

DAVID Y. IGE
GOVERNOR OF HAWAII



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JUN 02 2019

BRUCE S. ANDERSON, Ph.D.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HI 96801-3378

In reply, please refer to
File

May 23, 2019

62-31 S106 ltr (initial).docx

Alan S. Downer, PhD, Administrator
State of Hawai'i, Department of Land and Natural Resources
State Historic Preservation Division
601 Kamokila Boulevard, Rm. 555
Kapolei, HI 96707
Email: dlnr.intake.shpd@hawaii.gov

Dear Dr. Downer:

Subject: National Historic Preservation Act (NHPA)
Request to Initiate Section 106 Consultation
Lanihau Wastewater Pump Station Force Main Replacement
Clean Water State Revolving Fund Project No. C150062-31
Lanihau 1-2/Moeauoa Ahupua'a, Kona Moku, Island of Hawai'i
TMK: (3) 7-5-006:999 (Road Right-of-Way)

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OFF. OF ENVIRONMENTAL
QUALITY CONTROL

On behalf of the Environmental Protection Agency (EPA), the State of Hawai'i Department of Health (DOH) would like to invite you to participate in consultation for the proposed Lanihau Wastewater Pump Station Force Main Replacement project located in Lanihau 1-2/Moeauoa Ahupua'a, Kona Moku, Island of Hawai'i.

The proposed project will utilize federal funding that is administered by the DOH through the Clean Water State Revolving Fund (CWSRF) and will be considered a federal action and undertaking, as defined by Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (2006).

The EPA has authorized the DOH to act on behalf of the EPA regarding NHPA Section 106 notification and consultation. This letter is to initiate Section 106 consultation with the State Historic Preservation Division (SHPD) in accordance with Title 36 of the Code of Federal Regulations (CFR), Section 800.3.

The DOH is providing funding under the CWSRF to the County of Hawai'i, Department of Environmental Management Wastewater Division (WWD) for the Lanihau Wastewater Pump Station Force Main Replacement project. The proposed project will utilize federal funding and is considered an undertaking, as defined by Section 106 of the NHPA, 54 U.S.C. Section 36101 et seq., and 36 CFR Part 800.

In addition, the EPA requests the State Historic Preservation Officer's (SHPO's) concurrence on the Area of Potential Effect (APE), pursuant to Section 106 of the NHPA and 36 CFR Section 800.4(a)(1).

19-375

Undertaking Description and Area of Potential Effect

The project will replace a sewer force main under Palani Road between Kuakini Highway and Ali'i Drive, located in Kailua-Kona, Hawai'i. Please refer to Enclosure 1: Project Location and Vicinity Map.

The replacement of the Lanihau Force Main is a prime concern for the WWD. The force main's deteriorated condition led to a rupture on June 12, 2017 that resulted in an accidental discharge of untreated wastewater into Kailua Bay. The two points of failure were found under Palani Road and emergency repairs were completed on June 15, 2017. The WWD made a determination that the 55-year-old Lanihau Force Main reliability has been compromised due to corrosion, and the pipe is at the end of its useful life. The existing 6-inch cast iron force main was constructed in 1962. The cast iron pipe material has deteriorated from likely both internal corrosion from sewage flow as well as external corrosion from the environment the pipe is buried in. The consequences of failure for the Lanihau FM are substantial considering the high indirect cost associated with damage to the environment and closure of the popular tourist destination, Kailua Bay. A decision to replace the force main was made taking into account its age, high consequence of failure, history of previous failure, and strong likelihood of future failure based on the corrosion levels observed when the pipe was exposed during the repairs.

The proposed undertaking is shown on Enclosure 2: Force Main Replacement and Enclosure 3: Construction Plans. The planned work includes:

- Removal of an existing 6-inch diameter cast iron force main beneath the roadway.
- Installation of a new 8-inch diameter PVC pipe force main in same location and trench as removed pipe.
- Connection of the new force main to existing discharge piping inside of the Lanihau Waste Water Pump Station valve vault
- Connection of the new force main to the discharge manhole on Kuakini Highway
- Trenching for approximately 684 linear feet, at a maximum width of 30 inches, and to a depth of 3 to 10 feet (variable).
- Roadway pavement restoration following force main installation.
- Rehabilitation of discharge manhole on Kuakini Highway and one other manhole on Kuakini Highway.

