict with utility, but utility may affect construction access and/or may require avoidance/protection measures	Recommend detailed design drawings/specifications address temporary utility relocation for construction access and/or measures to avoid/protect utility
	Proposed measure design does not appear to conflict with utility; information provided for reference	None (but utility should be tracked in case future design refinements may lead to a potential conflict)

3.0 Results

A detailed listing of all utilities identified within the project construction limits is included in Attachment 3, and the plan drawings depicting the utility locations is included in Attachment 4. Table 4 summarizes those utilities that are expected to require relocation and/or design modifications; this is not intended to replace the complete list in Attachment 3, but rather to provide a high-level summary of the extent to which relocation and/or design modifications may be required for each of the proposed measure location.

TABLE 3
Summary of Key Utilities Requiring Relocation and/or Design Modifications

Location	Utility Conflicts	Recommendations
Ala Wai Canal Floodwalls (Left Bank)	Underground 46kV electrical line along Ala Wai Boulevard between Kaiolu Street and McCully Street may be located within or near floodwall footprint; exact location is not known	Determine whether floodwall conflicts with electrical line once detailed information is obtained; microsite floodwalls or relocate utility, as needed
	Miscellaneous electrical distribution lines along entire length of Ala Wai Blvd (transitioning between roadway and landscaped area) are partially located within or near floodwall footprint	Relocate within landscaped area, as needed
	16-inch and 30-inch diameter water lines located alongside McCully Street Bridge; bridge tie-in could impact water lines	Design bridge tie-in to accommodate water lines
	Wide variety of storm drains would be crossed by floodwall	Design floodwall to accommodate storm drain crossings
	Multiple force mains and sewer tunnel located in close proximity and crossed by floodwalls	Waikiki Buffer Zone requires mitigation and monitoring measures to avoid damage to the Beachwalk WWPS force mains; consider loads imposed on sewer lines and manhole access
	Power feeds and lines for walkway and street lighting located within or near floodwall footprint	Relocate as needed during construction
	Power feeds and lines for traffic signals (and traffic signal boxes) located within or near floodwall footprint	Relocate as needed during construction
	Irrigation lines located within or near floodwall footprint	Relocate as needed during construction
Ala Wai Canal Floodwalls (Right Bank)	Water line running along Ala Wai Promenade located within floodwall footprint	Relocate within promenade area as needed
	Parallel 3-inch diameter and 8-inch diameter water lines cross location where floodwall and/or flood gate would join with golf course detention berm	Design floodwall and/or flood gate to accommodate water lines
	Wide variety of storm drains would be crossed by floodwall	Design floodwall to accommodate storm drain crossings
	Multiple force mains and sewer tunnel located in close proximity and would be crossed by floodwalls	Waikiki Buffer Zone requires mitigation and monitoring measures to avoid damage to the Beachwalk WWPS force mains; consider loads imposed on sewer lines and manhole access
	Power feeds and park lights for Ala Wai Community Park located within or near floodwall footprint	Design floodwall to avoid lights or relocate closer to interior of park
	Power feeds for walkway lighting located within or near floodwall footprint	Relocate as needed during construction
	Irrigation lines located within or near floodwall footprint	Relocate as needed during construction

TABLE 3

Summary of Key Utilities Requiring Relocation and/or Design Modifications

Location	Utility Conflicts	Recommendations
Pump Station 1 (Kalahulu)	No utilities identified that require design modifications and/or relocation	N/A
Pump Station 2 (Golf Course)	Storm drain located within footprint of pump station	Design pump station to accommodate drain line
	Lighting for driving range located near pump station footprint (currently under construction)	Relocate lighting (or design pump station to avoid lighting) as needed
Pump Station 3 (University)	Proposed 46kV line to be installed in horizontal directional drill casing under Canal (est. 2018-2020) could conflict with pump station (sump)	Design pump station to avoid proposed 46kv line
	Transformers and electrical boxes located in (or near) pump station footprint	Design pump station to avoid transformers and electrical boxes
	Pump station would be located in close proximity to 72-inch diameter sewer tunnel; sump pump could conflict with sewer tunnel	Design pump station to avoid sewer tunnel
	Power feeds for lighting generally located within or near pump station footprint	Relocate as needed during construction
Ala Wai Golf Course Detention	Overhead electrical and telecommunications lines located along entrance road to golf course clubhouse could affect construction access	May require temporary relocation for construction
	Detention berm would cross water line that runs from Kapaehulu Street to drainage channel	Design berm to accommodate waterline
	Detention berm would cross water line near maintenance facility in at least 2 locations; water line may also conflict with sediment basin	Relocate water line (or design berm and sediment basin to accommodate water line) as necessary
	Detention berm would cross large drain lines that run from Kapaehulu Avenue through golf course, daylighting into drainage channel	Design berm to accommodate drain lines
	Storm drains running along edge of Ala Wai golf course property near Date Street would be in close proximity to detention berm	Confirm final design for berm does not conflict with storm drain; modify berm design and/or relocate storm drain as needed
	Detention berm would cross 6-inch and 8-inch diameter sewer lines near maintenance facility; sediment basin would also conflict with 8-inch sewer line	Relocate sewer lines (or design berm and sediment basin to accommodate sewer lines) as necessary
	Detention berm would cross 12-inch and 24-inch diameter sewer lines in eastern portion of golf course	Design berm to accommodate sewer lines and manholes
	Irrigation lines and equipment located within or near detention footprint	Relocate as needed during construction
Hausten Ditch Detention	72-inch diameter sewer tunnel and associated manholes located in close proximity to detention basin; detention berm may cross sewer tunnel	Identify measures to avoid/protect sewer; specifically need to consider loads imposed on sewer line and manhole access
	Power feeds for lighting may extend into detention footprint	Relocate as needed during construction
	Irrigation lines and equipment located within detention footprint	Relocate as needed during construction

TABLE 3

Summary of Key Utilities Requiring Relocation and/or Design Modifications

Location	Utility Conflicts	Recommendations
Kaneawai Detention	Overhead electrical line located along Manoa Stream, with pole at edge of construction limits	Relocate pole (or design detention berm to accommodate pole) as appropriate
	Overhead electrical and telecommunication lines along Dole Street may affect construction access	May require temporary relocation for construction
	Box culvert draining to Manoa Stream near baseball diamond is expected to conflict with excavation for detention basin	Design detention basin to avoid or accommodate feature (e.g., lower box culvert, replace box culvert with pipes or shallower box culvert)
	Irrigation lines may be located within or near detention footprint	Relocate as needed during construction
	Gaging station located near edge of construction limits; may be within footprint of detention basin	Design detention basin to avoid gaging station or relocate as necessary
Manoa In-Stream	Overhead electrical and telecommunication lines along Kahaloa Drive may affect construction access	May require temporary relocation
Woodlawn Detention	No utilities identified that require design modifications and/or relocation	N/A
Waiakeakua Debris and Detention Basin	Overhead electrical and telecommunication lines traverse along and across proposed construction access route and detention berm	Relocate poles and overhead lines (or design detention berm to accommodate utility) as appropriate
	Water lines/valves located within footprint of construction access road; water line and valves could be impacted by construction equipment and/or potential bridge reinforcement	Design access road and bridge reinforcement to accommodate water line and valves
	Storm drain located directly adjacent to access road at bridge crossing at end of Waaloa Way (near proposed staging area); storm drain could be impacted by potential bridge reinforcement	Design access road and bridge reinforcement to accommodate drainage feature
Waihi Debris and Detention Basin	No utilities identified	N/A
Makiki Debris and Detention Basin	Utility poles with overhead electrical and telecommunication lines located near perimeter of construction limits; may conflict with detention berm and/or affect construction access	Design detention berm as needed to avoid utility poles and lines and/or temporarily relocate for construction access
Pukele Debris and Detention Basin	Overhead electrical and telecommunication lines along La'i Road may affect construction access	May require temporary relocation for construction
	Storm drain extending from Ipulei Place with outfall near stream; storm drain could be impacted by detention berm	Confirm final design for berm does not conflict with storm drain; modify design and/or relocate storm drain as needed
	Sewer line and manholes located within (or near) construction limits along Pukele Stream and could be impacted by detention berm	Design detention berm to accommodate sewer line and manholes to extent possible; some degree of reinforcement may be necessary
Waiomao Debris and Detention Basin	Overhead electrical and telecommunication lines along Waiomao Road may affect construction access	May require temporary relocation for construction
	Sewer line and manholes located within (or near) construction limits along Waiomao Stream and may conflict with detention berm and/or access road	Design berm and access road to accommodate sewer line and manholes to extent possible; some degree of reinforcement may be necessary
Mitigation Sites (Falls 7 and 8)	No utilities identified that require design modifications and/or relocation	N/A

4.0 Summary and Next Steps

The information in this report summarizes the utilities that are known to occur within the project construction limits, based on information obtained as of June 15, 2016. As summarized in Table 3 (and detailed in Attachments 3 and 4), there are existing utilities within the construction limits of nearly every proposed measure, generally with increasing occurrence in the urbanized areas. As expected, the greatest number of utility conflicts would result from those measures located in the Waikiki District, particularly the Ala Wai Canal floodwalls and the Ala Wai golf course detention measure. With a few exceptions (as documented in Table 3 and Attachment 3), it is expected that most of the permanent utility conflicts can or should be resolved through design modifications.

Given the schedule requirements for the feasibility study, the timing for completing this existing utilities review and assessment was necessarily abbreviated, with this assessment completed approximately 30 days after the information request letters were mailed out. This short response period exceeded the ability of some utility owners to provide documentation of their utility infrastructure. In particular, Hawaiian Electric Company indicated that they would require up to 90 days to provide documentation of their electrical transmission and distribution system. To the extent possible, the occurrence of electric utilities was identified based on other documentation; however, it should be recognized that documentation from Hawaiian Electric Company may yield important information regarding the electrical utility system (particularly regarding the location of underground 46kV sub-transmission lines along Ala Wai Boulevard).

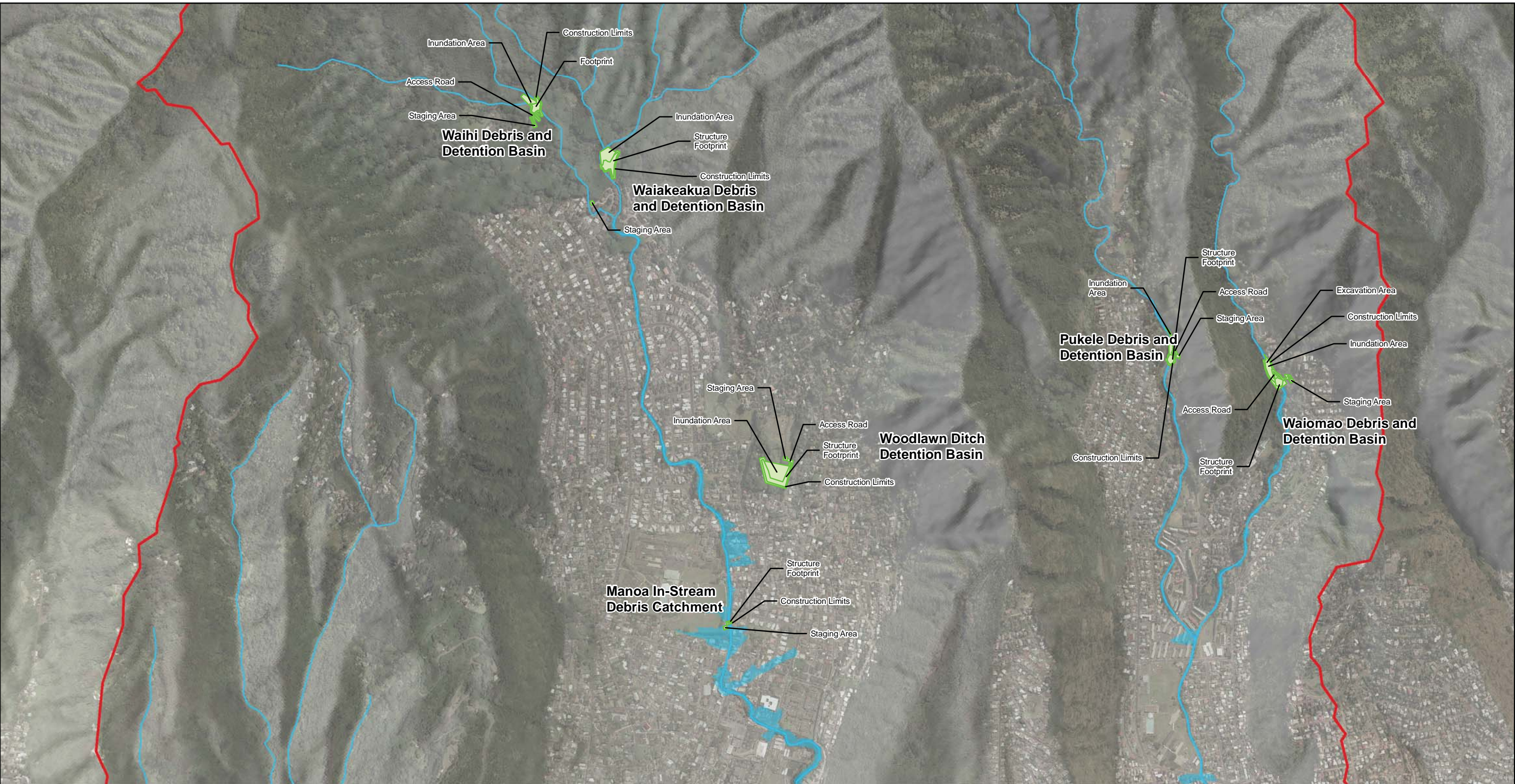
As detailed throughout this report, the occurrence and location of utilities were assessed based on publically-available documentation. This effort was as comprehensive as possible, and is believed to have captured the vast majority of utilities that occur within the construction limits for the project; however, the list may not be exhaustive and the locations (where shown) may not be exact. Nonetheless, the information presented in this report is expected to be adequate for feasibility planning purposes, with the understanding that a detailed utility mapping survey will be conducted in the future to support the detailed design effort. Other issues and recommendations that should be considered as the project progresses through the current feasibility planning and future design phases are listed below:

- Although most of the documentation was consistent, in some cases, the City & County of Honolulu's GIS data and/or the asbuilt drawings showed conflicting information with that shown for the location of storm drains on the USACE 35% design drawings. It is understood that the source information used for the 35% design drawings was from the City & County of Honolulu, but the specific details and level of accuracy of this documentation is unknown. Therefore, where discrepancies were identified, the information from the City & County of Honolulu's GIS database was assumed to be more accurate (and the discrepancy was noted in the detailed list of utilities in Attachment 3). It is not anticipated that any of these discrepancies will have a significant bearing on the outcome of the feasibility study as they generally fall within the range of conditions addressed in this assessment (and the exact locations would be verified as part of the future utility mapping survey), but it is recommended that the USACE confirm this conclusion.
- In many cases, utilities were identified that would not be in direct conflict, but would be close to a proposed flood risk management measure. In cases where the utility is expected to be immediately proximate to the construction limits or where the utility could be susceptible to damage, it is recommended that measures be implemented to avoid and protect the utility, as appropriate. In any case, these utility locations should be confirmed as part of the future utilities survey mapping effort to ensure that no conflict exists.

- For the proposed Waiomao Debris and Detention Basin, it was observed that in addition to the utilities that were identified, the proposed staging area and access road would be located in very steep terrain in the vicinity of various driveways and dwellings. It is recommended that the proximity of these features relative to the construction limits be reconsidered.
- It is understood that the USACE is conducting additional analyses, based upon which they may consider an extension of the Ala Wai Canal floodwalls along the right bank of the Manoa Palolo Drainage Canal up to the Date Street bridge. As these floodwalls were not previously included in the tentatively selected plan, they were not considered throughout the utility assessment. However, based on a review of the documentation obtained to date, the utilities that are known to occur in this area have been included in the detailed listing (Attachment 3) and are shown on Sheet C-210 (Attachment 4), to the extent possible.
- At the current time, it is assumed that there are not any utility agreements in place and all financial obligations for relocation would be the responsibility of the project sponsors. The specific requirements for compensability should be reviewed with USACE legal counsel.
- It is important to note that portions of the project (primarily the Ala Wai Canal floodwalls and Hausten Ditch Detention Basin) are within the Waikiki Buffer Zone (see Attachment 5), which was established to protect the Beachwalk Wastewater Pump Station (WWPS). Any work within the Waikiki Buffer Zone will require mitigation and/or monitoring measures to avoid damage to the Beachwalk WWPS force mains due to ground vibration or soil liquefaction. It is recommended that this information be considered in the detailed design process and included in the detailed design and specification documents.
- In addition to a survey for utilities during the early stages of the final design phase, it is recommended that USACE conduct early and close coordination with the utility owners as needed to confirm utility information and reach mutual agreement on requirements for avoidance/protection measures and relocation plans, where required.
- This assessment is limited to utilities that would be impacted by construction of the proposed flood risk management features. It does not consider utility impacts associated with flooding or related conditions (e.g., inundation of sewer lines). It is assumed that these impacts will be considered and addressed as needed through the detailed design process.

Attachment 1

Location of Tentatively Selected Plan



LEGEND

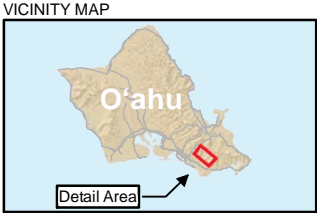
- Stream
- Watershed Boundary
- 1- Percent Annual Chance Exceedance Floodplain (with Implementation of Tentatively Selected Plan)
- Flood Risk Management Measure

0 0.5 1 Miles

Projection: State Plane Hawai'i Zone 3 feet NAD83 HARN



DISCLAIMER: This map was created by USACE using the best available data at the time (July 2015). It may or may not accurately reflect existing conditions.



Tentatively Selected Plan
Upper Watershed
Ala Wai Canal Project
O'ahu, Hawai'i



LEGEND

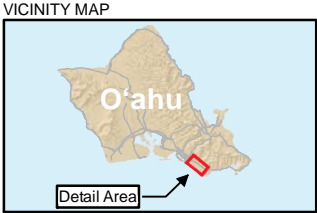
- Stream
- Watershed Boundary
- 1- Percent Annual Chance Exceedance Floodplain (with Implementation of Tentatively Selected Plan)
- Flood Risk Management Measure

0 0.5 1 Miles

Projection: State Plane Hawai'i Zone 3 feet NAD83 HARN



DISCLAIMER: This map was created by USACE using the best available data at the time (July 2015). It may or may not accurately reflect existing conditions.



Tentatively Selected Plan
Lower Watershed
Ala Wai Canal Project
O'ahu, Hawai'i

Attachment 2

Information Request Letters and Responses

Attachment 2a

Correspondence with Hawaiian Electric Company

CH2M HILL
1132 Bishop Street
Suite 1100
Honolulu, HI 96813
Tel 808.943.1133
Fax 808.954.4400



May 10, 2016

Mr. Kenneth Jen, EFT Researcher
Hawaiian Electric Company, Inc.
820 Ward Avenue
Honolulu, Hawaii 96814

**Subject: Feasibility Study of Ala Wai Canal Project
U.S. Army Corps of Engineers, Honolulu District
Utility Verification and Request for Information**

Dear Mr. Jen:

At the request of the State of Hawaii Department of Land and Natural Resources (DLNR) Engineering division, the Ala Wai Canal Project is a flood risk management feasibility study being investigated by the U.S. Army Corps of Engineers, Honolulu District (USACE) under the authority of Section 209 of the Flood Control Act of 1962.