The proposed project's APE lies entirely in the existing County of Hawai'i roadway right-of-way. Please refer to Enclosure 4: TMK Map and Enclosure 5: Area of Potential Effect (APE) Boundary. The APE includes all construction, access, and staging areas. All of the surrounding parcels are developed as commercial properties built between 1971 and 2013, including hotel and resort uses and a commercial retail property. For images of the project area, please see Enclosure 6: Photographs of Project Area.

There are no National Register of Historic Places (NRHP) listed or eligible historic properties identified in the APE or any of the adjacent parcels, and no buildings or structures that are more than 50 years of age. The proposed project would not affect any historic buildings, structures, or previously identified archaeological sites.

Environmental, Historical, and Archaeological Background

The project area is located on the western side of Hawai'i Island in the Kona (meaning "leeward") District, in the coastal area at the foot of Mount Hualālai. It is entirely within the urban area of Kailua-Kona. The project lies within the ahupua'a of Lanihau 1-2 (meaning "cool heaven" and Moeauoa (meaning "current going in various directions"). In this part of Kona, the land divisions are narrow and some such as these converge when they reach the shoreline. Soil types in the project area are lava flows with 2-20% slopes, part of the Hualālai volcano's activity from more than 200 years ago.

Expansion of the pre-Contact population in Kona is believed to have occurred in the late 15th century under the leadership of 'Umi-a-Liloa (ancestor of Kamehameha I), a chief who transferred his court to Kona from Waipi'o. The people practiced diversified agriculture in what was later described as the Kona Field System (Newman 1970, in Ellison and Kennedy 2004). Land uses roughly corresponded to zones from mauka to makai. The project area lies within the makai area of the kula zone, where land uses would have included permanent residences, small gardens of sweet potato, coconut trees, and land-based activities supporting nearshore aquaculture and fishing (Ellison and Kennedy 2004). This settlement was initially known as Kaiakeakua. A long-established canoe landing and a cluster of hale, some of them homes of the royal family and court, were located at Kailua Bay, near the makai end of the project APE, where the large Kailua Pier currently stands (John Papa I'i). Pa o 'Umi, a small point of land along the seawall in this area, is said to have been the location of the residence of 'Umi-a-Liloa.

The village of Kaiakeakua, later known as Kailua-Kona, was formally King Kamehameha I's seat of government prior to his unification of the Hawaiian Islands in 1795. He later returned and lived at Kamakahonu (meaning "eye of the turtle"), on the western side of Kailua Bay, continuing to rule the Kingdom of Hawai'i from this seat from 1812 until his death in 1819. The rock for which Kamakahonu was named appears on early maps, but is now covered by the Kailua Pier. Maps show that the inland area in the APE vicinity had a few buildings on the outskirts of, likely associated with the Kamakahonu compound as early as 1819. Although these buildings were demolished and changed multiple times as the town developed.

In 1820, the first Christian missionaries to land in Hawai'i stepped ashore at Kailua Bay, on a rock that was later covered over by Kailua Pier. These missionaries established the Mokuaikaia Church.

In the 19th century, Kailua-Kona served as a favorite residence and retreat for members of the Hawaiian royal family. Despite its association with Hawaiian royalty, Kailua-Kona remained essentially a small village, with the population of the area focused on fishing and subsistence agriculture. By the turn of the century, Kailua Bay had a shipping wharf used by the ranching and sugar industries. However, little changed until tourism became the area's primary economic driver in the late 20th century.

During the Māhele 'Āina beginning in 1846, the system of land ownership and use patterns across the Hawaiian Islands was altered under the direction of Kamehameha III. Land was divided into Crown Lands, Government Lands, and lands granted to the ali'i. By 1850, commoners and foreigners were also permitted to own land. Royal Patent Grants (RPG) were issued in government land purchase transactions as proof of ownership. Many of the lands in Kailua-Kona were retained in government and royal family ownership. The project is located within an area that was designated Government Land in 1848. Several land grants were

awarded later in the vicinity. The entire ahupua'a of Lanihau Nui, which covered the current project APE, was granted to William C. Lunalilo (King of Hawai'i 1873-1874). In 1875, two years before his death at age 22, William Pitt Leleiohoku II, a prince of the Kingdom of Hawai'i, brother of King Kalākaua and *hānai* heir to Ruth Ke'elikōlani, was granted the ahupua'a of Moeauoa as well as a house lot at Kaiakeakua. These holdings appear to have included the project area (RPG 7465, Helu 9971:41).