The objective of the project is to reduce riverine flood risks in the Ala Wai Watershed. In response to identified flood-related problems and opportunities, a range of alternatives were evaluated, resulting in identification of a tentatively selected plan. The plan includes (1) in-stream debris catchment and detention basins in the upper reaches of Makiki, Manoa and Palolo streams, (2) multi-purpose detention basins in open space areas in the urbanized portions of the watershed, and (3) floodwalls (and associated pump stations) along the Ala Wai Canal.

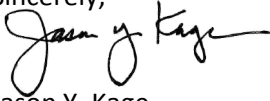
As part of project planning, USACE has contracted CH2M to examine utilities that may be potentially impacted by project features. This effort is focused on the following:

- Ala Wai Canal Floodwalls (Sheet C-101): *Makai* side of Ala Wai Canal, along Ala Wai Boulevard between Ala Moana Boulevard and Ainakea Way
- Ala Wai Golf Course Detention Basin (Sheet C-103): *Makai* side of Date Street from Manoa Palolo Drainage Canal to Kapahulu Avenue (adjacent to Ala Wai Golf Course) and *ewa* side of Kapahulu Avenue, between Date Street and Ala Wai Boulevard
- Husten Ditch Detention (Sheet C-102)
- Kanewai Field Multi-Purpose Detention (Sheet C-306)
- Multiple In-stream Detention Basins (Sheets C-301, C-302, C-305, C-308, C-313, C-315)
- Manoa Stream Falls 7 & 8 (Sheets C-107 and C-108)

Enclosed are site plans of all the proposed project areas, with the areas of particular interest highlighted in yellow. We are requesting information and as-builts of your existing infrastructure around the proposed project areas, as well as any future planning which may occur at these locations. This information will assist in evaluation of the proposed project.

The project is under an accelerated schedule and to assist us in meeting our client's expectations, we respectfully request that this information be returned by May 20, 2016. Should you have any questions, please do not hesitate to contact me at (808) 943-1133. Thank you in advance for your assistance.

Sincerely,

A handwritten signature in black ink, appearing to read "Jason Y. Kage". The signature is fluid and cursive, with the first name "Jason" being more prominent.

Jason Y. Kage
Project Manager

Enclosures (2)

Cc:

Michael Wyatt, USACE

Attachment 2b

Correspondence with City and County of Honolulu

Board of Water Supply

CH2M HILL
1132 Bishop Street
Suite 1100
Honolulu, HI 96813
Tel 808.943.1133
Fax 808.954.4400



May 10, 2016

Mr. Ernest Y.W. Lau, P.E., Manager and Chief Engineer
Board of Water Supply
Plans Review Section
City and County of Honolulu
630 South Beretania Street, 1st Floor
Honolulu, Hawaii 96813

**Subject: Feasibility Study of Ala Wai Canal Project
U.S. Army Corps of Engineers, Honolulu District
Utility Verification and Request for Information**

Dear Mr. Lau:

At the request of the State of Hawaii Department of Land and Natural Resources (DLNR) Engineering Division, the Ala Wai Canal Project is a flood risk management feasibility study being investigated by the U.S. Army Corps of Engineers, Honolulu District (USACE) under the authority of Section 209 of the Flood Control Act of 1962.

The objective of the project is to reduce riverine flood risks in the Ala Wai Watershed. In response to identified flood-related problems and opportunities, a range of alternatives were evaluated, resulting in identification of a tentatively selected plan. The plan includes (1) in-stream debris catchment and detention basins in the upper reaches of Makiki, Manoa and Palolo streams, (2) multi-purpose detention basins in open space areas in the urbanized portions of the watershed, and (3) floodwalls (and associated pump stations) along the Ala Wai Canal.

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- Kanewai Field Multi-Purpose Detention (Sheet C-306)
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Sincerely,

A handwritten signature in black ink, appearing to read "Jason Y. Kage". The signature is fluid and cursive, with the first name "Jason" and last name "Kage" clearly distinguishable.

Jason Y. Kage
Project Manager

Enclosures (2)

Cc:

Michael Wyatt, USACE

From: [GUY MASAGATANI](#)
To: [Onaga, Jeff/HNL](#)
Subject: RE: Request for As-builts/Distribution maps (Ala Wai)
Date: Friday, May 13, 2016 10:15:51 AM

Hi Jeff,

The request for as-builts and distribution map is on a CD and ready for pick up. The CD will be with the Engineering Bldg Security Guard.

Please bring a blank CD to exchange. Feel free to contact me if you have any questions.

Thanks,

Guy Masagatani
Board of Water Supply
Capital Projects – Support Branch
630 S. Beretania Street
Honolulu, HI 96843
Ph. (808) 748-5748
Fax (808) 550-5549
Email: gmagatani@hbws.org

From: MICHAEL DOMION
Sent: Thursday, May 12, 2016 1:39 PM
To: GUY MASAGATANI <GMASAGATANI@hbws.org>
Subject: FW: Request for As-builts/Distribution maps (Ala Wai)

Guy,

Please take care of this.

Thanks,
Mike D.

From: Jeff.Onaga@ch2m.com [<mailto:Jeff.Onaga@ch2m.com>]
Sent: Thursday, May 12, 2016 1:20 PM
To: MICHAEL DOMION
Cc: Jason.Kage@ch2m.com
Subject: Request for As-builts/Distribution maps (Ala Wai)

Hi Mike,

As Jason mentioned in his call previously, we are requesting as-builts and distribution maps for the highlighted areas in the attached map. The main focus is the area along Ala Wai Blvd from Ala Moana Blvd to Kapahulu Ave. Along with this area we would also like information on the Date Street

area along the golf course. We hope that you can provide us with this information as soon as possible, to allow for us to meet our client's fast approaching deadlines.

Thank you,

Jeff Onaga

Water Engineer

O: (808) 440-0207

CH2M

www.ch2m.com | LinkedIn | Twitter | Facebook

Attachment 2c

Correspondence with City and County of Honolulu

Department of Environmental Services

CH2M HILL
1132 Bishop Street
Suite 1100
Honolulu, HI 96813
Tel 808.943.1133
Fax 808.954.4400



May 10, 2016

Ms. Lori M.K. Kahikina, P.E, Director
Department of Environmental Services
City and County of Honolulu
1000 Uluohia Street, Suite 308
Kapolei, Hawaii 96707

**Subject: Feasibility Study of Ala Wai Canal Project
U.S. Army Corps of Engineers, Honolulu District
Utility Verification and Request for Information**

Dear Ms. Kahikina:

At the request of the State of Hawaii Department of Land and Natural Resources (DLNR) Engineering Division, the Ala Wai Canal Project is a flood risk management feasibility study being investigated by the U.S. Army Corps of Engineers, Honolulu District (USACE) under the authority of Section 209 of the Flood Control Act of 1962.

The objective of the project is to reduce riverine flood risks in the Ala Wai Watershed. In response to identified flood-related problems and opportunities, a range of alternatives were evaluated, resulting in identification of a tentatively selected plan. The plan includes (1) in-stream debris catchment and detention basins in the upper reaches of Makiki, Manoa and Palolo streams, (2) multi-purpose detention basins in open space areas in the urbanized portions of the watershed, and (3) floodwalls (and associated pump stations) along the Ala Wai Canal.

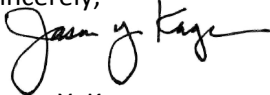
As part of project planning, USACE has contracted CH2M to examine utilities that may be potentially impacted by project features. This effort is focused on the following:

- Ala Wai Canal Floodwalls (Sheet C-101): *Makai* side of Ala Wai Canal, along Ala Wai Boulevard between Ala Moana Boulevard and Ainakea Way
- Ala Wai Golf Course Detention Basin (Sheet C-103): *Makai* side of Date Street from Manoa Palolo Drainage Canal to Kapahulu Avenue (adjacent to Ala Wai Golf Course) and *ewa* side of Kapahulu Avenue, between Date Street and Ala Wai Boulevard
- Hausten Ditch Detention (Sheet C-102)
- Kanewai Field Multi-Purpose Detention (Sheet C-306)
- Multiple In-stream Detention Basins (Sheets C-301, C-302, C-305, C-308, C-313, C-315)
- Manoa Stream Falls 7 & 8 (Sheets C-107 and C-108)

Enclosed are site plans of all the proposed project areas, with the areas of particular interest highlighted in yellow. We are requesting information regarding any future sewer projects around the proposed project areas. This information will assist in evaluation of the proposed project.

The project is under an accelerated schedule and to assist us in meeting our client's expectations, we respectfully request that this information be returned by May 20, 2016. Should you have any questions, please do not hesitate to contact me at (808) 943-1133. Thank you in advance for your assistance.

Sincerely,

A handwritten signature in black ink, appearing to read "Jason Y. Kage". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Jason Y. Kage
Project Manager

Enclosures (2)

Cc:

Michael Wyatt, USACE

From: [Kahikina, Lori M K](#)
To: [Onaga, Jeff/HNL](#)
Subject: Re: Info Request
Date: Tuesday, May 17, 2016 8:37:09 AM

Yes we should be able to get that to you by Friday. Jack Pobuk is already compiling the information.

Sent from my iPhone

> On May 17, 2016, at 8:10 AM, "Jeff.Onaga@ch2m.com" <Jeff.Onaga@ch2m.com> wrote:

>

> Okay, thank you! I will contact Randall for his help, but any information from ENV for those sewer projects will be extremely helpful to us.

>

> Thanks,

> Jeff

>

> -----Original Message-----

> From: Kahikina, Lori M K [<mailto:lkahikina@honolulu.gov>]

> Sent: Tuesday, May 17, 2016 8:00 AM

> To: Onaga, Jeff/HNL <Jeff.Onaga@ch2m.com>

> Subject: Re: Info Request

>

> Ah, the joys of working with the government. Ha! Thank you for indulging me.

>

> Yes, the Stormwater group moved over last July to DFM and Randall Wakumoto would be a good POC. His email address is rwakumoto@honolulu.gov.

>

> However, ENV will be able to provide to you the sewer projects.

>

> Mahalo

> Lori

>

> Sent from my iPhone

>

>> On May 16, 2016, at 3:59 PM, "Jeff.Onaga@ch2m.com" <Jeff.Onaga@ch2m.com> wrote:

>>

>> Hi Lori,

>>

>> I apologize for the rush on this request. I am aware that this project has been in the planning stages for years, but we have just got approval to work on our part of the study from USACE last week. Since they have not altered their work schedule, our work deadlines have been approaching even faster now. I have also sent a similar request letter to DFM, but was not aware the storm water group had moved completely. I was under the impression that your department would be able to help us with any future sewer projects in the area. Would I have to contact DFM's storm water group for that information too? If so, would you be able to provide me with contact information for that branch?

>>

>> Thank you,

>> Jeff

>>

>> -----Original Message-----

>> From: Kahikina, Lori M K [<mailto:lkahikina@honolulu.gov>]

>> Sent: Monday, May 16, 2016 3:45 PM

>> To: Onaga, Jeff/HNL <Jeff.Onaga@ch2m.com>

>> Subject: Info Request

>>

>> Aloha Jeff

>> I know this project has been studied and planned for years. I'm just curious why this request is a rush now.

>>

>> Also, just want to confirm with you that the storm water group has moved completely to our sister department, Facilities Maintenance. Just want to make sure you're also checking with them.

>>

>> Mahalo

>> Lori

>>

>> Sent from my iPhone

>

From: [Pobuk, Jack](#)
To: [Onaga, Jeff/HNL](#); [Kage, Jason/HNL](#); [Kaneko, Ross/HNL](#)
Cc: [Tanimoto, Ross](#); [Houghton, Tim](#); [Kahikina, Lori M K](#); [Olaes, Marisol](#); [Doyle, Frank](#)
Subject: Ala Wai Canal Project, Request for Information Letter (Utilities)
Date: Thursday, May 19, 2016 5:59:56 PM

CH2M,

We reviewed the locations for the various flood control improvements proposed.

Our comments:

We have major sewer trunk lines running parallel to, and across, the Ala Wai Canal. One of these is the recently completed Beachwalk WWPS Force Main back-up pipe. This approx 72-inch sewer line, which is currently a force main, but scheduled to be converted to gravity flow in approx 10 years, runs parallel with the Ala Wai Canal, and may be under the proposed flood wall improvements. There are several manholes for this sewer line that may be in conflict with the flood walls. Also, we may have future projects to connect new gravity sewers to these manholes, after the conversion to gravity flow, and we need the area around these manholes to be clear in anticipation of the future sewer connection work.

Also, we have tentative plans for a new sewer trunk line parallel to the Ala Wai Canal, mauka side, to connect from the existing 48-inch (upstream of the inverted siphon crossing the Ala Wai) to the new 72-inch sewer (at or near the "mauka pit").

We also have existing sewers in the vicinity of the following project areas:

Hausten Ditch Detention basin facilities

Ala Wai Golf Course Multi-purpose Detention basin facilities

Kanewai Field Multi-purpose Detention basin facilities

Pukele Debris and Detention basin facilities

Waiomao Debris and Detention basin facilities (this location may be affected by a planned sewer rehab project.)

Manoa In-Stream Debris Catchment facilities

The existing sewers in these areas will need to be protected from damage during construction.

Also, if any sewers or manholes are located in areas that could be impacted by flooding, detention basin water, or debris accumulation, then this needs to be addressed.

Please let me know if any questions. You can call me at 768-3464, or call Marisol or my staff at 768-3467.

Thanks,

Jack

From: Kahikina, Lori M K
Sent: Monday, May 16, 2016 3:43 PM
To: Pobuk, Jack
Cc: Tanimoto, Ross; Houghton, Tim
Subject: Re: Request for Information Letter (Utilities)

Thank you, Jack. I hope they know that too. All we can provide is the sewer side.

Sent from my iPhone

On May 16, 2016, at 3:40 PM, Pobuk, Jack <jpobuk@honolulu.gov> wrote:

Lori,

Seems all they need is information on our CIP projects, and it should not be that difficult to do. It is basically just our planned wastewater projects. We can provide response by Fri.

Hope CH2M realizes that all CIP projects for storm water quality are entirely under DDC/CD or DFM now.

Thanks,

Jack

From: Kahikina, Lori M K

Sent: Monday, May 16, 2016 3:35 PM

To: Pobuk, Jack

Cc: Tanimoto, Ross; Houghton, Tim

Subject: Fwd: Request for Information Letter (Utilities)

Hi Jack

Will you be able to provide the information by this Friday? If not, let me know and I'll contact Ross Kaneko. This project has been studied for years and now it's a one-week rush to get our response???

Thanks

Sent from my iPhone

Begin forwarded message:

From: "Fukumoto, Diane S" <dfukumoto@honolulu.gov>

Date: May 16, 2016 at 2:47:14 PM HST

To: "Kahikina, Lori M K" <lkahikina@honolulu.gov>

Subject: FW: Request for Information Letter (Utilities)

Hi, Lori. Jeff Onaga wanted to speak to you on the attached. I printed out the attached and gave it to Jack. He said he has seen things on this Ala Wai Canal Project.

Jeff can be reached at 440-0207.

Thank you,

Diane

From: Jeff.Onaga@ch2m.com [<mailto:Jeff.Onaga@ch2m.com>]

Sent: Monday, May 16, 2016 2:35 PM
To: Fukumoto, Diane S
Subject: Request for Information Letter (Utilities)

Hi Diane,

Thank you so much for assisting us with this request. Attached is our request letter and the supporting pdf files. If any questions about these documents may arise, feel free to contact me by phone or email. My project manager, Jason Kage can also be reached through his contact information, which is available on the request letter.

Once again thank you very much,

Jeff Onaga

Water Engineer

O: (808) 440-0207

CH2M

www.ch2m.com | [LinkedIn](#) | [Twitter](#) | [Facebook](#)

Attachment 2d

Correspondence with City and County of Honolulu

Department of Design and Construction

Wastewater Division

CH2M HILL
1132 Bishop Street
Suite 1100
Honolulu, HI 96813
Tel 808.943.1133
Fax 808.954.4400



May 10, 2016

Mr. Guy Inouye, Chief of Wastewater Division
Wastewater Division
650 South King Street, 14th Floor
Honolulu, Hawaii 96813
Department of Design and Construction, Wastewater Division
City and County of Honolulu

**Subject: Feasibility Study of Ala Wai Canal Project
U.S. Army Corps of Engineers, Honolulu District
Utility Verification and Request for Information**

Dear Mr. Inouye:

At the request of the State of Hawaii Department of Land and Natural Resources (DLNR) Engineering Division, the Ala Wai Canal Project is a flood risk management feasibility study being investigated by the U.S. Army Corps of Engineers, Honolulu District (USACE) under the authority of Section 209 of the Flood Control Act of 1962.

The objective of the project is to reduce riverine flood risks in the Ala Wai Watershed. In response to identified flood-related problems and opportunities, a range of alternatives were evaluated, resulting in identification of a tentatively selected plan. The plan includes (1) in-stream debris catchment and detention basins in the upper reaches of Makiki, Manoa and Palolo streams, (2) multi-purpose detention basins in open space areas in the urbanized portions of the watershed, and (3) floodwalls (and associated pump stations) along the Ala Wai Canal.

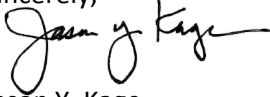
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As part of project planning, USACE has contracted CH2M to examine utilities that may be potentially impacted by project features. This effort is focused on the following:

- Ala Wai Canal Floodwalls (Sheet C-101): *Makai* side of Ala Wai Canal, along Ala Wai Boulevard between Ala Moana Boulevard and Ainakea Way
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- Hausten Ditch Detention (Sheet C-102)
- Kanewai Field Multi-Purpose Detention (Sheet C-306)

The project is under an accelerated schedule and to assist us in meeting our client's expectations, we respectfully request that this information be returned by May 20, 2016. Should you have any questions, please do not hesitate to contact me at (808) 943-1133. Thank you in advance for your assistance.

Sincerely,

A handwritten signature in black ink, appearing to read "Jason Y. Kage". The signature is fluid and cursive, with the first name "Jason" and last name "Kage" clearly distinguishable.

Jason Y. Kage
Project Manager

Enclosures (2)

Cc:

Michael Wyatt, USACE

DEPARTMENT OF DESIGN AND CONSTRUCTION
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 11TH FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 768-8480 • Fax: (808) 768-4567
Web site: www.honolulu.gov

RECEIVED

MAY 20 2016

KIRK CALDWELL
MAYOR



ROBERT J. KRONING, P.E.
DIRECTOR

MARK YONAMINE, P.E.
DEPUTY DIRECTOR

WW.A 16-016

May 19, 2016

Mr. Jason Y. Kage
Project Manager
CH2M Hill
1132 Bishop Street, Suite 1100
Honolulu, Hawaii 96813


Dear Mr. Kage:

SUBJECT: Feasibility Study of Ala Wai Canal Project
U.S. Army Corps of Engineers, Honolulu District
Response to Utility Verification and Request for Information

The enclosed CD contains the information requested in your letter dated May 10, 2016, regarding the subject project. The information provided includes both As-Built drawings of our sewers and location maps of future sewer projects currently in the design phase.

If there are any questions, please contact Tina Ono of our Wastewater Division at (808) 768-8766.

Very truly yours,


Robert J. Kroning, P.E.
Director

Enclosure

Attachment 2e

Correspondence with City and County of Honolulu

Department of Facility Maintenance

CH2M HILL
1132 Bishop Street
Suite 1100
Honolulu, HI 96813
Tel 808.943.1133
Fax 808.954.4400



May 10, 2016

Mr. Ross S. Sasamura, P.E., Director and Chief Engineer
Department of Facility Maintenance
City and County of Honolulu
1000 Uluohia Street, Suite 215
Kapolei, Hawaii 96707

**Subject: Feasibility Study of Ala Wai Canal Project
U.S. Army Corps of Engineers, Honolulu District
Utility Verification and Request for Information**

Dear Mr. Sasamura:

At the request of the State of Hawaii Department of Land and Natural Resources (DLNR) Engineering Division, the Ala Wai Canal Project is a flood risk management feasibility study being investigated by the U.S. Army Corps of Engineers, Honolulu District (USACE) under the authority of Section 209 of the Flood Control Act of 1962.