A 1913 map shows substantial changes by the turn of the twentieth century as Kailua-Kona became a more commercial center. The current alignment of Palani Street is shown as "Government Road" connecting the bayfront road to inland routes. A wharf and warehouses supporting the sugar trade dominated the bayfront in the vicinity, and American Factors had a large building on the corner of the Government Road.

The project area vicinity was thoroughly transformed by development for tourism in the 1970s and 1980s. All parcels along both sides of the road are fully developed, with extensive paving and large commercial buildings including high-rise hotels. A review of the property records show that the development of these parcels occurred primarily from 1971 to 1975, with numerous modifications in subsequent years.

Historic Properties Identification

The APE and adjacent parcels are heavily developed and do not include any known historic properties. While there are NRHP-listed and eligible historic properties in the vicinity, these all lie outside and out of sight of the project APE and would not be affected by project activities.

Archaeological Surveys and Historical Studies

Numerous archaeological surveys have occurred in the general vicinity. See Table 1 for a summary of reports related to the surveys that have occurred in and near the APE.

Table 1. Archaeological and historical surveys in the project vicinity.

Name (Year)	Location	Study type	Sites identified and notes
Stokes (1906)	Lanihau and Keaholū coast.	General survey	Heiau and numerous other sites throughout the coastal region noted.
Reinicke (1930)	Lanihau and Keaholū coast.	Reconnaissance Survey	Heiau and numerous other sites throughout the coastal region noted.
Rosendahl (1979)	Three parcels totaling 220 acres, including parcels adjacent to Queen Kaahumanu Highway and Palani Road, starting about 100 feet outside the current project APE.	Archaeological Reconnaissance Survey	13 features or feature complexes recorded in survey area; none within or near current project APE.
Donham (1990)	1,100 acre six-parcel area owned by Queen Liliuokalani Trust on the	Archaeological Inventory Survey	239 sites, including 1,810 features were located, almost all

	east side of Queen Ka'auhumanu Highway north of Palani Road; edge of area is adjacent to north end of current project APE.		agricultural features, mostly in upland areas away from APE.
O'Hare and Rosendahl (1993)	Parcel of 100 acres, from shore to Queen Ka'ahumanu Highway.	Archaeological Inventory Survey	18 sites with 38 component features were recorded, including a section of the Māmalahoa Trail and a burial. No sites shown in or near the current APE.
Perzinski et al. (2004)	TMK (3) 7-4-008:020, more than 2,000 feet outside of the current project APE.	Archaeological Inventory Survey	One habitation site (50-10-28-23798); not within or near current APE.
Elison and Kennedy (2004)	Kailua-Kona, TMK (3) 7-5-006:001, about 900 feet outside the current project APE.	AIS Report	Two sites, including a complex of mortared stone structures and a complex of boundary walls (Sites 50-10-28-24184 and -24185), not within APE.
Simonson, Schideler and Hammatt (2010)	Kailua-Kona, TMK (3) 7-5-005:007 and 083, directly southwest of the current project APE.	Literature Review and Field Inspection	32 archaeological sites including burials, concentrated in the central and western portions of the surveyed area, away from the APE. No site numbers are provided.

Historic Properties Inventory

Outside and out of view of the project, but within approximately 0.25 mile of the APE along the Kailua Bay waterfront, are three NHRP-listed historic properties: Kamakahonu National Historic Landmark, Hulihe'e Palace, and Mokuaiakaua Church. Known historic properties within 0.25 mile of the APE are shown in Table 2 below and on Enclosure 7: Map of Historic Properties Relative to APE. The project activities will not be visible from or otherwise affect these historic properties.