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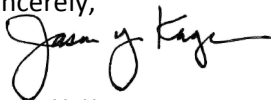
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- Multiple In-stream Detention Basins (Sheets C-301, C-302, C-305, C-308, C-313, C-315)
- Manoa Stream Falls 7 & 8 (Sheets C-107 and C-108)

Enclosed are site plans of all the proposed project areas, with the areas of particular interest highlighted in yellow. We are requesting information and as-builts of your existing infrastructure for traffic signals and street lights around the proposed project areas. This information will assist in evaluation of the proposed project.

The project is under an accelerated schedule and to assist us in meeting our client's expectations, we respectfully request that this information be returned by May 20, 2016. Should you have any questions, please do not hesitate to contact me at (808) 943-1133. Thank you in advance for your assistance.

Sincerely,

A handwritten signature in black ink, appearing to read "Jason Y. Kage". The signature is fluid and cursive, with the first name "Jason" being more prominent.

Jason Y. Kage
Project Manager

Enclosures (2)

Cc:

Michael Wyatt, USACE

Attachment 2f

Correspondence with Hawaii Gas

CH2M HILL
1132 Bishop Street
Suite 1100
Honolulu, HI 96813
Tel 808.943.1133
Fax 808.954.4400



May 10, 2016

Mr. Charles Calvet, P.E., Manager, Engineering
Hawaii Gas
515 Kamakee Street
Honolulu, Hawaii 96814

**Subject: Feasibility Study of Ala Wai Canal Project
U.S. Army Corps of Engineers, Honolulu District
Utility Verification and Request for Information**

Dear Mr. Calvet:

At the request of the State of Hawaii Department of Land and Natural Resources (DLNR) Engineering Division, the Ala Wai Canal Project is a flood risk management feasibility study being investigated by the U.S. Army Corps of Engineers, Honolulu District (USACE) under the authority of Section 209 of the Flood Control Act of 1962.

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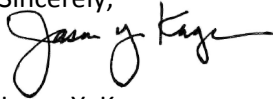
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Enclosed are site plans of all the proposed project areas, with the areas of particular interest highlighted in yellow. We are requesting information and as-builts of your existing infrastructure

around the proposed project areas, as well as any future planning which may occur at these locations. This information will assist in evaluation of the proposed project.

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Sincerely,

A handwritten signature in black ink, appearing to read "Jason Y. Kage". The signature is fluid and cursive, with the first name "Jason" being more prominent.

Jason Y. Kage
Project Manager

Enclosures (2)

Cc:

Michael Wyatt, USACE



May 23, 2016

RECEIVED

MAY 24 2016

Mr. Jason Y. Kage, P.E.
CH2M Hill, Inc.
1132 Bishop Street, Suite 1100
Honolulu, Hawaii 96813

Dear Mr. Kage:

Subject: Feasibility Study of Ala Wai Canal Project
U.S. Army Corps of Engineers, Honolulu District
Utility Verification and Request for Information

In response to your letter dated May 10, 2016, we are sending gas maps for Ala Wai Boulevard, Kapahulu Avenue, Date Street, Pukele and Kanewai Field. Also enclosed is a copy of our construction notes for gas facilities which should be included as part of the final plans and our gas line symbols for your information.

All information provided by Hawaii Gas, including but not limited to maps, prints, stakeouts, toning, and site indications are approximations only of the location of its facilities and pipelines. Hawaii Gas makes no representation or warranty, either expressed or implied, of their accuracy; and the party receiving such information shall have the sole responsibility for field verification for determining the exact location of said facilities and pipelines. The presence of or assistance provided by any Hawaii Gas employee shall not relieve said party of its responsibility for verification. Hawaii Gas shall not be liable for any claims or damages arising from the use of the information provided.

The recipient shall not assign, loan, sell copy or otherwise transfer data to any other party.

Should there be any questions, or if additional information is desired, please call Colin Chikamoto at 596-1430.

Sincerely,

Hawaii Gas

Keith K. Yamamoto
Manager, Engineering

KKY:krs

Attached: CD

Attachment 2g

Correspondence with Oceanic – Time Warner Cable

CH2M HILL
1132 Bishop Street
Suite 1100
Honolulu, HI 96813
Tel 808.943.1133
Fax 808.954.4400



May 10, 2016

Ms. Allyson Ebert
Oceanic- Time Warner Cable
Engineering Department
200 Akamainui Street
Mililani, Hawaii 96789

**Subject: Feasibility Study of Ala Wai Canal Project
U.S. Army Corps of Engineers, Honolulu District
Utility Verification and Request for Information**

Dear Ms. Ebert,

At the request of the State of Hawaii Department of Land and Natural Resources (DLNR) Engineering Division, the Ala Wai Canal Project is a flood risk management feasibility study being investigated by the U.S. Army Corps of Engineers, Honolulu District (USACE) under the authority of Section 209 of the Flood Control Act of 1962.

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Sincerely,

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Jason Y. Kage
Project Manager

Enclosures (2)

Cc:

Michael Wyatt, USACE



RECEIVED

MAY 16 2016

May 12, 1016

CH2M
1132 Bishop Street, Suite 1100
Honolulu, Hawaii 96813

Attention: Jason Y. Kage

Project: Feasibility Study of Ala Wai Canal Project

Subject: Impacted to CATV

Dear Mr. Kage,

At this time Oceanic Time Warner Cable sees No impact to our facilities in and around the project areas. If you have any questions, contact me at #625-8576.

Sincerely,

A handwritten signature in black ink, appearing to read "Lionel Aguiar", written over the word "Sincerely,".

Lionel Aguiar
OSP Engineer
Oceanic Time Warner Cable

Attachment 2h

Correspondence with Hawaiian Telcom, Inc.

CH2M HILL
1132 Bishop Street
Suite 1100
Honolulu, HI 96813
Tel 808.943.1133
Fax 808.954.4400



May 10, 2016

Mr. Leslie Loo
Hawaiian Telcom, Inc.
1177 Bishop Street (A10)
Honolulu, Hawaii 96813

**Subject: Feasibility Study of Ala Wai Canal Project
U.S. Army Corps of Engineers, Honolulu District
Utility Verification and Request for Information**

Dear Mr. Loo:

At the request of the State of Hawaii Department of Land and Natural Resources (DLNR) Engineering Division, the Ala Wai Canal Project is a flood risk management feasibility study being investigated by the U.S. Army Corps of Engineers, Honolulu District (USACE) under the authority of Section 209 of the Flood Control Act of 1962.

The objective of the project is to reduce riverine flood risks in the Ala Wai Watershed. In response to identified flood-related problems and opportunities, a range of alternatives were evaluated, resulting in identification of a tentatively selected plan. The plan includes (1) in-stream debris catchment and detention basins in the upper reaches of Makiki, Manoa and Palolo streams, (2) multi-purpose detention basins in open space areas in the urbanized portions of the watershed, and (3) floodwalls (and associated pump stations) along the Ala Wai Canal.

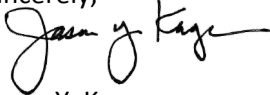
As part of project planning, USACE has contracted CH2M to examine utilities that may be potentially impacted by project features. This effort is focused on the following:

- Ala Wai Canal Floodwalls (Sheet C-101): *Makai* side of Ala Wai Canal, along Ala Wai Boulevard between Ala Moana Boulevard and Ainakea Way
- Ala Wai Golf Course Detention Basin (Sheet C-103): *Makai* side of Date Street from Manoa Palolo Drainage Canal to Kapahulu Avenue (adjacent to Ala Wai Golf Course) and *ewa* side of Kapahulu Avenue, between Date Street and Ala Wai Boulevard
- Husten Ditch Detention (Sheet C-102)
- Kanewai Field Multi-Purpose Detention (Sheet C-306)
- Multiple In-stream Detention Basins (Sheets C-301, C-302, C-305, C-308, C-313, C-315)
- Manoa Stream Falls 7 & 8 (Sheets C-107 and C-108)

Enclosed are site plans of all the proposed project areas, with the areas of particular interest highlighted in yellow. We are requesting information and as-builts of your existing infrastructure around the proposed project areas, as well as any future planning which may occur at these locations. This information will assist in evaluation of the proposed project.

The project is under an accelerated schedule and to assist us in meeting our client's expectations, we respectfully request that this information be returned by May 20, 2016. Should you have any questions, please do not hesitate to contact me at (808) 943-1133. Thank you in advance for your assistance.

Sincerely,

A handwritten signature in black ink, appearing to read "Jason Y. Kage". The signature is fluid and cursive, with a long horizontal stroke at the end.

Jason Y. Kage
Project Manager

Enclosures (2)

Cc:

Michael Wyatt, USACE



June 1, 2016

CH2M HILL
1132 Bishop Street
Suite 1100
Honolulu, Hawaii 96813
Attention: Mr. Jason Y. Kage, Project Manager

Dear Mr. Kage:

**Subject: Feasibility Study of Ala Wai Canal Project
U.S. Army Corps of Engineers, Honolulu District
Utility Verification and Request for Information**

In response to your letter dated May 10, 2016, we have determined that Hawaiian Telcom has aerial and underground facilities within the area of your proposed project sites. The locations of the support structures are indicated on the attached drawings.

Please be aware that these locations are only approximate and that field locating should be done prior to any excavation work commencing. Also, underground service drop connections to individual lots may or may not be identified on the maps.

Hawaiian Telcom does not foresee any future projects at these locations.

If you have any questions or require assistance in the future on this project, please call me at 546-7761.

Sincerely,

Les Loo
Network Engineer – Outside Plant Engineering
Network Engineering & Planning

Attachments

cc: File



Attachment 2i

Correspondence with Sandwich Isles Communications, Inc.

CH2M HILL
1132 Bishop Street
Suite 1100
Honolulu, HI 96813
Tel 808.943.1133
Fax 808.954.4400



May 10, 2016

Kalani Andrade, Network Engineering and I.T. Manager
Sandwich Isles Communications, Inc.
77-808 Kamehameha Highway
Mililani, Hawaii 96789

**Subject: Feasibility Study of Ala Wai Canal Project
U.S. Army Corps of Engineers, Honolulu District
Utility Verification and Request for Information**

Dear Kalani Andrade:

At the request of the State of Hawaii Department of Land and Natural Resources (DLNR) Engineering Division, the Ala Wai Canal Project is a flood risk management feasibility study being investigated by the U.S. Army Corps of Engineers, Honolulu District (USACE) under the authority of Section 209 of the Flood Control Act of 1962.

The objective of the project is to reduce riverine flood risks in the Ala Wai Watershed. In response to identified flood-related problems and opportunities, a range of alternatives were evaluated, resulting in identification of a tentatively selected plan. The plan includes (1) in-stream debris catchment and detention basins in the upper reaches of Makiki, Manoa and Palolo streams, (2) multi-purpose detention basins in open space areas in the urbanized portions of the watershed, and (3) floodwalls (and associated pump stations) along the Ala Wai Canal.

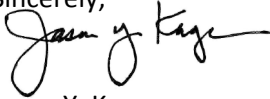
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Enclosed are site plans of all the proposed project areas, with the areas of particular interest highlighted in yellow. We are requesting information and as-builts of your existing infrastructure around the proposed project areas, as well as any future planning which may occur at these locations. This information will assist in evaluation of the proposed project.

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Sincerely,

A handwritten signature in black ink, appearing to read "Jason Y. Kage". The signature is fluid and cursive, with the first name "Jason" being more prominent.

Jason Y. Kage
Project Manager

Enclosures (2)

Cc:

Michael Wyatt, USACE

Attachment 3

Detailed Listing of Utilities within the Project Construction
Limits

Summary of Existing Utilities Located Within Construction Limits of Ala Wai Canal Project

Utility Type	Utility Owner	Project Location																
		Ala Wai Canal Floodwalls (Left Bank)	Ala Wai Canal Floodwalls (Right Bank)	Ala Wai Canal Floodwalls (Manoa Palolo Canal)	Pump Station 1 (Kapahulu)	Pump Station 2 (Golf Course)	Pump Station 3 (University)	Ala Wai Golf Course Detention	Hausten Ditch Detention	Kanewai Detention	Manoa In-Stream	Woodlawn Ditch Detention	Waiakeakua Debris / Detention Basin	Waihi Debris / Detention Basin	Makiki Debris / Detention Basin	Pukele Debris / Detention Basin	Waiomao Debris / Detention Basin	Mitigation Sites (Falls 7 and 8)
Electrical	Hawaiian Electric Company	●	●				●	●		●			●		●	●	●	
Water	Board of Water Supply	●	●					●					●					
Storm Drain	City & County of Honolulu	●	●	●	●	●	●	●	●	●	●	●				●	●	
Sanitary Sewer	City & County of Honolulu	●	●	●			●	●	●	●	●					●	●	●
Gas	Hawaii Gas	●																
Telecommunications	Oceanic Time Warner	●	●				●			●	●		●		●	●	●	
	Hawaiian Telcom																	
	Sandwich Isles Communications																	
Lighting	City & County of Honolulu	●	●	●		●	●		●	●								
Traffic Signals	City & County of Honolulu	●																
Irrigation	City & County of Honolulu	●	●	●		●		●	●	●								

Ala Wai Canal Floodwalls (Left Bank)

Utility Type	Utility Owner	Source of Information	Description	General Location	Status	Within Const. Limits	Est. Depth Within Construction Limits	Potential Conflict with Proposed Feature	Recommended Resolution	Notes
Electrical	Hawaiian Electric Company	Ala Wai Canal Dredging FEA DDC Asbuilt, Job No. W18-07, Sheet C-13	Electrical conduit; size unknown	Crosses Canal at Ala Moana Blvd Bridge	Active	yes	Conduit encased in bridge structure	Bridge structure (and existing conduit) not expected to be affected by floodwall	Confirm final design for bridge tie-in does not conflict with existing utility conduit once detailed utility information is obtained; include measures to avoid/protect, as needed	Partial location shown on plan drawings based on asbuilt
	Hawaiian Electric Company	Ala Wai Canal Dredging FEA DDC Asbuilt, Job No. W18-07, Sheet C-17	Electrical conduit; size unknown	Crosses Canal at McCully St Bridge	Active	yes	Conduit encased in bridge structure	Bridge structure (and existing conduit) not expected to be affected by floodwall	Confirm final design for bridge tie-in does not conflict with existing utility conduit once detailed utility information is obtained; include measures to avoid/protect, as needed	Partial location shown on plan drawings based on asbuilt
	Hawaiian Electric Company	No detailed source documents identified	46kV underground sub-transmission line	Along Ala Wai Blvd between Kaiolu St and McCully St	Active	Unknown	Unknown	Assumed to be within Ala Wai Blvd roadway, but specific information has not been obtained	Determine whether floodwall conflicts with electrical line once detailed information is obtained; microsite floodwalls or relocate utility, as needed	Detailed information not obtained; locations not shown on plan drawings
	Hawaiian Electric Company	Ala Wai Canal Dredging FEA 46kV Relocation Project documentation	Two 46kv lines within 200'-wide easement crossing Canal; to be replaced by new line (see future project)	Extending across Canal between Kaiolu St and Ala Wai Neighborhood Park; manholes at intersection of Kaiolu St and Ala Wai Blvd	Active (to be replaced in future)	yes	Approx. 20 feet below grade (per 46kV relocation project info)	Floodwall would cross existing 46kV lines, but these are expected to be removed in 2018	N/A	Schematically shown on plan drawings based on 46kV Relocation Project documentation
	Hawaiian Electric Company	46kV Relocation Project documentation	Proposed 46kV line to be installed in horizontal directional drill casing under Canal	Crossing Canal between Kalaimoku St and University Ave, with associated trenching in Ala Wai Blvd roadway between Kaiolu St and Kalaimoku St	Future (planned to start in 2018)	yes	40-50' deep (at edge of Canal)	46kv line would be installed prior to project and deep enough to avoid conflict with floodwall, but could conflict with pump station	Track utility information; confirm there would be no conflict once detailed utility information and location is available	Schematically shown on plan drawings based on 46kV Relocation Project documents; would also involve trenching between Kaiolu St and Kalaimoku St (expected to occur in Ala Wai Blvd. roadway, but design is not yet complete)
	Hawaiian Electric Company	DDC Asbuilt, Job No. W18-07, Sheets C-14 through C-16	Miscellaneous electrical distribution lines and other electrical infrastructure	Along entire length of Ala Wai Blvd, transitioning back and forth between roadway and landscaped area	Active	yes	Unknown	Partially located within or near floodwall footprint	Relocate within landscaped area, as needed	Partial location shown on plan drawings based on Asbuilt
Water	Board of Water Supply	Ala Wai Canal Dredging FEA BWS Dist Map (2016)	Underground distribution line; 12" diameter	Crosses Wai Canal at Ala Moana Blvd.; (attached to bridge)	Active	yes	Attached to bridge	Bridge structure (and existing water line) not expected to be affected by floodwall	Confirm final design for bridge tie-in does not conflict with existing water line once detailed utility information is obtained; include measures to avoid/protect, as needed	
	Board of Water Supply	Ala Wai Canal Dredging FEA BWS Dist Map (2016) DDC Asbuilt, Job No. W18-07, Sheet C-16	Underground distribution line; 12" diameter	Within Ala Wai Blvd roadway; crosses Canal at Kalakaua Ave (attached to bridge)	Active	yes	Attached to bridge	Bridge structure (and existing water line) not expected to be affected by floodwall	Confirm final design for bridge tie-in does not conflict with existing water line once detailed utility information is obtained; include measures to avoid/protect, as needed	Partial location shown on plan drawings based on Asbuilt
	Board of Water Supply	Ala Wai Canal Dredging FEA BWS Dist Map (2016) DDC Asbuilt, Job No. W18-07, Sheet C-17	Underground distribution line; 16" diameter	Crosses Canal at McCully St. (attached to bridge)	Active	yes	Attached to bridge	Bridge structure (and existing water line) not likely to be affected by floodwall, depending on design for bridge tie-in	Confirm final design for bridge tie-in does not conflict with existing water line once detailed utility information is obtained; include measures to avoid/protect, as needed	

Ala Wai Canal Floodwalls (Left Bank)