A request was made on April 30, 2019 to the State Historic Preservation Division (SHPD) for available GIS data showing locations and information for State Inventory of Historic Places (SIHP) sites in the project vicinity. A response has not yet been received. When information is received, any other sites that have been determined NRHP eligible within 0.25 mile of the project APE will be added to the table.

Table 2. Inventoried historic properties located in the project vicinity, identifying relationship to APE.

SIHP #, NRHP, HRHP status (if applicable)	Historic Property Name	Description	Relationship to APE
50-10-27- 7002; NRHP #66000288	Kamakahonu National Historic Landmark (NHL)	Located on the grounds of the King Kamehameha Hotel, Kamakahonu's documented history dates to 1812. This is the location where Kamehameha I resided in his later years as well as where the first missionaries landed in Hawai'i in 1820. Many of the NHL's associated structures were destroyed, but were reconstructed in the 1970s.	On Kaahumanu Place, TMKs (3) 7-5-006:024 and :032, approximately 600 feet outside the APE, across part of Kailua Bay
50-10-28- 7001; NRHP #73000653	Hulihe'e Palace	Located about 1,000 feet to the east of the current project APE along Ali'i Drive, this royal residence was built in 1838.	75-5718 Ali'i Drive, TMK (3) 7-5-007:020. Approximately 1,000 feet outside APE.
50-10-28- 7231; NRHP #78001015	Mokuaikaua Church	Located about 1,000 feet to the east of the current project APE along Ali'i Drive, this large stone church built in 1837 by early Christian missionaries is significant as one of the first and largest stone churches in Hawai'i.	75-5713 Ali'i Drive, TMK (3) 7-5-007:018. Approximately 1,000 feet outside APE.
50-10-28- 24184 and - 24185	Unnamed sites	Surveyed by Elison and Kennedy (2004), these two sites include a complex of mortared stone structures and a complex of boundary walls.	TMK (3) 7-5-006:001, approximately 900 feet outside APE.

Consultation

Consultation has not yet been initiated. The following section describes planned efforts and provides a list of potential consulting parties for SHPD review and comment.

A NHPA Section 106 notice/advertisement will be published in the Office of Environmental Quality Environmental Notice. Letters will be sent to Native Hawaiian organizations (NHOs) and Native Hawaiian descendants with ancestral, lineal or cultural ties to, cultural knowledge or concerns for, and cultural or religious attachment to the proposed project area. In addition to NHOs, letters will be sent to other historically-focused and community groups that have interest in and knowledge about the local historic and cultural sites.

The letters will provide a project description, APE description, and summary of archaeological and historic properties. Letters will request a written response within 30 days stating whether the recipient would like to participate in the Section 106 process for this project. In addition, letters

will request any initial comments on the proposed improvements and any information they may have about other historic and cultural sites, practices, or knowledge.

We have prepared the following initial list of NHOs and interested parties to be consulted:

1	Office of Hawaiian Affairs
2	Aha Moku – Moku a Keawe
3	Historic Hawai'i Foundation
4	Kona Historical Society
5	National Park Service, National Historic Landmarks Program
6	Council of Hawaiian Civic Clubs
7	Daughters of Hawai'i

Pursuant to 36 CFR 800.3 (f) in consultation with the SHPO, we are interested in information if your agency is acquainted with any persons or organization that is knowledgeable about the proposed project area, or any descendants with ancestral, lineal or cultural ties to or cultural knowledge or concerns for, and cultural or religious attachment to the proposed project area. We would appreciate receiving their names and contact information within the 30 days of notification.

We welcome any comments that you may have on this project's proposed improvements.

We would appreciate a written response within thirty (30) calendar days from receipt of this letter. Please address any written comments you may have to email jonathan.nagato@doh.hawaii.gov or the following:

Attn: Jon Nagato
Department of Health, Wastewater Branch
2827 Waimano Home Road, Room 207
Pearl City, HI 96782

Should you have any questions, please call Jon Nagato of our Branch at (808) 586-4294.