Utility Type	Utility Owner	Source of Information	Description	General Location	Status	Within Const. Limits	Est. Depth Within Construction Limits	Potential Conflict with Proposed Feature	Recommended Resolution	Notes
Water (con't)	Board of Water Supply	Ala Wai Canal Dredging FEA BWS Dist Map (2016) DDC Asbuilt, Job No. W18-07, Sheet C-17	Underground distribution line; 30" diameter	Crosses Ala Wai Blvd. near McCully St.; in concrete encasement alongside upstream side of bridge	Active	yes	Alongside upstream side of bridge	Bridge structure (and existing water line) not likely to be affected by floodwall, depending on design for bridge tie-in	Confirm final design for bridge tie-in does not conflict with existing water line once detailed utility information is obtained; include measures to avoid/protect, as needed	Partial location shown on plan drawings based on visual observation
	Board of Water Supply	BWS Dist Map (2016) BWS Asbuilt, Job No. 92-016	Underground distribution line (transitions between 12" and 16" diameter); an abandoned line runs parallel to this active line	Entire length of Ala Wai Blvd, within roadway	Active	no	N/A	Project is not expected to affect utilities within Ala Wai Blvd roadway	Design drawings and specifications should identify measures to avoid/protect utility, depending on final design	Partial location shown on plan drawings based on Asbuilt
	Board of Water Supply	BWS Dist Map (2016) DDC Asbuilt, Job No. W18-07, Sheet C-14	Lateral lines feeding approx. 40 fire hydrant along Ala Wai Blvd	Various locations within Ala Wai Blvd roadway. Most are on makai side of roadway; 4 are located within landscaped area (between Kalakaua Ave and Ala Moana Blvd)	Active	yes	Typically 3' cover	Project is not expected to affect utilities within Ala Wai Blvd roadway	Design drawings and specifications should identify measures to avoid/protect laterals and hydrants (particularly those in landscaped area between Kalakaua Blvd and Ala Moana Blvd)	Plan drawings only show fire hydrants on makai side of Ala Wai Blvd, west of Kalakaua Ave (4 total)
	Private	Ala Wai Canal Dredging FEA BWS Asbuilt, Job No. 78-100, Sheet 6	Private line for Sheraton Hotel; emergency replacement for original line was abandoned; replacement status unknown	Crossing Ala Wai Blvd. at Nahua St.	Active	yes	Invert = 0.2' (approx.)	Floodwall would cross abandoned water line; status of replacement line is unknown	Verify status of replacement line and design floodwall to accommodate water line as needed	Location of abandoned line shown on plan drawings based on Asbuilt; status of replacement line to be verified during design phase
Storm Drain	City & County of Honolulu	DPW Asbuilt, Job No. 24-50, Sheet 3	4"x4" culvert	Crossing Ala Wai Blvd at western terminus	Shown as proposed on asbuilt; not in C&C GIS database	yes	Unknown	Current City & County GIS records do not identify storm drain in this location; no conflict expected	Verify status of proposed storm drain and design floodwall to accommodate line if needed	Location not shown on plan drawings
	City & County of Honolulu	DPW Asbuilt, Job No. 24-50, Sheet 3	Reinforced concrete drain box; 12" diameter	Crossing Ala Wai Blvd. between Ala Moana Blvd. and Lipeepee St.	Shown on asbuilt; not in C&C GIS records	yes	Unknown	Current City & County GIS records do not identify storm drain in this location; no conflict expected	Verify status of drainage box and design floodwall to accommodate line if needed	Location not shown on plan drawings
	City & County of Honolulu	C&C GIS database DDC Asbuilt, Job No. W18-07, Sheet C-13	8" diameter reinforced concrete pipe (RCP)	Crossing Ala Wai Blvd between Ala Moana Blvd and Lipeepee St	Active	yes	Unknown	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database DDC Asbuilt, Job No. W18-07, Sheet C-14	18" diameter RCP	Crossing Ala Wai Blvd between Ala Moana Blvd and Lipeepee St	Active	yes	Unknown	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database DDC Asbuilt, Job No. W18-07, Sheet C-14	8" diameter RCP	Crossing Ala Wai Blvd between Ala Moana Blvd and Lipeepee St	Active	yes	Unknown	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	DDC Asbuilt, Job No. W18-07, Sheet C-14	18" diameter RCP	Crossing Ala Wai Blvd between Ala Moana Blvd and Lipeepee St	Active	yes	Unknown	Current City & County GIS records do not identify storm drain in this location; no conflict expected	Verify status of drainage box and design floodwall to accommodate line if needed	
	City & County of Honolulu	C&C GIS database DDC Asbuilt, Job No. W18-07, Sheet C-15	48" diameter RCP	Crossing Ala Wai Blvd at Lipeepee St	Active	yes	Invert = approx. -14' (Asbuilt)	Floodwall would cross storm drain, but no conflict expected based on storm drain elevation	Confirm elevation of storm drain and design floodwall to accommodate line if needed	

Ala Wai Canal Floodwalls (Left Bank)

Utility Type	Utility Owner	Source of Information	Description	General Location	Status	Within Const. Limits	Est. Depth Within Construction Limits	Potential Conflict with Proposed Feature	Recommended Resolution	Notes
Storm Drain (con't)	City & County of Honolulu	C&C GIS database DDC Asbuilt, Job No. W18-07, Sheet C-15	24" diameter RCP	Crossing Ala Wai Blvd at Lipeepee St	Active	yes	Invert = approx. -2.4'	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database DDC Asbuilt, Job No. W18-07, Sheet C-15	24" diameter RCP	Crossing Ala Wai Blvd. at Makaoe Ln.	Active	yes	Unknown	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	Shown as 24" diameter in GIS database, 12" diameter on Asbuilt
	City & County of Honolulu	C&C GIS database DDC Asbuilt, Job No. W18-07, Sheet C-16	18" diameter RCP	Crossing Ala Wai Blvd between Makaoe Ln and Kalakaua Ave	Active	yes	Invert = approx. -0.8'	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	Asbuilt for Allure Waikiki, Sheet C-4.2	2-18" diameter RCP	Crossing Ala Wai Blvd just west of Kalakaua Ave	Active	yes	Invert = 0.01	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	DDC Asbuilt, Job No. W18-07, Sheet C-16	18" diameter RCP	Crossing Ala Wai Blvd. east of Kalakaua Ave.	Active	yes	Unknown	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database	18" diameter RCP	Crosses roadway west of McCully Street Bridge	Active	yes	Unknown	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database	24" diameter RCP	Runs up middle of McCully Street	Active	no	Unknown	Floodwall would not cross storm drain	N/A	
	City & County of Honolulu	C&C GIS database USACE 35% design drawings	18" diameter RCP	Crossing Ala Wai Blvd. at Niu Street	Active	yes	Invert = -0.4' (USACE drawings)	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database USACE 35% design drawings	18" diameter RCP	Crossing Ala Wai Blvd. at Niu Street	Active	yes	Invert = -0.7' (USACE drawings)	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database USACE 35% design drawings	18" diameter RCP	Crossing Ala Wai Blvd. at Pau Street	Active	yes	Invert = -0.8' (USACE drawings)	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database USACE 35% design drawings BWS Asbuilt, Job No. 78-100, Sheet 3	18" diameter RCP	Crossing Ala Wai Blvd. west of Kuamoo St.	Active	yes	Invert = -1.1' (USACE drawings)	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database USACE 35% design drawings BWS Asbuilt, Job No. 78-100, Sheet 4	18" diameter RCP	Crossing Ala Wai Blvd. west of Namahana St.	Active	yes	Invert = -0.3' (USACE drawings)	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database USACE 35% design drawings BWS Asbuilt, Job No. 78-100, Sheet 4	24" diameter RCP	Crossing Ala Wai Blvd. at Namahana St.	Active	yes	Invert = 0.2' (USACE drawings)	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database USACE 35% design drawings BWS Asbuilt, Job No. 78-100, Sheet 4	18" diameter RCP	Crossing Ala Wai Blvd. east of Namahana St.	Active	yes	Invert = -0.5' (USACE drawings)	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database	RCP, unknown diameter	Crossing Ala Wai Blvd. west of Olohana St.	Active	yes	Unknown	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database USACE 35% design drawings BWS Asbuilt, Job No. 78-100, Sheet 4	18" diameter RCP	Crossing Ala Wai Blvd. west of Kalamoku St.	Active	yes	Invert = -0.8' (USACE drawings)	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	

Ala Wai Canal Floodwalls (Left Bank)

Utility Type	Utility Owner	Source of Information	Description	General Location	Status	Within Const. Limits	Est. Depth Within Construction Limits	Potential Conflict with Proposed Feature	Recommended Resolution	Notes
Storm Drain (con't)	City & County of Honolulu	C&C GIS database USACE 35% design drawings	72" x 30" box culvert	Crossing Ala Wai Blvd. at Kalamoku St.	Active	yes	Invert = -0.9' (USACE drawings)	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database BWS Asbuilt, Job No. 78-100, Sheet 4	24" diameter RCP	Crossing Ala Wai Blvd. at Kalamoku St.	Active	yes	Unknown	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database USACE 35% design drawings BWS Asbuilt, Job No. 78-100, Sheet 4	18" diameter RCP	Crossing Ala Wai Blvd. east of Kalamoku St.	Active	yes	Invert = -0.7' (USACE drawings)	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	Shown as 18" diameter RCP in GIS database, 24" culvert on USACE 35% design drawings
	City & County of Honolulu	C&C GIS database USACE 35% design drawings BWS Asbuilt, Job No. 78-100, Sheet 5	24" diameter RCP	Crossing Ala Wai Blvd. west of Kaiolu St.	Active	yes	Invert = -1.0' (USACE drawings)	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	Shown as 24" diameter in GIS database, 18" diameter in USACE 35% design drawings
	City & County of Honolulu	C&C GIS database USACE 35% design drawings BWS Asbuilt, Job No. 78-100, Sheet 5	24" diameter RCP	Crossing Ala Wai Blvd. east of Kaiolu St.	Active	yes	Invert = -1.6' (USACE drawings)	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	Shown as 24" diameter in GIS database, 18" diameter in USACE 35% design drawings
	City & County of Honolulu	C&C GIS database USACE 35% design drawings BWS Asbuilt, Job No. 78-100, Sheet 5	42" diameter RCP	Crossing Ala Wai Blvd. at Lewers St.	Active	yes	Invert = -5.9' (USACE drawings)	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database USACE 35% design drawings BWS Asbuilt, Job No. 78-100, Sheet 5	24" diameter RCP	Crossing Ala Wai Blvd. east of Lewers St.	Active	yes	Invert = -2.2' (USACE drawings)	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	Shown as 24" diameter in GIS database, 18" diameter in USACE 35% design drawings
	City & County of Honolulu	C&C GIS database USACE 35% design drawings BWS Asbuilt, Job No. 78-100, Sheet 6	66" diameter RCP	Crossing Ala Wai Blvd. west of Seaside Ave.	Active	yes	Invert = -6.0' (USACE drawings)	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	USACE design drawings show the 66" RCP and 24" RCP in reverse locations
	City & County of Honolulu	C&C GIS database USACE 35% design drawings BWS Asbuilt, Job No. 78-100, Sheet 6	24" diameter RCP	Crossing Ala Wai Blvd. east of Seaside Ave.	Active	yes	Inv = -0.88' (Asbuilt) Inv = -6.0' (USACE drawings)	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	USACE design drawings show the 66" RCP and 24" RCP in reverse locations; Shown as 24" diameter in GIS database, and 18" diameter in USACE 35% design drawings
	City & County of Honolulu	C&C GIS database USACE 35% design drawings BWS Asbuilt, Job No. 78-100, Sheet 6	18" diameter RCP	Crossing Ala Wai Blvd. at Nohonani St.	Active	yes	Inv = -0.80' (Asbuilt) Inv = -3.66' (USACE drawings)	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	USACE 35% design drawings show two 18" diameter lines
	City & County of Honolulu	C&C GIS database USACE 35% design drawings BWS Asbuilt, Job No. 78-100, Sheet 6	24" diameter RCP	Crossing Ala Wai Blvd. at Nahua St.	Active	yes	Inv = -0.47' (Asbuilt) Inv = -2.1' (USACE drawings)	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	Shown as 24" diameter in GIS database, 18" diameter in USACE 35% design drawings
	City & County of Honolulu	C&C GIS database USACE 35% design drawings BWS Asbuilt, Job No. 78-100, Sheet 7	18" diameter RCP	Crossing Ala Wai Blvd. west of Walina St.	Active	yes	Inv = -0.4' (Asbuilt) Inv = -1.5' (USACE drawings)	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database USACE 35% design drawings BWS Asbuilt, Job No. 78-100, Sheet 7	18" diameter RCP	Crossing Ala Wai Blvd. east of Walina St.	Active	yes	Inv = -0.40' (Asbuilt) Inv = -1.7' (USACE drawings)	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	

Ala Wai Canal Floodwalls (Left Bank)

Utility Type	Utility Owner	Source of Information	Description	General Location	Status	Within Const. Limits	Est. Depth Within Construction Limits	Potential Conflict with Proposed Feature	Recommended Resolution	Notes
Storm Drain (con't)	City & County of Honolulu	C&C GIS database USACE 35% design drawings BWS Asbuilt, Job No. 78-100, Sheet 7	18" diameter RCP	Crossing Ala Wai Blvd. west of Kanekapolei St.	Active	yes	Inv = 0.00	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database USACE 35% design drawings BWS Asbuilt, Job No. 78-100, Sheet 7	18" diameter RCP	Crossing Ala Wai Blvd. east of Kanekapolei St.	Active	yes	Inv = -1.9' and -2.9' (USACE drawings)	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	USACE 35% design drawings show two 18" diameter lines
	City & County of Honolulu	C&C GIS database USACE 35% design drawings BWS Asbuilt, Job No. 78-100, Sheet 7	60" diameter RCP	Crossing Ala Wai Blvd. at Kaiulani Ave.	Active	yes	Inv = -3.04'	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database USACE 35% design drawings BWS Asbuilt, Job No. 92-016, Sheet 4	18" diameter RCP	Crossing Ala Wai Blvd. east of Kaiulani Ave.	Active	yes	Inv = -0.3'	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database USACE 35% design drawings BWS Asbuilt, Job No. 92-016, Sheet 5	18" diameter RCP	Crossing Ala Wai Blvd. west of Liliuokalani Ave.	Active	yes	Inv = 0.2' (USACE drawings)	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database USACE 35% design drawings	Box culvert	Crossing Ala Wai Blvd. at Liliuokalani Ave.	Active	yes	Inv = -3.3' (USACE drawings)	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database USACE 35% design drawings BWS Asbuilt, Job No. 92-016,	18" diameter RCP	Crossing Ala Wai Blvd. at Ohua Ave.	Active	yes	Inv = -0.3' (USACE drawings)	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database USACE 35% design drawings BWS Asbuilt, Job No. 92-016,	18" diameter RCP	Crossing Ala Wai Blvd. at Ohua Ave.	Active	yes	Inv = -0.8' (USACE drawings)	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database USACE 35% design drawings BWS Asbuilt, Job No. 92-016, Sheet 6	7'x4' box drain (USACE 35% design drawings show 10' x 4')	Crossing Ala Wai Blvd. west of Paoakalani Ave	Active	yes	Inv = -2.2' (USACE drawings)	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	Shown as 7'x4' box culvert in GIS database and as 10'x4' culvert in USACE 35% design drawings
	City & County of Honolulu	C&C GIS database USACE 35% design drawings	18" diameter RCP	Crossing Ala Wai Blvd. east of Paoakalani Ave	Active	yes	Inv. = 0.3' (USACE drawings)	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database USACE 35% design drawings BWS Asbuilt, Job No. 92-016, Sheet 7	18" diameter RCP	Crossing Ala Wai Blvd. west of Wai Nani Way	Active	yes	Inv. = -0.3' (USACE drawings)	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database	18" diameter RCP	Crossing Ala Wai Blvd. at Wai Nani Way	Active	yes	Unknown	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database USACE 35% design drawings BWS Asbuilt, Job No. 92-016, Sheet 7	18" diameter RCP	Crossing Ala Wai Blvd. west of Ainakea Way	Active	yes	Inv = 0.6' (USACE drawings)	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	USACE 35% design drawings BWS Asbuilt, Job No. 92-016, Sheet 7	18" diameter RCP	Crossing Ala Wai Blvd. east of Ainakea Way	Active	yes	Inv = 0.7' (USACE drawings)	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	

Ala Wai Canal Floodwalls (Left Bank)

Utility Type	Utility Owner	Source of Information	Description	General Location	Status	Within Const. Limits	Est. Depth Within Construction Limits	Potential Conflict with Proposed Feature	Recommended Resolution	Notes
Sanitary Sewer	City & County of Honolulu	C&C GIS database DDC Asbuilt, Job No. W18-07, Sheet G-3	Force main; 42" diameter	Within Ala Wai Blvd roadway between Kaiolu St and Ala Moana Blvd.; crosses Canal near Ala Moana Blvd	Active	yes	Top of concrete pipe jacket at about -20 feet MSL (Ala Wai Canal Dredging FEA)	Force main is in roadway for most of its length, but floodwall would cross it near Ala Moana Blvd; however, no conflict is expected based on sewer depth	Design drawings and specifications should identify measures to avoid/protect sewer, as needed	Project is within the Waikiki Buffer Zone, which requires mitigation/monitoring measures to avoid damage to the Beachwalk WWPS force mains from ground vibration or soil liquefaction
	City & County of Honolulu	C&C GIS database DDC Asbuilt, Job No. W18-07, Sheet G-3 and C-22	Force main, Hobas pipe; 2-36" diameter	Crossing Ala Wai Canal at Kaiolu Street	Active	yes	Inv = between -19 and -34' (GIS database)	Floodwall would cross force main near Kaiolu St; however, no conflict is expected based on sewer depth	Design drawings and specifications should identify measures to avoid/protect sewer, as needed	Project is within the Waikiki Buffer Zone, which requires mitigation/monitoring measures to avoid damage to the Beachwalk WWPS force mains from ground vibration or soil liquefaction
	City & County of Honolulu	C&C GIS database DDC Asbuilt, Job No. W18-07, Sheet G-3	Sewer tunnel, Hobas pipe; 72" diameter	Within Ala Wai Blvd between Kalakaua Ave. and Ala Moana Blvd.; crosses Canal between McCully St and Kalakaua Ave, and near Ala Moana Blvd	Active	yes	30'+ below grade	Floodwall would cross sewer tunnel in two locations (near Kalakaua Bridge and near Ala Moana Bridge); however, no conflict is expected based on sewer depth	Design drawings and specifications should identify measures to avoid/protect sewer, as needed	Project is within the Waikiki Buffer Zone, which requires mitigation/monitoring measures to avoid damage to the Beachwalk WWPS force mains from ground vibration or soil liquefaction
	City & County of Honolulu	C&C GIS database Waikiki Buffer Zone Map BWS Asbuilt, Job No. 78-100,	Gravity line; 27" diameter	Within Ala Wai Blvd ROW between Lewers St. and Kanekapolei St.	Active	no	Inv = approx. -13' (GIS database)	Project is not expected to affect utilities within Ala Wai Blvd roadway	Design drawings and specifications should identify measures to avoid/protect sewer, as needed	
	City & County of Honolulu	C&C GIS database Waikiki Buffer Zone Map Ala Wai Canal Dredging FEA	Three gravity siphon lines; 21", 24" and 27" diameter	Crossing Canal at Lewers St.	Active	yes	Top of concrete jacket at -15.75' MSL (FEA); Inv = approx. -14 to -15.75' (GIS)	Floodwall would cross utility; however, no conflict is expected based on sewer depth	Design drawings and specifications should identify measures to avoid/protect sewer and accommodate existing manhole, as needed	
	City & County of Honolulu	C&C GIS database Ala Wai Canal Dredging FEA Waikiki Buffer Zone Map DDC Asbuilt, Job No. W18-07, Sheet C-16	Force main; 20" diameter	Along Kalakaua Ave, crossing Ala Wai Blvd and Ala Wai Promenade	Active	yes	Estimated to have 6' cover	Bridge structure (and existing sewer) not expected to be affected by floodwall	Confirm final design for bridge tie-in does not conflict with existing sewer line once detailed information is obtained; include measures to avoid/protect, as needed	C&C GIS database shows three 12" diameter lines crossing Kalakaua Bridge
	City & County of Honolulu	Information provided by Jack Pobuk, ENV (email dated May 19, 2016)	Future plans to convert 72" force main to gravity line; and connect new gravity sewers to existing manholes along 72" force main	Existing 72" diameter force main line corridor	Future (dates TBD)	yes	TBD	No conflict identified based on current level of detail; no manholes associated with 72" force main located within construction limits on makai side of Canal	Track additional detail and development of future plans	Not shown on plan drawings
Gas	Hawaii Gas	Hawaii Gas distribution map DDC Asbuilt, Job No. W18-07, Sheet C-16	Underground distribution line; 8" diameter transitioning to 6" diameter	Crossing Ala Wai Canal in conduit on Kalakaua Bridge	Active	yes	Approx. 4' cover near Ala Wai Blvd (Asbuilt)	Bridge structure (and existing conduit) not expected to be affected by floodwall	Confirm final design for bridge tie-in does not conflict with utility conduit once detailed information is obtained; include measures to avoid/protect, as needed	
	Hawaii Gas	Ala Wai Canal Dredging FEA DDC Asbuilt, Job No. W18-07, Sheet C-13	4" diameter	Crossing Ala Wai Canal in conduit on Ala Moana Bridge	Active	yes	Inv = approx. 3.8' (Asbuilt)	Bridge structure (and existing conduit) not expected to be affected by floodwall	Confirm final design for bridge tie-in does not conflict with utility conduit once detailed information is obtained; include measures to avoid/protect, as needed	Partial location shown on plan drawings based on Asbuilt
	Hawaii Gas	Hawaii Gas distribution map	Various	Various distribution lines within Ala Wai Blvd roadway (discontinuous)	Active and Abandoned	no	Unknown	Project is not expected to affect utilities within Ala Wai Blvd roadway	Design drawings and specifications should identify measures to avoid/protect gas lines, as needed	Not shown on plan drawings

Ala Wai Canal Floodwalls (Left Bank)

Utility Type	Utility Owner	Source of Information	Description	General Location	Status	Within Const. Limits	Est. Depth Within Construction Limits	Potential Conflict with Proposed Feature	Recommended Resolution	Notes
Telecommunications	Unknown	Ala Wai Canal Dredging FEA	Cable	Conduit in Kalakaua Ave. Bridge	Active	yes	Unknown	Bridge structure (and existing conduit) not expected to be affected by floodwall	Confirm final design for bridge tie-in does not conflict with utility conduit once detailed information is obtained; include measures to avoid/protect, as needed	Not shown on plan drawings
	Unknown	Ala Wai Canal Dredging FEA	Cable and telephone lines	Conduit in Ala Moana Blvd Bridge	Active	yes	Unknown	Bridge structure (and existing conduit) not expected to be affected by floodwall	Confirm final design for bridge tie-in does not conflict with utility conduit once detailed information is obtained; include measures to avoid/protect, as needed	Not shown on plan drawings
	Unknown	Ala Wai Canal Dredging FEA	Telephone lines	Conduit in McCully St Bridge	Active	yes	Unknown	Bridge structure (and existing conduit) not expected to be affected by floodwall	Confirm final design for bridge tie-in does not conflict with utility conduit once detailed information is obtained; include measures to avoid/protect, as needed	Not shown on plan drawings
	Unknown	DDC Asbuilt, Job No. W18-07, Sheets C-14 through C-16	Unknown telecommunication line	Within Ala Wai Blvd between Kalakaua Ave and Ala Moana Blvd	Active	no	Unknown	Project is not expected to affect utilities within Ala Wai Blvd roadway	Design drawings and specifications should identify measures to avoid/protect gas lines, as needed	
Lighting	City & County of Honolulu	Visual Inspection DDC Asbuilt, Job No. W18-07, Sheets C-14 through C-16	Multiple power feeds and lines; details not shown on asbuilt drawings	Between Ala Wai Blvd and existing sidewalk; specific locations not shown on asbuilt drawings	Active	yes	Unknown	Generally located within or near floodwall footprint	Relocate as needed during construction (assuming locations may not be obtained as part of future survey effort)	Not shown on plan drawings
Traffic Signals	City & County of Honolulu	Visual Inspection	Multiple power feeds and lines, as well as traffic signal boxes; details not shown on asbuilt drawings	Between Ala Wai Blvd and existing sidewalk; specific locations not shown on asbuilt drawings	Active	yes	Unknown	Generally located within or near floodwall footprint	Relocate as needed during construction (assuming locations may not be obtained as part of future survey effort)	Not shown on plan drawings
Irrigation	City & County of Honolulu	Visual Inspection DDC Asbuilt, Job No. W18-07, Sheets C-14 through C-16	Various line (inc. 2-1/2" and 1-1/4" diameter); details not shown on asbuilt drawings	Generally between Ala Wai Blvd and existing sidewalk; specific locations not shown on asbuilt drawings	Active	yes	Unknown	Generally located within or near floodwall footprint	Relocate as needed during construction (assuming locations may not be obtained as part of future survey effort)	Partial location shown on plan drawings based on Asbuilt

NOTE: A description of the color coding shown for the potential conflict and recommended resolution is provided in Section 3 of the Utility Assessment Report.

Ala Wai Canal Floodwalls (Right Bank)

Utility Type	Utility Owner	Source of Information	Description	General Location	Status	Within Const. Limits	Est. Depth Within Construction Limits	Potential Conflict with Proposed Feature	Recommended Resolution	Notes
Electrical	Hawaiian Electric Company	Ala Wai Canal Dredging FEA DDC Asbuilt, Job No. W18-07, Sheet C-13	Electrical line; size unknown	Crosses Canal at Ala Moana Blvd Bridge	Active	yes	Conduit encased in bridge structure	Bridge structure (and existing conduit) not expected to be affected by floodwall	Confirm final design for bridge tie-in does not conflict with existing utility conduit once detailed utility information is obtained; include measures to avoid/protect, as needed	Partial location shown on plan drawings based on asbuilt
	Hawaiian Electric Company	Ala Wai Canal Dredging FEA DDC Asbuilt, Job No. W18-07, Sheet C-17	Electrical conduit; size unknown	Crosses Canal at McCully St Bridge	Active	yes	Conduit encased in bridge structure	Bridge structure (and existing conduit) not expected to be affected by floodwall	Confirm final design for bridge tie-in does not conflict with existing utility conduit once detailed utility information is obtained; include measures to avoid/protect, as needed	Partial location shown on plan drawings based on asbuilt
	Hawaiian Electric Company	Ala Wai Canal Dredging FEA 46kV Relocation Project documentation	Two 46kv lines within 200'-wide easement crossing Canal; to be replaced by new line (see future project)	Extending across Canal between Ala Wai Neighborhood Park and Kaiolu St	Active (to be replaced by future project)	yes	Approx. 20 feet below grade (per 46kV relocation project info)	Floodwall would cross existing 46kV lines, but these are expected to be removed in 2018	N/A	Schematically shown on plan drawings based on 46kV Relocation Project documentation
	Hawaiian Electric Company	46kV Relocation Project documentation	Proposed 46kV line to be installed in horizontal directional drill casing under Canal	Crossing Ala Wai Canal, between Kalaimoku St and University Ave	Future (planned to start in 2018)	yes	40-50' deep (at edge of Canal)	46kv line would be installed prior to project and deep enough to avoid conflict with floodwall, but could conflict with pump station	Track utility information; confirm there would be no conflict once detailed utility information and location is available	Schematically shown on plan drawings based on 46kV Relocation Project documentation
	Hawaiian Electric Company	Visual inspection DPR Utility Plan, Job No. 89-009c, Sheet C3	Overhead electrical line	Makai side of entrance road to Ala Wai Golf Course clubhouse	Active	yes	Aboveground	Floodwall and/or flood gate not expected to conflict with overhead electrical line	Include utility information in detailed design drawings/specifications, with provisions for temporary relocation as needed for construction access	
Water	Board of Water Supply	Ala Wai Canal Dredging FEA BWS Dist Map (2016)	Underground distribution line; 12" diameter	Crosses Wai Canal at Ala Moana Blvd; attached to bridge	Active	yes	Attached to bridge	Bridge structure (and existing water line) not expected to be affected by floodwall	Confirm final design for bridge tie-in does not conflict with water line once detailed utility information is obtained; include measures to avoid/protect, as needed	
	Board of Water Supply	Ala Wai Canal Dredging FEA BWS Dist Map (2016) DDC Asbuilt, Job No. W18-07, Sheet C-16	Underground distribution line; 12" diameter	Crosses Canal at Kalakaua Ave; attached to bridge	Active	yes	Attached to bridge	Bridge structure (and existing water line) not expected to be affected by floodwall	Confirm final design for bridge tie-in does not conflict with water line once detailed utility information is obtained; include measures to avoid/protect, as needed	
	Board of Water Supply	Ala Wai Canal Dredging FEA BWS Dist Map (2016) DDC Asbuilt, Job No. W18-07, Sheet C-17	Underground distribution line; 16" diameter	Crosses Canal at McCully St. (attached to bridge)	Active	yes	Attached to bridge	Bridge structure (and existing water line) not expected to be affected by floodwall	Confirm final design for bridge tie-in does not conflict with water line once detailed utility information is obtained; include measures to avoid/protect, as needed	
	Board of Water Supply	Ala Wai Canal Dredging FEA BWS Dist Map (2016) DDC Asbuilt, Job No. W18-07, Sheet C-17	Underground distribution line; 30" diameter	Crosses Ala Wai Blvd. near McCully St.; in concrete encasement alongside upstream side of bridge	Active	yes	Alongside upstream side of bridge	Bridge structure (and existing water line) not expected to be affected by floodwall	Confirm final design for bridge tie-in does not conflict with water line once detailed utility information is obtained; include measures to avoid/protect, as needed	Partial location shown on plan drawings based on visual observation
	Board of Water Supply	DPR Utility Plan, Job No. 89-009c, Sheet C3	3" diameter	Runs along entrance road to Ala Wai Golf Course clubhouse	Active	yes	Approx. 2-3' below ground	Water line crosses location where floodwall and/or flood gate would join with golf course detention berm	Design floodwall and/or flood gate to accommodate water line crossing once detailed information is obtained	
	Board of Water Supply	BWS Dist Map (2016) DPR Utility Plan, Job No. 89-009c, Sheet C3	8" diameter	Runs along entrance road to Ala Wai Golf Course clubhouse	Active	yes	Approx. 2-3' below ground	Water line crosses location where floodwall and/or flood gate would join with golf course detention berm	Design floodwall and/or flood gate to accommodate water line crossing once detailed information is obtained	
	Private	BWS Dist Maps (1988), Sheet 45	4" transitioning to 3" diameter	Along Ala Wai Promenade, west of Kalakaua Ave.	Active	yes	Unknown	Generally located within or near floodwall footprint	Relocate within promenade area as needed during construction	Not shown on plan drawings

Ala Wai Canal Floodwalls (Right Bank)

Utility Type	Utility Owner	Source of Information	Description	General Location	Status	Within Const. Limits	Est. Depth Within Construction Limits	Potential Conflict with Proposed Feature	Recommended Resolution	Notes
Storm Drain	City & County of Honolulu	C&C GIS database USACE 35% design drawings	18" diameter RCP	Just east of Ala Moana Bridge	Active	yes	Unknown	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database USACE 35% design drawings	24" diameter RCP	Between Ala Moana Blvd and Kalakaua Ave	Active	yes	Unknown	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database USACE 35% design drawings	6'x7' box culvert	Between Ala Moana Blvd and Kalakaua Ave	Active	yes	Unknown	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database USACE 35% design drawings	RCP; diameter unknown	Between Ala Moana Blvd and Kalakaua Ave; near convention center	Active	yes	Unknown	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database USACE 35% design drawings	RCP; diameter unknown	Between Ala Moana Blvd and Kalakaua Ave; near convention center	Active	yes	Unknown	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database USACE 35% design drawings	18" diameter RCP	Just west of Kalakaua Ave	Active	yes	Unknown	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database USACE 35% design drawings	24" diameter RCP	Between Kalakaua Ave and McCully St	Active	yes	Unknown	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database USACE 35% design drawings DDC Asbuilt, Job No. W18-07, Sheet C-17	18" diameter RCP	Along McCully St. sidewalk (east side)	Active	yes	Inv = -.01' (USACE)	Storm drain is located within McCully St roadway, but exact location is unknown floodwall may conflict with storm drain depending on final design location	Confirm final design for floodwall does not conflict with existing storm drain once detailed utility information is obtained; modify design and/or relocate utility, as needed	
	City & County of Honolulu	DDC Asbuilt, Job No. W18-07, Sheets C-17 and C-25A	8" diameter RCP	At the Ala Wai Recreation Center east of McCully St., outfall to Ala Wai Canal	Shown on Asbuilt; not in C&C GIS records	yes	Inv = approx 0.0' (Asbuilt)	Floodwall would cross storm drain (if verified to be present)	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	Storm drain is not shown on C&C GIS database, but GIS data show drain inlet in parking lot so storm drain assumed present
	City & County of Honolulu	DDC Asbuilt, Job No. W18-07, Sheets C-17 and C-25A	24" diameter RCP	At the Ala Wai Recreation Center east of McCully St., outfall to Ala Wai Canal	Shown on Asbuilt; not in C&C GIS records	yes	Inv = approx 0.0' (Asbuilt)	Floodwall would cross storm drain (if verified to be present)	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	Storm drain is not shown on C&C GIS database, but GIS data show drain inlet in parking lot so storm drain assumed present
	City & County of Honolulu	DDC Asbuilt, Job No. W18-07, Sheet C-25A	18" diameter RCP	Within the parking area for Ala Wai Recreation Center	Shown on Asbuilt; not in C&C GIS records	yes	Unknown	Floodwall would cross storm drain (if verified to be present)	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	Storm drain is not shown on C&C GIS database, but GIS data show drain inlet in parking lot so storm drain assumed present
	City & County of Honolulu	DDC Asbuilt, Job No. W18-07, Sheets C-17 and C-25A	6" diameter RCP	At the Ala Wai Recreation Center by McCully St., outfall to Ala Wai Canal	Shown on Asbuilt; not in C&C GIS records	yes	Inv = approx 0.0' (Asbuilt)	Floodwall would cross storm drain (if verified to be present)	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	Storm drain is not shown on C&C GIS database, but GIS data show drain inlet in parking lot so storm drain assumed present
	City & County of Honolulu	DDC Asbuilt, Job No. W18-07, Sheets C-17 and C-25A	6" diameter RCP	At the Ala Wai Recreation Center by McCully St., outfall to Ala Wai Canal	Shown on Asbuilt; not in C&C GIS records	yes	Inv = approx 0.0' (Asbuilt)	Current C&C GIS records do not identify storm drain in this location; no conflict expected	Verify status of drain pipe and design floodwall to accommodate line if needed	
	City & County of Honolulu	DDC Asbuilt, Job No. W18-07, Sheet C-18	24" diameter RCP	Running through Ala Wai Community Park, outfall to Ala Wai Canal	Active	yes	Inv = approx -1.75' (Asbuilt)	Current C&C GIS records do not identify storm drain in this location; no conflict expected	Verify status of drain pipe and design floodwall to accommodate line if needed	

Ala Wai Canal Floodwalls (Right Bank)

Utility Type	Utility Owner	Source of Information	Description	General Location	Status	Within Const. Limits	Est. Depth Within Construction Limits	Potential Conflict with Proposed Feature	Recommended Resolution	Notes
Storm Drain (con't)	City & County of Honolulu	C&C GIS database USACE 35% design drawings DDC Asbuilt, Job No. W18-07, Sheet C-18	6'x4' box drain	Running through Ala Wai Community Park, outfall to Ala Wai Canal	Active	yes	Inv = -3.1' (USACE)	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database USACE 35% design drawings	15' x 3' box culvert	Hausten Ditch	Active	yes	N/A	New slide gates proposed as part of project	Ensure design accommodates existing drainage feature once detailed information is obtained	Shown on plans as Hausten Ditch
	City & County of Honolulu	C&C GIS database USACE 35% design drawings DDC Asbuilt, Job No. W18-07, Sheet C-18	10'x8' box drain	Running mauka to makai at University Ave, outfall to Ala Wai Canal	Active	yes	Inv = 0.0' (USACE)	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database USACE 35% design drawings DDC Asbuilt, Job No. W18-07, Sheet C-22	24" diameter RCP	Near Ala Wai Community Garden, outfall to Ala Wai Canal	Active	yes	Inv = -1.3' (USACE)	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	USACE 35% design drawings DDC Asbuilt, Job No. W18-07, Sheet C-22	36" diameter RCP	Near Moana-Palolo Drainage Canal, outfall to Ala Wai Canal	Active	yes	Inv = -2.7' (USACE)	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
Sanitary Sewer	City & County of Honolulu	C&C GIS database DDC Asbuilt, Job No. W18-07, Sheet G-3	Force main; 42" diameter	Crosses Canal just east of Ala Moana Blvd	Active	yes	Top of concrete pipe jacket at about -20 feet MSL (Ala Wai Canal Dredging FEA)	Floodwall may cross force main at terminus near Ala Moana Blvd Bridge; however, no conflict expected based on sewer depth	Design drawings and specifications should identify measures to avoid/protect sewer, as needed	Project is within the Waikiki Buffer Zone, which requires mitigation/monitoring measures to avoid damage to the Beachwalk WWPS force mains from ground vibration or soil liquefaction
	City & County of Honolulu	C&C GIS database DDC Asbuilt, Job No. W18-07, Sheet G-3	Force main, Hobas pipe; 2-36" diameter	Crosses Ala Wai Canal near Ala Wai Neighborhood Park (connecting to Mauka Pit)	Active	yes	Inv = between -19 and -34' (GIS)	Floodwall would cross force main near Kaiolu St; however, no conflict expected based on sewer depth	Design drawings and specifications should identify measures to avoid/protect sewer line, as needed	Project is within the Waikiki Buffer Zone, which requires mitigation/monitoring measures to avoid damage to the Beachwalk WWPS force mains from ground vibration or soil liquefaction
	City & County of Honolulu	C&C GIS database DDC Asbuilt, Job No. W18-07, Sheet G-3	Sewer tunnel, Hobas pipe; 72" diameter	Runs parallel to Canal (near walkway) from Mauka Pit (near Ala Wai Neighborhood Park), crossing under McCully St Bridge and across Ala Wai Canal; crosses back to mauka side of Canal just east of Ala Moana Blvd Bridge	Active	yes	30'+ below grade	Floodwall located in close proximity to sewer tunnel (and associated manholes); at a minimum the flood wall would cross the tunnel in multiple locations (e.g., near McCully St Bridge and Ala Moana Blvd Bridge); however, no conflict expected based on sewer depth	Design drawings and specifications should identify measures to avoid/protect sewer line and accommodate manholes, as needed	Project is within the Waikiki Buffer Zone, which requires mitigation/monitoring measures to avoid damage to the Beachwalk WWPS force mains from ground vibration or soil liquefaction
	City & County of Honolulu	C&C GIS database Waikiki Buffer Zone Map Ala Wai Canal Dredging FEA	Three gravity siphon lines; 21", 24" and 27" diameter	Crosses Canal near Ala Wai Neighborhood Park, just west of Manoa Palolo Drainage Canal; continues as 48" diameter line toward Ala Wai Elementary School	Active	yes	Top of concrete pipe jacket at -15.75' MSL (Ala Wai Canal Dredging FEA); Inv = approx. -14 to -15.75' (GIS)	Floodwall would cross sewer lines; however, no conflict expected based on sewer depth	Design drawings and specifications should identify measures to avoid/protect sewer line and accommodate manholes, as needed	
	City & County of Honolulu	C&C GIS database Ala Wai Canal Dredging FEA Waikiki Buffer Zone Map DDC Asbuilt, Job No. W18-07, Sheet C-16	20" diameter force main	Along Kalakaua Ave. crossing Ala Wai Blvd. and Ala Wai Promenade	Active	yes	Estimated to have 6' cover	Bridge structure (and existing sewer) not expected to be affected by floodwall	Confirm final design for bridge tie-in does not conflict with sewer line once detailed utility information is obtained; include measures to avoid/protect, as needed	C&C GIS database shows three 12" diameter lines crossing Kalakaua Bridge

Ala Wai Canal Floodwalls (Right Bank)