Sincerely,

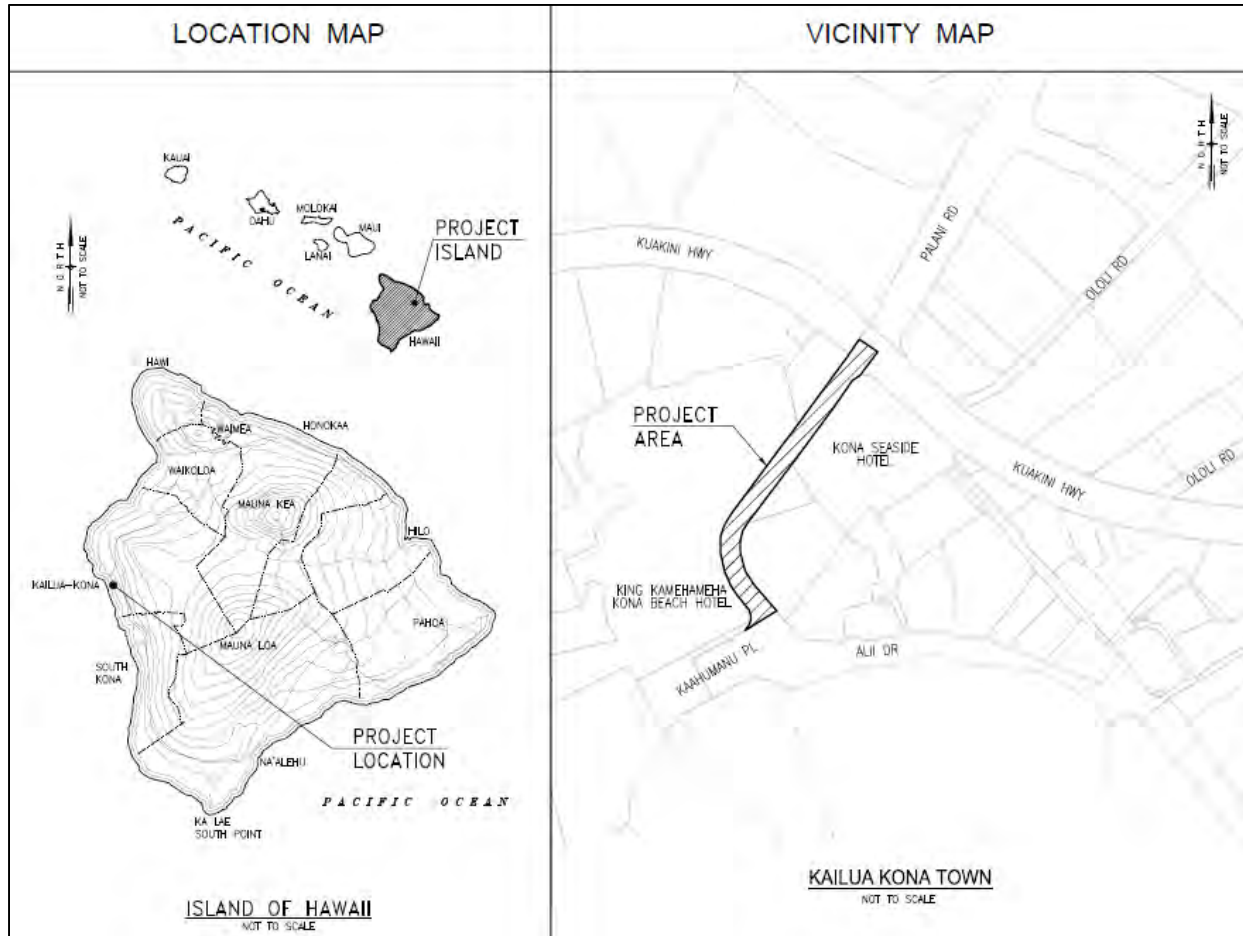


SINA PRUDER, P.E., CHIEF
Wastewater Branch

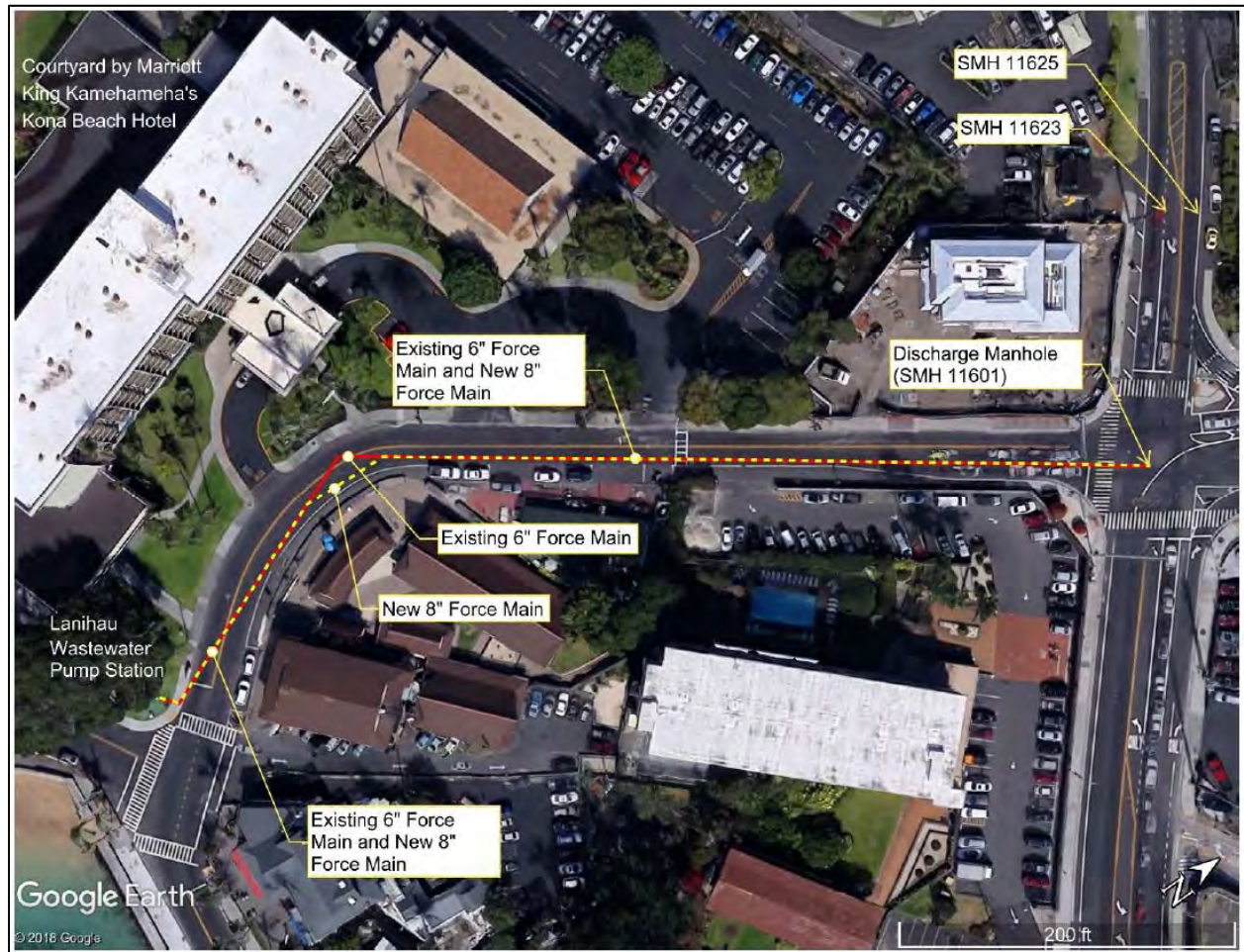
JN:sp

c: Ms. Dora Beck (via email at Dora.Beck@hawaiicounty.gov)
Mr. Anthony Medrano (via email at Anthony.Medrano@hawaiicounty.gov)
Mr. Jarrett Brown, AECOM