Utility Type	Utility Owner	Source of Information	Description	General Location	Status	Within Const. Limits	Est. Depth Within Construction Limits	Potential Conflict with Proposed Feature	Recommended Resolution	Notes
Telecommunications	Unknown	Ala Wai Canal Dredging FEA	Cable and telephone lines	Conduit in Ala Moana Blvd Bridge	Active	yes	Unknown	Bridge structure (and existing conduit) not expected to be affected by floodwall	Confirm final design for bridge tie-in does not conflict with existing utility conduit once detailed utility information is obtained; include measures to avoid/protect, as needed	Not shown on plan drawings
	Unknown	Ala Wai Canal Dredging FEA	Cable	Conduit in Kalakaua Ave. Bridge	Active	yes	Unknown	Bridge structure (and existing conduit) not expected to be affected by floodwall	Confirm final design for bridge tie-in does not conflict with existing utility conduit once detailed utility information is obtained; include measures to avoid/protect, as needed	Not shown on plan drawings
	Unknown	Ala Wai Canal Dredging FEA	Telephone lines	Conduit in McCully St Bridge	Active	yes	Unknown	Bridge structure (and existing conduit) not expected to be affected by floodwall	Confirm final design for bridge tie-in does not conflict with existing utility conduit once detailed utility information is obtained; include measures to avoid/protect, as needed	Not shown on plan drawings
Park Lights	City & County of Honolulu	Visual inspection	Park lights	Surrounding baseball field at Ala Wai Community Park; two lights are located along existing walkway	Active	yes	Unknown	Generally located within or near floodwall footprint	Design floodwall to avoid lights or relocate closer to interior of park	Shown schematically on plan drawings based on visual observation
Lighting	City & County of Honolulu	Visual inspection DDC Asbuilt, Job No. W18-07, Sheet C-18 and up	Multiple power feeds and lines; complete details not shown on asbuilt drawings	Along edge of existing walkway from Manoa Palolo Drainage Canal to Kalakaua Ave (discontinuous)	Active	yes	Unknown	Generally located within or near floodwall footprint	Relocate as needed during construction (assuming locations may not be obtained as part of future survey effort)	Partially shown on plan drawings near Ala Wai Neighborhood Park; specific location and full extent to be verified during design phase
	City & County of Honolulu	Visual inspection DDC Asbuilt, Job No. W18-07, Sheet C-25A	Multiple power feeds and lines; complete details not shown on asbuilt drawings	Parking area for Ala Wai Community Park (end of University Ave)	Active	yes	Unknown	Generally located within or near floodwall footprint	Relocate as needed during construction (assuming locations may not be obtained as part of future survey effort)	Location not shown on plan drawings
Irrigation	City & County of Honolulu	Visual Inspection	Various lines and valves	Generally along walkway and within Ala Wai Community Park	Active	yes	Unknown	Generally located within or near floodwall footprint	Relocate as needed during construction (assuming locations may not be obtained as part of future survey effort)	Not shown on plan drawings
Other	State Civil Defense	Visual Inspection	Warning siren (and associated power feed and lines)	Located within parking lot for Ala Wai Community Park (near intersection of McCully Street and Kapiolani Blvd)	Active	no	N/A	No conflict identified; included for reference	N/A	Not shown on plan drawings

NOTE: A description of the color coding shown for the potential conflict and recommended resolution is provided in Section 3 of the Utility Assessment Report.

Ala Wai Canal Floodwalls (Manoa Palolo Drainage Canal)

Utility Type	Utility Owner	Source of Information	Description	General Location	Status	Within Const. Limits	Est. Depth Within Construction Limits	Potential Conflict with Proposed Feature	Recommended Resolution	Notes
Electrical	Hawaiian Electric Company	Visual Inspection	Overhead lines	Along west side of Laau Street, parallel to Manoa Palolo Drainage Canal	Active	no	N/A	No conflict identified; included for reference	N/A	Schematically shown on plan drawings based on visual inspection
Water	Board of Water Supply	BWS Dist Map (2016)	30" diameter water line	Within Date St roadway/bridge	Active	no	N/A	Project is not expected to affect utilities within Date St roadway/bridge	Design drawings and specifications should identify measures to avoid/protect utility, depending on final design	Not shown on plan drawings
	Board of Water Supply	BWS Dist Map (2016)	12" diameter water line	Within Date St roadway/bridge	Active	no	N/A	Project is not expected to affect utilities within Date St roadway/bridge	Design drawings and specifications should identify measures to avoid/protect utility, depending on final design	Not shown on plan drawings
	Board of Water Supply	BWS Dist Map (2016)	12" diameter water line	Within Laau St roadway	Active	no	N/A	Project is not expected to affect utilities within Date St roadway	Design drawings and specifications should identify measures to avoid/protect utility, depending on final design	Not shown on plan drawings
Storm Drain	City & County of Honolulu	C&C GIS database	18" diameter RCP	Along Laau St, crossing Iolani School driveway and draining to Manoa Palolo Drainage Canal	Active	yes	Unknown	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
	City & County of Honolulu	C&C GIS database USACE 35% design drawings DDC Asbuilt, Job No. W18-07, Sheet C-22	36" diameter RCP	Outfall to Ala Wai Canal near Moana-Palolo Drainage Canal	Active	yes	Inv = -2.7' (USACE)	Floodwall would cross storm drain	Design floodwall to accommodate existing storm drain crossing once detailed information is obtained	
Sanitary Sewer	City & County of Honolulu	C&C GIS database	30" diameter sewer line	Located within Date St roadway, but transitions to cross below Manoa Palolo Drainage Canal on makai side of Date St bridge; manholes located on either side of bridge	Active	yes	Inv = approx. -9' (GIS)	Floodwall would cross sewer line; however, no conflict is expected based on sewer depth	Design drawings and specifications should identify measures to avoid/protect sewer and accommodate existing manholes, as needed	
Telecommunications	Unknown	Visual Inspection	Overhead lines	Co-located with electrical lines	Active	no	N/A	No conflict identified; included for reference	N/A	Not shown on plan drawings
Lighting	City & County of Honolulu	Visual Inspection	Electrical lines for street lighting	Located along makai side of Date Street	Active	no	N/A	Located near potential floodwall location but not expected to be within construction limits; no conflict expected	N/A	Not shown on plan drawings
	City & County of Honolulu	Visual Inspection	Electrical lines for pathway lighting	Located along pathway parallel to Manoa Palolo Drainage Canal	Active	yes	Unknown	Generally located within or near floodwall footprint	Relocate as needed during construction (assuming locations may not be obtained as part of future survey effort)	Not shown on plan drawings
Traffic Signals	City & County of Honolulu	Visual Inspection	Power feeds and lines	Located along makai side of Date Street	Active	no	N/A	Located near potential floodwall location but not expected to be within construction limits; no conflict expected	N/A	Not shown on plan drawings
Irrigation	City & County of Honolulu	Visual Inspection	Various lines and valves	Located along pathway parallel to Manoa Palolo Drainage Canal	Active	yes	Unknown	Generally located within or near floodwall footprint	Relocate as needed during construction (assuming locations may not be obtained as part of future survey effort)	Not shown on plan drawings

NOTE: A description of the color coding shown for the potential conflict and recommended resolution is provided in Section 3 of the Utility Assessment Report.

Pump Stations

Utility Type	Utility Owner	Source of Information	Description	General Location	Status	Within Const. Limits	Est. Depth Within Construction Limits	Potential Conflict with Proposed Feature	Recommended Resolution	Notes
PUMP STATION 1 (KAPAHULU)										
Storm Drain	City & County of Honolulu	C&C GIS database Visual inspection USACE 35% design drawings	12' x 7' box culvert	At head of Ala Wai Canal in makai corner	Active	yes	Invert = -4.1' (USACE drawings)	Drainage feature to be incorporated into pump station design	Design drawings and specifications should identify measures to avoid/protect drainage feature	
	City & County of Honolulu	Visual inspection USACE 35% design drawings	4' x 3' box culvert, outfall has been covered	At head of Ala Wai Canal near center of channel	Abandoned (based on visual inspection)	yes	Unknown	Storm drain located within footprint of pump station, but is no longer in use; no conflict expected	N/A	
	City & County of Honolulu	Visual inspection USACE 35% design drawings	9' x 6' box culvert	At head of Ala Wai Canal in mauka corner	Active	yes	Invert = -3.5' (USACE drawings)	Drainage feature to be incorporated into pump station design	Design drawings and specifications should identify measures to avoid/protect drainage feature	
Lighting	City & County of Honolulu	Visual Inspection DDC Wastewater Div. Asbuilt	Multiple power feeds and lines; details not shown on asbuilt drawings	Along Ala Wai Blvd within/near existing sidewalk; specific locations not shown on asbuilt drawings	Active	no	Unknown	Located near pump station but not within construction limits; no conflict expected	N/A	Not shown on plan drawings
Traffic Signals	City & County of Honolulu	Visual Inspection	Multiple power feeds and lines; details not shown on asbuilt drawings	Along Ala Wai Blvd within/near existing sidewalk; specific location not shown on asbuilt drawings	Active	no	Unknown	Located near pump station but not within construction limits; no conflict expected	N/A	Not shown on plan drawings
PUMP STATION 2 (GOLF COURSE)										
Storm Drain	City & County of Honolulu	Visual inspection C&C GIS database USACE 35% design drawings	3 - 9.5'x7' RCB, 48" diameter pipe	Running through golf course, daylighting into drainage that flows to Ala Wai Canal	Active	yes	Invert = -4.7' (USACE drawings)	Drainage feature to be incorporated into pump station design	Design drawings and specifications should identify measures to avoid/protect drainage feature	
	City & County of Honolulu	C&C GIS database	18" RCP	Running through driving range, daylighting into drainage that flows to Ala Wai Canal	Active	yes	Unknown	Storm drain located within footprint of pump station	Design pump station to accommodate existing storm drain once detailed information is obtained	
Lighting	City & County of Honolulu	Visual Inspection	Lighting for driving range	Within interior portion of golf course, east of club house. Driving range is currently under renovation, so lighting location may be in flux	Active	yes	Unknown	Located near pump station footprint	Relocate lighting (or design pump station to avoid utility) as appropriate once detailed information is obtained	Not shown on plan drawings
Irrigation	City & County of Honolulu	DPR Asbuilt for Ala Wai Golf Course, Sheet C3	2" diameter	Running through golf course, from Kapahulu Ave across drainage channel	Active	no	Unknown	Located near pump station but not within construction limits; no conflict expected	N/A	

Pump Stations

Utility Type	Utility Owner	Source of Information	Description	General Location	Status	Within Const. Limits	Est. Depth Within Construction Limits	Potential Conflict with Proposed Feature	Recommended Resolution	Notes
PUMP STATION 3 (UNIVERSITY)										
Electrical	Hawaiian Electric Company	46kV Relocation Project documentation	Proposed 46kV line to be installed in horizontal directional drill casing under Canal	Crossing Ala Wai Canal, between Kalaimoku St and University Ave	Future (planned to start in 2018)	yes	40-50' deep (at edge of Canal)	46kv line would be installed prior to project and deep enough to avoid conflict with floodwall, but could conflict with pump station (sump)	Design pump station to avoid proposed 46kv line once crossing design information is obtained	Schematically shown on plan drawings based on 46kV Relocation Project documentation
	Hawaiian Electric Company	Visual Inspection DDC Asbuilt, Job No. W18-07, Sheet C-21	Transformer and electrical boxes	Near walkway, east of canoe club longhouse	Active	yes	Aboveground	Transformers and electrical boxes are generally located in (or near) pump station footprint	Design pump station to avoid transformers and electrical boxes once detailed utility information is obtained	Schematically shown on plan drawings based on visual observation
Storm Drain	City & County of Honolulu	C&C GIS database USACE 35% design drawings DDC Asbuilt, Job No. W18-07, Sheet C-18	10'x8' box drain	Running mauka to makai along University Ave, outfall to Ala Wai Canal	Active	yes	Inv = 0.0' (USACE drawings)	Drainage feature to be incorporated into pump station design	Design drawings and specifications should identify measures to avoid/protect drainage feature	
Sanitary Sewer	City & County of Honolulu	C&C GIS database DDC Asbuilt, Job No. W18-07, Sheet G-3	Sewer Tunnel, Hobas pipe; 72" diameter	Along walkway near Ala Wai Neighborhood Park	Active	yes	30+ feet below grade	Pump station would be located in close proximity to sewer tunnel; sump pump could conflict with sewer tunnel	Design pump station to avoid sewer tunnel once detailed utility information is obtained	Project is within the Waikiki Buffer Zone, which requires mitigation/monitoring measures to avoid damage to the Beachwalk WWPS force mains from ground vibration or soil liquefaction
Lighting	City & County of Honolulu	Visual inspection DDC Asbuilt, Job No. W18-07, Sheet C-25A	Multiple power feeds and lines; complete details not shown on asbuilt drawings	Parking area for Ala Wai Community Park (end of University Ave)	Active	yes	Unknown	Generally located within or near pump station footprint	Relocate as needed during construction (assuming locations may not be obtained as part of future survey effort)	Location not shown on plan drawings

NOTE: A description of the color coding shown for the potential conflict and recommended resolution is provided in Section 3 of the Utility Assessment Report.

Ala Wai Golf Course Multi-Purpose Detention

Utility Type	Utility Owner	Source of Information	Description	General Location	Status	Within Const. Limits	Est. Depth Within Construction Limits	Potential Conflict with Proposed Feature	Recommended Resolution	Notes
Electrical	Hawaiian Electric Company	DPR Utility Plan, Job No. 89-009c, Sheets C-2 and C-3	Overhead electrical line	Makai side of entrance road to Ala Wai Golf Course clubhouse	Active	Yes	Aboveground	Overhead electrical line not expected to conflict with detention berm, but may affect construction access	Include utility information in detailed design drawings/specifications, with provisions for temporary relocation as needed for construction access	
Water	Board of Water Supply	BWS Dist Map (2016)	24" diameter water line	Located near edge of golf course property along Kapahulu Ave	Active	Yes	Unknown	Detention berm is not expected to conflict with water line	Confirm that detention berm does not conflict with water line once detailed information is obtained; adjust berm design as needed	Not shown on plan drawings
	Board of Water Supply	BWS Dist Map (2016)	8" diameter waterline service	Connecting from Date St at Palani Ave to golf course	Active	Yes	Unknown	Detention berm is not expected to conflict with service line, but extent and location of service use is unknown	Determine whether detention berm conflicts with service line or other golf course features once detailed information is obtained; adjust berm design or relocate utility as needed	Not shown on plan drawings
	Board of Water Supply	BWS Dist Map (2016)	4" diameter waterline service	Connecting from Date St at Kapahulu Ave to golf course	Active	Yes	Unknown	Detention berm is not expected to conflict with service line, but extent and location of service use is unknown	Determine whether detention berm conflicts with service line or other golf course features once detailed information is obtained; adjust berm design or relocate utility as needed	Not shown on plan drawings
	City and County of Honolulu	DPR Utility Plan, Job No. 89-009c, Sheets C-2 & C-3	8" diameter fire line feeding fire hydrant and golf course club house	Runs along entrance road to golf course clubhouse	Active	Yes	Unknown	Fire line runs along entrance road; flood gate would be installed across road	Confirm final design for flood gate does not conflict with fire line once detailed information is obtained; include measures to avoid/protect, as needed	
	City and County of Honolulu	DPR Utility Plan, Job No. 89-009c, Sheets C-2 & C-3	3" diameter waterline connecting to golf course clubhouse	Located parallel to 8" fire line	Active	Yes	Unknown	Fire line runs along entrance road; flood gate would be installed across road	Confirm final design for flood gate does not conflict with fire line once detailed information is obtained; include measures to avoid/protect, as needed	
	City and County of Honolulu	DPR Utility Plan, Job No. 89-009c, Sheets C-2 & C-3	2" diameter waterline	Runs from Kapahulu St. to drainage channel	Active	Yes	Unknown	Detention berm would cross water line	Design berm to accommodate waterline once detailed information is obtained	
	City and County of Honolulu	DPR Utility Plan, Job No. 89-009c, Sheets C-4	6" diameter waterline	Located near southwest side of maintenance building on Date Street, and runs through golf course	Active	Yes	Unknown	Detention berm would cross water line in at least 2 locations; sediment basin would also conflict with water line	Relocate water line (or design berm and sediment basin to accommodate water line) as necessary, once detailed utility information is obtained	
	City & County of Honolulu	DPR Asbuilt, Job No. 96-011C, Sheets C-4	Abandoned 6" diameter water line; line has been cut & plugged	Located near southwest side of maintenance building on Date Street (parallel to active 6" waterline)	Abandoned	Yes	Unknown	Water line located within footprint of detention berm, but is no longer in use; no conflict expected	N/A	Not shown on plan drawings
	Board of Water Supply	DPR Asbuilt, Job No. 96-011C, Sheets C-4	Abandoned 8" diameter water line; may have been removed	Located near southeast side of maintenance building on Date Street	Abandoned	Yes	Unknown	Water line located within footprint of detention berm, but is no longer in use; no conflict expected	N/A	Not shown on plan drawings
	Board of Water Supply	DPR Asbuilt, Job No. 96-011C, Sheets C-4	2" and 8" diameter waterlines (parallel)	Located near west side of maintenance building on Date Street	Active	No	Unknown	Located near detention berm but not within construction limits; no conflict expected	N/A	

Ala Wai Golf Course Multi-Purpose Detention

Utility Type	Utility Owner	Source of Information	Description	General Location	Status	Within Const. Limits	Est. Depth Within Construction Limits	Potential Conflict with Proposed Feature	Recommended Resolution	Notes
Storm Drain	City and County of Honolulu	Visual inspection C&C GIS database USACE 35% design drawings	3 - 9.5' x 7' RCB, 48" pipe	Runs through golf course and daylights into drainage channel that flows to Ala Wai Canal	Active	yes	Unknown	Detention berm would cross drain lines	Design berm to accommodate existing drain lines once detailed information is obtained	
	City & County of Honolulu	Visual inspection USACE 35% design drawings	9' x 6' box culvert	At head of Ala Wai Canal in mauka corner	Active	yes	Unknown	Detention berm would not cross drain line; drain line within footprint of staging area	Design drawings and specifications should identify measures to avoid/protect drain line, as needed	
	City & County of Honolulu	Visual inspection USACE 35% design drawings	4' x 3' box culvert, outfall has been covered	At head of Ala Wai Canal near center of channel	Abandoned (based on visual inspection)	yes	Unknown	Storm drain located near footprint of staging area, but is no longer in use; no conflict expected	N/A	
	City & County of Honolulu	C&C GIS database	5.5' x 10' box culvert, with drain pipes tying in from adjacent residential area	Running along edge of Ala Wai golf course property between maintenance building and Palani St	Active	yes	Unknown	Storm drain located in close proximity to detention berm; may conflict depending on final design and exact location/depth of storm drain	Confirm final design for berm does not conflict with existing storm drain once detailed utility information is obtained; modify design and/or relocate storm drain, as needed	
	City & County of Honolulu	C&C GIS database	42" diameter RCP	Running along edge of Ala Wai golf course property between Palani St and Kapahulu Ave	Active	yes	Unknown	Storm drain located in close proximity to detention berm; may conflict depending on final design and exact location/depth of storm drain	Confirm final design for berm does not conflict with existing storm drain once detailed utility information is obtained; modify design and/or relocate storm drain, as needed	
Sanitary Sewer	City & County of Honolulu	C&C GIS database	30" diameter sewer line	Located within Date St roadway; transitions to cross below Manoa Palolo Drainage Canal on makai side of Date St bridge; manholes located on either side of bridge	Active	no	Unknown	Sewer line is located within Date St roadway, but approaches construction limits near northwest corner of golf course (near Manoa-Palolo Drainage Canal)	Design drawings and specifications should identify measures to avoid/protect sewer and accommodate manholes, as needed	
	City and County of Honolulu	DPR Asbuilt, Job No. 96-011C, Sheets C-4	6" diameter sewer line for maintenance facility	Located between west side of maintenance facility; connects to a 8" diameter sewer line that exits the property at Date-Kapahulu Sewer	Active	Yes	Inv = approx. 4.1' (Asbuilt)	Detention berm would cross sewer line	Design berm to accommodate existing sewer line once detailed information is obtained	
	City and County of Honolulu	DPR Asbuilt, Job No. 96-011C, Sheets C-4	8" diameter sewer line	Runs from golf course clubhouse to Date-Kapahulu Sewer (connects at sewer manhole [SMH] #1)	Active	Yes	Inv = approx. -5.38' (Asbuilt)	Detention berm would cross sewer line; sediment basin would also conflict with sewer line	Relocate sewer line (or design berm and sediment basin to accommodate sewer line) as necessary, once detailed utility information is obtained	
	City and County of Honolulu	C&C GIS database	24" diameter sewer line and manholes	Runs north to south through eastern portion of golf course (roughly from vicinity of Ekela St to Castle St)	Active	Yes	Unknown	Detention berm would cross sewer line	Design berm to accommodate existing sewer line and manholes once detailed information is obtained	
	City and County of Honolulu	C&C GIS database	12" diameter sewer line and manholes	Runs east to west through eastern portion of golf course (roughly from vicinity of Kamuela St to 24" sewer line)	Active	Yes	Unknown	Detention berm would cross sewer line	Design berm to accommodate existing sewer line and manholes once detailed information is obtained	

Ala Wai Golf Course Multi-Purpose Detention

Utility Type	Utility Owner	Source of Information	Description	General Location	Status	Within Const. Limits	Est. Depth Within Construction Limits	Potential Conflict with Proposed Feature	Recommended Resolution	Notes
Gas	Hawaii Gas	Hawaii Gas distribution map	Various	Various distribution lines within Kapahulu Ave	Active	no	Unknown	Project is not expected to affect utilities within Kapahulu Ave roadway	Design drawings and specifications should identify measures to avoid/protect gas lines, as needed	Not shown on plan drawings
Telecommunications	Hawaiian Telcom	Hawaiian Telcom maps	Overhead telecommunication lines	Co-located with electrical lines on makai side of entrance road to Ala Wai Golf Course Clubhouse	Active	Yes	Overhead	Detention berm not expected to conflict with overhead telecommunication line	Include utility information in detailed design drawings/specifications, with provisions for temporary relocation as needed for construction access	
Irrigation	City & County of Honolulu	Visual Inspection	Various lines and valves	Generally located within Ala Wai golf course; specific locations unknown	Active	yes	Unknown	Generally located within or near detention berm	Relocate as needed during construction (assuming locations may not be obtained as part of future survey effort)	Not shown on plan drawings

NOTE: A description of the color coding shown for the potential conflict and recommended resolution is provided in Section 3 of the Utility Assessment Report.

Hausten Ditch Detention

Utility Type	Utility Owner	Source of Information	Description	General Location	Status	Within Const. Limits	Est. Depth Within Construction Limits	Potential Conflict with Proposed Feature	Recommended Resolution	Notes
Water	Board of Water Supply	BWS Dist Maps (2016)	8" diameter waterline	Within University Ave and Hihiwai St roadways	Active	no	N/A	Located in roadway at a distance from construction limits; no conflict expected	N/A	Not shown on plan drawings
Storm Drain	City & County of Honolulu	C&C GIS database USACE 35% design drawings	15'x3' box culvert	Hausten Ditch	Active	yes	Unknown	Drainage feature located within footprint of detention basin; new slide gates proposed as part of project	Design drawings and specifications should identify measures to avoid/protect drainage feature	Shown on plans as Hausten Ditch
Sanitary sewer	City & County of Honolulu	C&C GIS database DDC Asbuilt, Job No. W18-07, Sheet G-3	Sewer tunnel, Hobas pipe; 72" diameter	Runs parallel to Canal (near walkway)	Active	yes	30'+ below grade	Detention basin would be located in close proximity to sewer tunnel and associated manholes; detention berm may cross tunnel near Canal	Design drawings and specifications should identify measures to avoid/protect sewer and accommodate manholes; specifically need to consider loads imposed on sewer line and manhole access	Project is within the Waikiki Buffer Zone, which requires mitigation/monitoring measures to avoid damage to the Beachwalk WWPS force mains from ground vibration or soil liquefaction
Lighting	City & County of Honolulu	Visual Inspection DDC Asbuilt, Job No. W18-07, Sheets C-23A and C-24	Multiple power feeds and lines; details not shown on as-built drawings	Along walkway	Active	yes	Unknown	Generally located within floodwall footprint, but may also extend into detention footprint	Relocate as needed during construction (assuming locations may not be obtained as part of future survey effort)	Not shown on plan drawings
	City & County of Honolulu	Visual Inspection	Multiple power feeds and lines; details not shown on as-built drawings	Within park, at sports courts	Active	yes	Unknown	Generally located outside construction area (based on visual observation), but may extend into detention basin footprint	Determine whether detention basin conflicts with utility once detailed information is obtained; relocate utility during construction, as needed	Not shown on plan drawings
Irrigation	City & County of Honolulu	Visual Inspection	Unknown; details not shown on as-built drawings	Throughout Ala Wai Community Park	Active	yes	Unknown	Generally located within or near detention basin footprint	Relocate as needed during construction (assuming locations may not be obtained as part of future survey effort)	Not shown on plan drawings
	City & County of Honolulu	Visual Inspection	Backflow preventer	Within Ala Wai Community Park, just west of the sports courts	Active	yes	Aboveground	Generally located within or near detention basin footprint	Relocate backflow preventer (or design detention berm to avoid backflow preventer) as appropriate	Not shown on plan drawings

NOTE: A description of the color coding shown for the potential conflict and recommended resolution is provided in Section 3 of the Utility Assessment Report.

Kanewai Field Multi-Purpose Detention Basin

Utility Type	Utility Owner	Source of Information	Description	General Location	Status	Within Const. Limits	Est. Depth Within Construction Limits	Potential Conflict with Proposed Feature	Recommended Resolution	Notes
Electrical	Hawaiian Electric Company	Visual Inspection	Overhead electrical lines	Running adjacent to Manoa Stream from Dole St. to Koali Rd.	Active	yes	Aboveground	Overhead electrical line and pole located at edge of construction limits for detention basin	Relocate pole (or design detention berm to accommodate pole) as appropriate once detailed information is obtained	Schematically shown on plan drawings based on visual inspection
	Hawaiian Electric Company	Visual Inspection	Overhead electrical lines	Running along Dole St., crossing between mauka and makai sides of road	Active	no	Aboveground	Overhead electrical line not expected to conflict with detention basin, but could affect construction access	Include utility information in detailed design drawings/ specifications, with provisions for temporary relocation as needed for construction access	Not shown on plan drawings
Water	Board of Water Supply	BWS Dist. Maps (1988), Sheet 50	20" diameter	Along Dole St	Active	no	N/A	Located in roadway at a distance from construction limits; no conflict expected	N/A	
	Board of Water Supply	BWS Dist. Maps (1988), Sheet 50	8" diameter	Along Kanewai St	Active	no	N/A	Located in roadway at a distance from construction limits; no conflict expected	N/A	
Storm Drain	City and County of Honolulu	Visual Inspection C&C GIS database	6' x 4' box culvert (with manhole located within park)	Runs from Dole St. to Manoa Stream; crosses near home plate (manhole located just east of baseball diamond)	Active	yes	Unknown (but appears to be relatively shallow based on visual inspection)	Box culvert could conflict with excavation for detention basin	Design detention basin to avoid or accommodate features (e.g., lower box culvert, replace box culvert with pipes or shallower box culvert)	
	City and County of Honolulu	Visual Inspection C&C GIS database	Inlet to 24" diameter RCP	At southern edge of park along row of houses on Koali Rd.	Active	yes	Unknown	Drain inlet located within footprint of detention basin; project is designed to utilize drain inlet and drain line	Design drawings and specifications should identify measures to avoid/protect drain line	
Sanitary Sewer	City and County of Honolulu	DES Asbuilt, Moiliili Area 3 C&C GIS database	6" diameter sewer main	Within park, running parallel to Dole St.	Active	yes	Unknown	Sewer line is not within construction limits for detention basin, but would be crossed by access road	Design drawings and specifications should identify measures to avoid/protect sewer, as needed	
	City and County of Honolulu	C&C GIS database	4" diameter sewer line	Along eastern edge of tennis courts, parallel to 6" diameter sewer line	Active	yes	Unknown	Sewer line is not within construction limits for detention basin, but would be crossed by access road	Design drawings and specifications should identify measures to avoid/protect sewer, as needed	
Telecommunications	Unknown	Visual Inspection	Overhead lines, co-located with electrical lines	Running along Dole Street, crossing between mauka and makai sides of road	Active	yes	Aboveground	Telecommunication lines not expected to conflict with detention basin, but could affect construction access	Include utility information in detailed design drawings/ specifications, with provisions for temporary relocation as needed for construction access	Not shown on plan drawings
Lighting	City and County of Honolulu	Visual Inspection	Electrical lines for park lighting	Exact locations are unknown	Active	yes	Unknown	Electrical lines are generally expected to be near park infrastructure and not within detention footprint, but exact locations are unknown	Determine whether detention basin conflicts with electrical lines once detailed information is obtained; relocate utility during construction, as needed	Not shown on plan drawings
Irrigation	City and County of Honolulu	Visual Inspection	Backflow preventer, valves and other miscellaneous irrigation features	Throughout park area, backflow preventer located next to wall between swimming pool and maintenance building	Active	yes	Unknown	May be located within or near detention footprint	Relocate as needed during construction (assuming locations may not be obtained as part of future survey effort)	Not shown on plan drawings
Other	U.S. Geological Survey	Visual Inspection	Stream gaging station	Located next to Manoa Stream, approximately midway between baseball diamond fencing and housing next to school	Active	yes	Aboveground	Gaging station located near edge of construction limits; may be within footprint of detention basin	Design detention basin to accommodate gaging station (or relocate as necessary) once detailed information is obtained	
	Unknown	Visual Inspection	Possible utility room	Under tennis courts at field elevation	Active	no	Aboveground	Possible utility room is not within construction limits, so no conflict is expected	Design drawings and specifications should identify measures to avoid/protect utility room, as needed	Not shown on plan drawings

NOTE: A description of the color coding shown for the potential conflict and recommended resolution is provided in Section 3 of the Utility Assessment Report.

Manoa In-Stream Debris Catchment

Utility Type	Utility Owner	Source of Information	Description	General Location	Status	Within Const. Limits	Est. Depth Within Construction Limits	Potential Conflict with Proposed Feature	Recommended Resolution	Notes
Electrical	Hawaiian Electric Company	Visual Inspection	Overhead lines	Located along mauka side of Kahaloa Dr. at entrance to park, with feeder lines crossing Kahaloa Dr.	Active	no	N/A	No conflict with in-stream debris catchment, but overhead lines may affect construction access	Include utility information in detailed design drawings/specifications, with provisions for temporary relocation as needed for construction access	Schematically shown on plan drawings based on visual inspection
Storm Drain	City & County of Honolulu	C&C GIS database	36" RCP	Runs through park and drains to Manoa Stream, just south of Kahaloa Dr	Active	no	N/A	Drain line is not within construction limits for in-stream debris catchment, but may be crossed as part of construction access	Design drawings and specifications should identify measures to avoid/protect drain line, as needed	
	City & County of Honolulu	C&C GIS database	24" RCP	Run through park and drains to Manoa Stream, just north of baseball diamond	Active	no	N/A	Drain line is not within construction limits for in-stream debris catchment, but may be crossed as part of construction access	Design drawings and specifications should identify measures to avoid/protect drain line, as needed	
	City & County of Honolulu	C&C GIS database	30" x 48" box culvert	Series of ditches around baseball diamond lead to box culvert that drains to Manoa Stream at southern tip of park	Active	no	N/A	Drainage feature is not within construction limits; no conflict expected	N/A	
Sanitary Sewer	City & County of Honolulu	C&C GIS database	15" diameter gravity-fed sewer line	Runs through park near walkway parallel to Manoa Stream	Active	no	Unknown	Sewer line is near construction limits for in-stream debris catchment; may be crossed by construction access	Design drawings and specifications should identify measures to avoid/protect sewer, as needed	
Telecommunications	Unknown	Visual Inspection	Overhead lines	Co-located with electrical lines	Active	no	N/A	No conflict with in-stream debris catchment, but overhead lines may affect construction access	Include utility information in detailed design drawings/ specifications, with provisions for temporary relocation as needed for construction access	Not shown on plan drawings
Lighting	City & County of Honolulu	Visual Inspection	Electrical lines for street lighting	Street lights located along makai side of Kahaloa Drive at entrance to park; location of electrical lines is unknown	Active	no	N/A	Exact location of electrical lines is unknown, but not expected to conflict with in-stream debris catchment	N/A	Not shown on plan drawings

NOTE: A description of the color coding shown for the potential conflict and recommended resolution is provided in Section 3 of the Utility Assessment Report.

Woodlawn Ditch Detention

Utility Type	Utility Owner	Source of Information	Description	General Location	Status	Within Const. Limits	Est. Depth Within Construction Limits	Potential Conflict with Proposed Feature	Recommended Resolution	Notes
Electrical	Hawaiian Electric Company	Visual Inspection	Overhead electrical lines	Along north side of Lower Rd	Active	no	N/A	Utility poles are located near detention berm, but are not within construction limits; no conflict expected	Design drawings and specifications should identify measures to avoid/protect utility, depending on final design	Schematically shown on plan drawings based on visual inspection
Water	Board of Water Supply	Visual observation BWS Dist. Maps (1988), Sheet 56	6" diameter water line and fire hydrant	Along Lower Rd	Active	no	N/A	Located in roadway outside of construction limits; no conflict expected	N/A	Water line not shown on plan drawings
Storm Drain	City & County of Honolulu	C&C GIS database	18" diameter RCP	Along Lower Rd	Active	no	N/A	Located in roadway outside of construction limits; no conflict expected	N/A	
	City & County of Honolulu	C&C GIS database	18" diameter RCP	Crossing intersection of Old E Manoa Rd and E Manoa Road, then running along E Manoa Road	Active	no	N/A	Located in roadway at a distance from construction limits; no conflict expected	N/A	
	City & County of Honolulu	C&C GIS database	18" diameter RCP, with manhole	Running along Pakanu Street, draining into Woodlawn Ditch	Active	no	N/A	Located at a distance from construction limits; no conflict expected	N/A	
Sanitary Sewer	City & County of Honolulu	C&C GIS database	10" diameter sewer line	Within E. Manoa Rd	Active	no	N/A	Located in roadway at a distance from construction limits; no conflict expected	N/A	
	City & County of Honolulu	C&C GIS database	8" diameter sewer line	Within Lower Rd	Active	no	N/A	Located in roadway at a distance from construction limits; no conflict expected	N/A	
Telecommunications	Hawaiian Telcom	Hawaiian Telcom maps	Overhead	Co-located with electrical lines along Lower Rd	Active	no	N/A	Utility poles are located near detention berm, but are not within construction limits; no conflict expected	Design drawings and specifications should identify measures to avoid/protect drain line, as needed	Not shown on plan drawings

NOTE: A description of the color coding shown for the potential conflict and recommended resolution is provided in Section 3 of the Utility Assessment Report.

Waiakeakua Debris and Detention Basin

Utility Type	Utility Owner	Source of Information	Description	General Location	Status	Within Const. Limits	Est. Depth Within Construction Limits	Potential Conflict with Proposed Feature	Recommended Resolution	Notes
Electrical	Hawaiian Electric Company	Visual Inspection	Overhead electrical lines	Along BWS dirt access road	Active	yes	Aboveground	Traverses along and across proposed construction access route and detention berm	Relocate poles and overhead lines (or design detention berm to accommodate utility) as appropriate once detailed utility information is obtained	Schematically shown on plan drawings based on visual inspection
Water	Board of Water Supply	Visual Inspection BWS Dist. Maps (1988), Sheet 54	12" diameter water line	Runs from Manoa Tunnel #3 to Waaloa Way. Located along dirt access road; two valves located just east of bridge over Waiakeakua Stream	Active	yes	Unknown	Located within footprint of construction access road; water line and valves could be impacted by construction equipment and/or potential bridge reinforcement	Design access road and bridge reinforcement to accommodate existing water line and valves once detailed information is obtained	
	Board of Water Supply	Visual Inspection BWS Dist. Maps (1988), Sheet 54	6" diameter water line	Runs north to south, connecting to 12" waterline east of bridge over Waiakeakua Stream	Active	yes	Unknown	Located within footprint of construction access road; water line could be impacted by construction equipment and/or potential bridge reinforcement	Design access road and bridge reinforcement to accommodate existing water line once detailed information is obtained	
Storm Drain	City & County of Honolulu	Visual Inspection C&C GIS database	48" diameter RCP	Located along Waaloa Way, draining to stream at first bridge crossing	Active	no	N/A	Located directly adjacent to access road at bridge crossing at end of Waaloa Way (near proposed staging area); storm drain could be impacted by potential bridge reinforcement	Design access road and bridge reinforcement to accommodate existing drainage feature once detailed information is obtained	
Telecommunications	Hawaiian Telcom	Visual Inspection (2/19/2016) Hawaiian Telcom maps	Overhead telecommunication lines, co-located with electrical lines	Co-located with electrical lines	Active	yes	Aboveground	Traverses along and across proposed construction access route and detention berm	Relocate overhead lines (or design detention berm to accommodate utility) as needed once detailed utility information is obtained	Not shown on plan drawings

NOTE: A description of the color coding shown for the potential conflict and recommended resolution is provided in Section 3 of the Utility Assessment Report.

Makiki Debris and Detention Basin

Utility Type	Utility Owner	Source of Information	Description	General Location	Status	Within Const. Limits	Est. Depth Within Construction Limits	Potential Conflict with Proposed Feature	Recommended Resolution	Notes
Electrical	Hawaiian Electric Company	Visual Inspection	Overhead electrical lines	Along west side of Makiki Heights Dr., crossing to east side of Makiki Heights Dr. in vicinity of proposed detention berm	Active	no	N/A	Utility poles are located near perimeter of construction limits; may conflict with detention berm	Confirm location relative to proposed measure once detailed utility information is obtained; microsite design as needed to avoid utility impacts	Schematically shown on plan drawings based on visual inspection
	Hawaiian Electric Company	Visual Inspection	Overhead electrical lines	Along west side of Round Top Dr.	Active	no	N/A	Utility poles are located near perimeter of construction limits; may conflict with detention berm and/or affect construction access	Confirm location relative to proposed measure once detailed utility information is obtained; microsite design as needed to avoid utility impacts and/or temporarily relocate for construction access	Schematically shown on plan drawings based on visual inspection
Water	Board of Water Supply	BWS Dist. Maps (1988), Sheet 54	8" diameter distribution line	Within Round Top Dr	Active	No	N/A	No conflict identified; included for reference	N/A	
	Board of Water Supply	BWS Dist. Maps (1988), Sheet 54	8" diameter distribution line	Within Makiki Heights Dr	Active	No	N/A	No conflict identified; included for reference	N/A	
	Board of Water Supply	Visual Inspection	Pump station and reservoir	Between Makiki Heights Dr. and Round Top Dr., just south of proposed staging area	Active	No	N/A	No conflict identified; included for reference	N/A	
Telecommunications	Unknown	Visual Inspection	Overhead telecommunication lines, co-located with electrical lines	Along west side of Makiki Heights Dr., crossing to east side of Makiki Heights Dr. in vicinity of proposed detention berm	Active	Yes	N/A	Utility poles are located near perimeter of construction limits; may conflict with detention berm	Confirm location relative to proposed measure once detailed utility information is obtained; microsite design as needed to avoid utility impacts	Not shown on plan drawings
	Unknown	Visual Inspection	Overhead telecommunication lines, co-located with electrical lines	Along west side of Round Top Dr.	Active	Yes	N/A	Utility poles are located near perimeter of construction limits; may conflict with detention berm and/or affect construction access	Confirm location relative to proposed measure once detailed utility information is obtained; microsite design as needed to avoid utility impacts and/or temporarily relocate for construction access	Not shown on plan drawings
Other	Unknown	Visual Inspection	Former well?	Adjacent to Makiki Heights Dr., in vicinity of proposed staging area	Abandoned?	No	N/A	Located near access road; may conflict with access road if not abandoned	Confirm location relative to access road once detailed utility information is obtained; microsite design as needed to avoid utility	
	Unknown	Visual Inspection	Former utility house?	Adjacent to right bank of stream, in vicinity of proposed staging area	Abandoned?	No	N/A	Near staging area, but conflict expected; included for reference	N/A	

NOTE: A description of the color coding shown for the potential conflict and recommended resolution is provided in Section 3 of the Utility Assessment Report.