Enclosure 1. Project Location and Vicinity Map



Enclosure 2. Force Main Replacement



Enclosure 3. Construction Plans

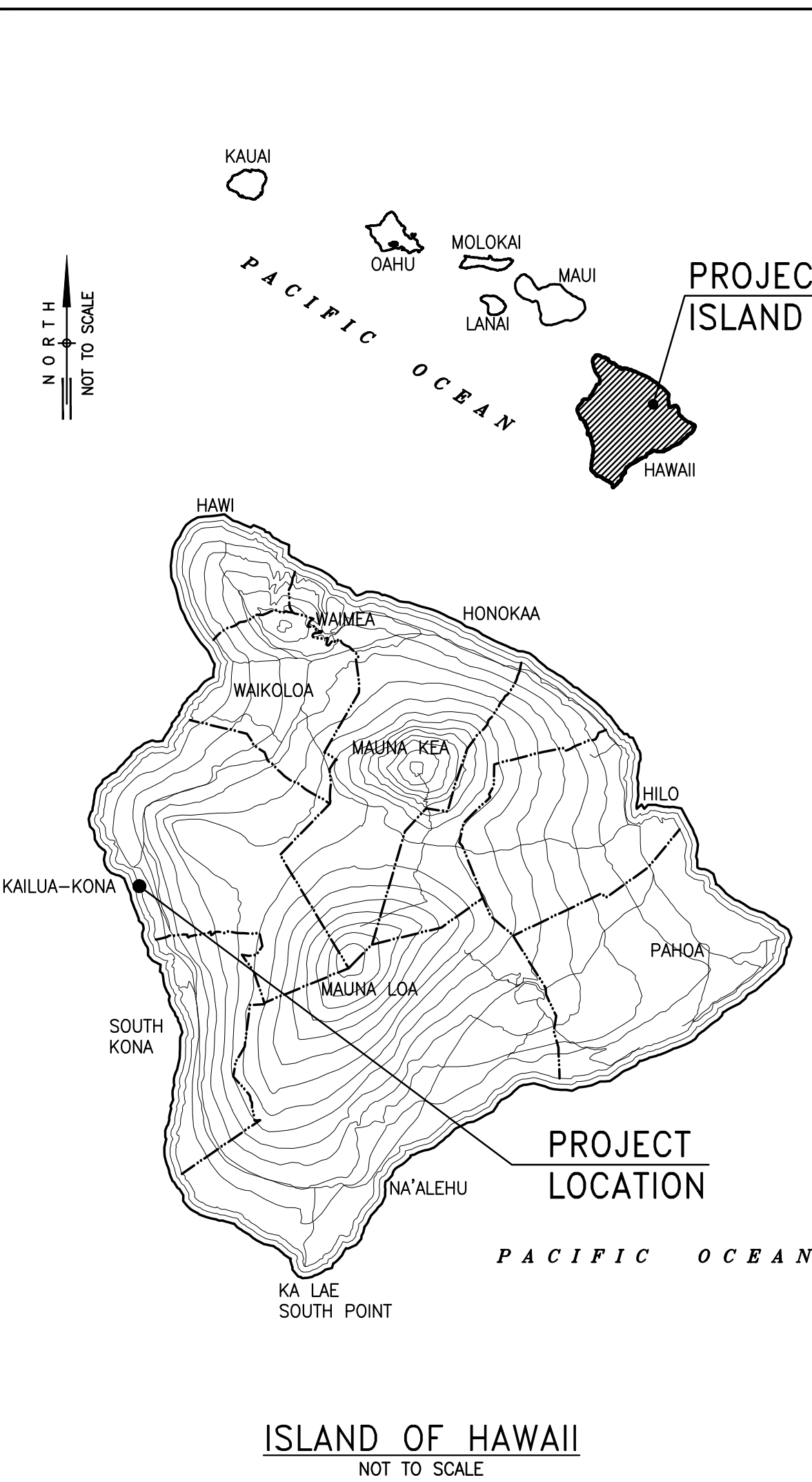
LANIHAU WASTEWATER PUMP STATION
FORCE MAIN REPLACEMENT
100% DESIGN SUBMITTAL

KAILUA-KONA, HAWAII
TMK: (3) 7-5-006:999
JOB NO. WW-4457