Pukele Debris and Detention Basin

Utility Type	Utility Owner	Source of Information	Description	General Location	Status	Within Const. Limits	Est. Depth Within Construction Limits	Potential Conflict with Proposed Feature	Recommended Resolution	Notes
Electrical	Hawaiian Electric Company	Visual Inspection	Overhead lines	Along east side of Ipulei Place, with service lines crossing street	Active	no	N/A	No conflict identified; included for reference	N/A	Schematically shown on plan drawings based on visual inspection
	Hawaiian Electric Company	Visual Inspection	Overhead lines	Along east side of La-'i Road, with guy wires crossing road	Active	no	N/A	No conflict with proposed detention basin, but electrical lines may affect construction access	Include utility information in detailed design drawings/ specifications, with provisions for temporary relocation as needed for construction access	Schematically shown on plan drawings based on visual inspection
Water	Board of Water Supply	BWS Dist. Maps (1988), Sheet 62	8" diameter distribution line	Within La-'i Rd.	Active	no	N/A	No conflict identified; included for reference	N/A	
	Board of Water Supply	BWS Dist. Maps (1988), Sheet 62	8" diameter distribution line	Within Ipulei Pl.	Active	no	N/A	No conflict identified; included for reference	N/A	
Storm Drain	City & County of Honolulu	DDC Asbuilt for Hillside Terrace Subdivision Sewer	18" concrete pipe	Extending from Ipulei Pl. to Pukele Stream	Active	no	N/A	Drainage outfall is located near perimeter of construction limits; may conflict with detention berm	Confirm location relative to proposed measure once detailed utility information is obtained; adjust design as needed to avoid drain line and outfall	
Sanitary Sewer	City & County of Honolulu	DDC Asbuilt for Hillside Terrace Subdivision Sewer Relocation C&C GIS database	8" diameter sewer line, with shallow manholes	Along Pukele stream	Active	Yes	Unknown, but appears to be relatively shallow	Sewer line and manholes are located within (or near) construction limits along Pukele Stream	Design detention berm to accommodate existing sewer line and manholes; some degree of reinforcement may be necessary	
Telecommunications	Unknown	Visual Inspection (5/19/2016)	Overhead lines	Along east side of Ipulei Place, co-located on electrical poles	Active	no	N/A	No conflict identified; included for reference	N/A	Not shown on plan drawings
	Unknown	Visual Inspection (5/19/2016)	Overhead lines	Along east side of La-'i Road, co-located with electrical lines	Active	no	N/A	No conflict with proposed detention basin, but telecommunication lines may affect construction access	Include utility information in detailed design drawings/ specifications, with provisions for temporary relocation as needed for construction access	Not shown on plan drawings
Lighting	City & County of Honolulu	Visual Inspection (5/19/2016)	Street lights	Along east side of Ipulei Place, co-located on electrical poles	Active	no	N/A	No conflict identified; included for reference	N/A	Not shown on plan drawings
	City & County of Honolulu	Visual Inspection (5/19/2016)	Street lights	Along east side of La-'i Road, co-located with electrical lines	Active	no	N/A	No conflict identified; included for reference	N/A	Not shown on plan drawings

NOTE: A description of the color coding shown for the potential conflict and recommended resolution is provided in Section 3 of the Utility Assessment Report.

Waiomao Debris and Detention Basin

Utility Type	Utility Owner	Source of Information	Description	General Location	Status	Within Const. Limits	Est. Depth Within Construction Limits	Potential Conflict with Proposed Feature	Recommended Resolution	Notes
Electrical	Hawaiian Electric Company	Visual Inspection	Overhead lines	Along west side of Waiomao Rd., crossing road in various locations	Active	no	N/A	No conflict with proposed detention basin, but electrical lines may affect construction access	Include utility information in detailed design drawings/ specifications, with provisions for temporary relocation as needed for construction access	Schematically shown on plan drawings based on visual inspection
Water	Board of Water Supply	BWS Dist. Maps (1988), Sheet 62	Parallel 6" and 8" diameter distribution lines	Along Waiomao Rd.	Active	no	N/A	Not located within construction limits; no conflict identified	None	
Storm Drain	City and County of Honolulu	C&C GIS database	18" diameter RCP transitioning to 24" diameter RCP	Extending west from Waiomao Rd	Active	no	Unknown	Located within or near to staging area	Design drawings and specifications should identify measures to avoid/protect drain line, as needed	In addition to utilities, there are various driveways and dwellings in the vicinity of the staging area and access road
	City and County of Honolulu	C&C GIS database	RCP; diameter unknown	Within Waiomao Rd	Active	no	Unknown	Not located within construction limits; no conflict identified	None	
Sanitary Sewer	City and County of Honolulu	C&C GIS database DPW Asbuilt, Job No. 47-72	8" diameter sewer main with 6' wide easement	Perpendicular to Halekipa Pl. through project area.	Active	yes	Unknown	Sewer line and manholes are located within (or near) construction limits along Waiomao Stream; may conflict with detention berm and/or access road	Design detention berm and associated access road to accommodate existing sewer line and manholes; some degree of reinforcement may be necessary	
	City and County of Honolulu	C&C GIS Asbuilt DES Asbuilt, Palolo Area 3.1	8" diameter sewer main	Within Waiomao Rd	Active	no	Unknown	Not located within construction limits; no conflict identified	None	
Telecommunications	Unknown	Visual Inspection (5/19/2016)	Overhead lines	Along west side of Waiomao Rd., co-located with electrical lines	Active	No	N/A	No conflict with proposed detention basin, but telecommunication lines may affect construction access	Address utility avoidance and/or temporary relocation as part of detailed design process and/or defer to contractor	Not shown on plan drawings
Lighting	City & County of Honolulu	Visual Inspection (5/19/2016)	Street lights	Along west side of Waiomao Rd., co-located with electrical lines	Active	No	N/A	Not located within construction limits; no conflict identified	None	Not shown on plan drawings

NOTE: A description of the color coding shown for the potential conflict and recommended resolution is provided in Section 3 of the Utility Assessment Report.

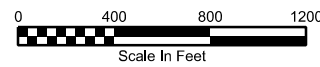
Mitigation Sites (Falls 7 and 8)

Utility Type	Utility Owner	Source of Information	Description	General Location	Status	Within Const. Limits	Est. Depth Within Construction Limits	Potential Conflict with Proposed Feature	Recommended Resolution	Notes
Electrical	Hawaiian Electric Company	Visual Inspection	Overhead lines	Mauka side of Pawaina St.	Active	no	N/A	Electric lines are outside construction limits; no conflict identified	None	Schematically shown on plan drawings based on visual inspection
Storm Drain	City & County of Honolulu	C&C GIS database	24" diameter RCP	Draining to stream from intersection of Pinao St and Pinao Pl	Active	no	N/A	Storm drain is at outer edge of construction limits; no conflict identified	None	
Sanitary Sewer	City & County of Honolulu	C&C GIS database	12" diameter concrete encased sewer line	Crossing Manoa Stream at Falls 7	Active	yes	Above grade	Measure is intended to address erosion and undercutting beneath sewer line crossing, but is not expected to impact sewer line	Design drawings and specifications should identify measures to avoid/protect utility	
	City & County of Honolulu	C&C GIS database	8" diameter sewer line	Parallel to west side of Manoa Stream	Active	no	Unknown	Sewer line is outside construction limits; no conflict identified	None	
Telecommunications		Visual Inspection (5/19/2016)	Overhead lines	Mauka side of Pawaina Street, co-located with electrical lines	Active	no	N/A	Telecommunication lines are outside construction limits; no conflict identified	None	Not shown on plan drawings

NOTE: A description of the color coding shown for the potential conflict and recommended resolution is provided in Section 3 of the Utility Assessment Report.

Attachment 4

Existing Utility Plan Drawings



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[illegible]

US ARMY CORPS OF ENGINEERS		DESIGNED BY:	DATE:	REVISION:
HONOLULU DISTRICT		DRAWN BY:	CHECKED BY:	SOLICIT/ CONTRACT NO.:
HONOLULU, HAWAII		SUBMITTED BY:	LOCATION CODE	
		PLOT SCALE/ PLOT DATE:	DRAWING NUMBER:	
		AS SHOWN	DATES	
		SIZE:	FILE NAME:	

ALA WAI WATERSHED PROJECT MITIGATION MEASURES

EXISTING UTILITIES PLAN

SHEET
IDENTIFICATION
C-200
SHEET xx OF 19

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MODEL: \$MODELNAMES
DATE & TIME: \$DATES \$ TIMES
LAST SAVED BY:

PLOTDRIVER: \$PLTDRVS
PEN TABLE: \$PENTBLS
PRINTED BY: \$USERS

A

B

C

D

LEGEND:

- PROPERTY LINE
- FLOOD WALL (PROPOSED)
- DRAIN LINE
- SEWER LINE
- WATER LINE
- GAS LINE
- ELECTRIC LINE (UNDERGROUND)
- ELECTRIC LINE (OVERHEAD)
- TELEPHONE LINE
- DRAIN MANHOLE
- CATCH BASIN
- SEWER MANHOLE
- SEWER CLEANOUT
- ELECTRIC MANHOLE
- WATER MANHOLE
- FIRE HYDRANT
- ELECTRICAL BOX

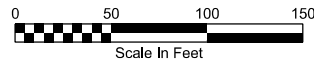
NOTES:

- LOCATION OF EXISTING UTILITIES ESTIMATED BASED ON AS-BUILTS AND OTHER AVAILABLE SOURCES. REFER TO THE UTILITY ASSESSMENT REPORT FOR WRITTEN DESCRIPTION AND SOURCE INFORMATION.
- ADDITIONAL UTILITIES ARE KNOWN TO EXIST BEYOND THOSE SHOWN ON THESE DRAWINGS. SPECIFIC LOCATIONS OF THESE UTILITIES COULD NOT BE IDENTIFIED IN THE PRELIMINARY SEARCH. THESE ADDITIONAL UTILITIES INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:
 - HECO ELECTRICAL CONDUIT CROSSING ALA MONA BRIDGE (PARTIALLY SHOWN)
 - HECO ELECTRICAL CONDUIT ALONG ALA WAI BLVD. (PARTIALLY SHOWN)
 - 4" AND 12" STORM DRAINS CROSSING ALA WAI BLVD. BETWEEN ALA MOANA BLVD. AND LIPEEPEE STREET.
 - 4" GAS LINE CROSSING ALA MOANA BRIDGE (PARTIALLY SHOWN)
 - IRRIGATION LINES ALONG ALA WAI BLVD. (PARTIALLY SHOWN)
 - VARIOUS GAS DISTRIBUTION LINES WITHIN ALA WAI BLVD.
 - CABLE AND TELEPHONE CONDUIT IN ALA MOANA BLVD BRIDGE
 - STREET LIGHT AND TRAFFIC SIGNAL CONDUITS ALONG ALA WAI BLVD.



ALA WAI CANAL FLOOD WALLS - 1

1"=50'



MATCH LINE SEE SHEET C-202



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US ARMY CORPS OF ENGINEERS HONOLULU DISTRICT HONOLULU, HAWAII	DESIGNED BY:	DATE:	REVISION:
	DRAWN BY:	CHECKED BY:	SOLICIT / CONTRACT NO.:
	SUBMITTED BY:	LOCATION CODE	
	PLOT SCALE:	PLOT DATE:	DRAWING NUMBER:
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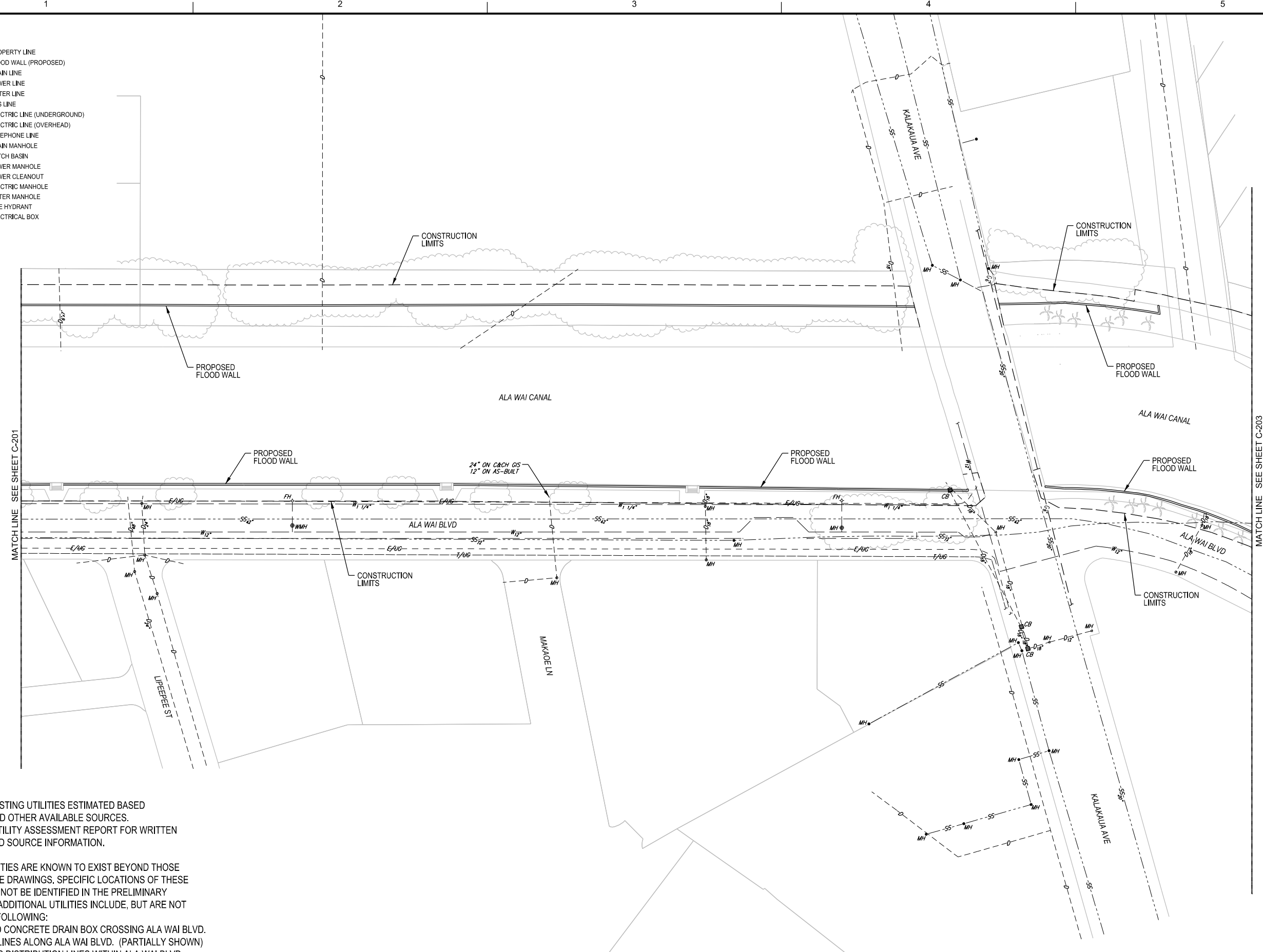
ALA WAI WATERSHED PROJECT
MITIGATION MEASURES

EXISTING UTILITIES
PLAN

SHEET
IDENTIFICATION
C-201
SHEET 1 OF 19

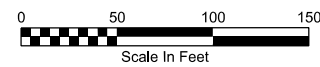
LEGEND:

- | | |
|---|-----------------------------|
|  | PROPERTY LINE |
|  | FLOOD WALL (PROPOSED) |
|  | DRAIN LINE |
|  | SEWER LINE |
|  | WATER LINE |
|  | GAS LINE |
|  | ELECTRIC LINE (UNDERGROUND) |
|  | ELECTRIC LINE (OVERHEAD) |
|  | TELEPHONE LINE |
|  | DRAIN MANHOLE |
|  | CATCH BASIN |
|  | SEWER MANHOLE |
|  | SEWER CLEANOUT |
|  | ELECTRIC MANHOLE |
|  | WATER MANHOLE |
|  | FIRE HYDRANT |
|  | ELECTRICAL BOX |



ALA WAI CANAL FLOOD WALLS - 2

1"=50'



NOTES:

1. LOCATION OF EXISTING UTILITIES ESTIMATED BASED ON AS-BUILTS AND OTHER AVAILABLE SOURCES.
REFER TO THE UTILITY ASSESSMENT REPORT FOR WRITTEN DESCRIPTION AND SOURCE INFORMATION.
2. ADDITIONAL UTILITIES ARE KNOWN TO EXIST BEYOND THOSE SHOWN ON THESE DRAWINGS. SPECIFIC LOCATIONS OF THESE UTILITIES COULD NOT BE IDENTIFIED IN THE PRELIMINARY SEARCH. THESE ADDITIONAL UTILITIES INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:
 - a. REINFORCED CONCRETE DRAIN BOX CROSSING ALA WAI BLVD.
 - b. IRRIGATION LINES ALONG ALA WAI BLVD. (PARTIALLY SHOWN)
 - c. VARIOUS GAS DISTRIBUTION LINES WITHIN ALA WAI BLVD.
 - d. STREET LIGHT AND TRAFFIC SIGNAL CONDUITS ALONG ALA WAI BLVD.
 - e. CABLE CONDUIT IN KALAKAUA AVE. BRIDGE
 - f. 4" WATER DISTRIBUTION LINE TRANSITIONS TO 3" ALONG ALA WAI PROMENADE.



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HONOLULU DISTRICT HONOLULU, HAWAII	DRAWN BY: _____		CHECKED BY: _____	SOLICIT/ CONTRACT NO: _____
	SUBMITTED BY: _____		LOCATION CODE _____	
	PLOT SCALER _____	PLOT DATE: _____	DRAWING NUMBER: _____	
	AS SHOWN _____	FILE NAME: _____		
ANSI D _____		FILE # _____		

ALA WAI WATERSHED PROJECT MITIGATION MEASURES

EXISTING UTILITIES PLAN

SHEET
IDENTIFICATION
C-202
SHEET 2 OF 19



SHEET
IDENTIFICATION
C-206
SHEET 6 OF 19

FILE: \$FILE\$
MODEL NAME: \$MODELNAME\$
DATE & TIME: \$DATE\$ \$TIME\$
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PLOTTER: \$PLOTDRVS\$
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