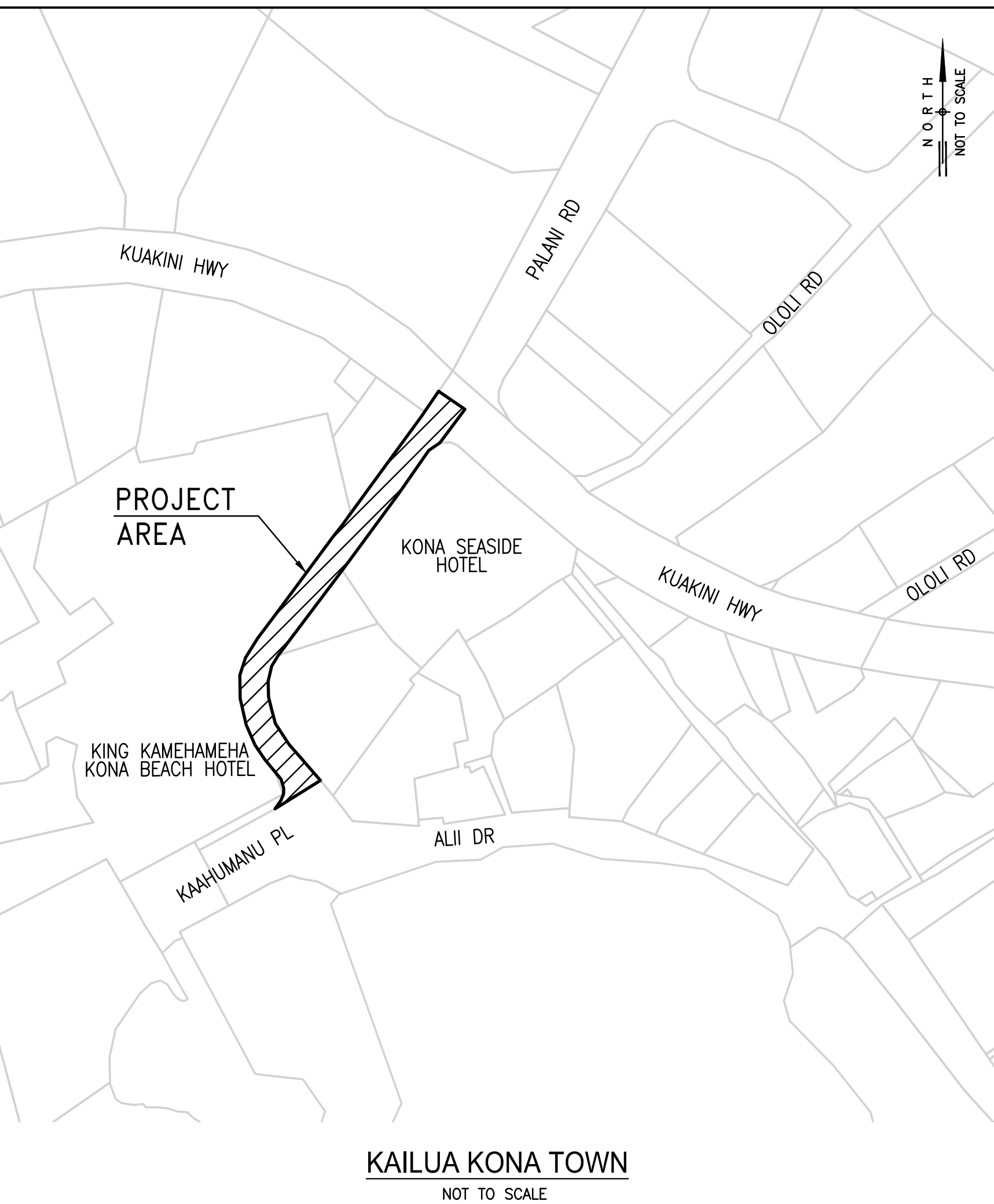
PREPARED FOR: COUNTY OF HAWAII
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

PREPARED BY: **AECOM** 1001 BISHOP STREET
SUITE 1600
HONOLULU, HAWAII 96813

LOCATION MAP



VICINITY MAP

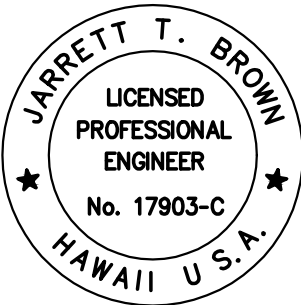


DRAWING INDEX

SHEET NO.	SHEET NAME	SHEET TITLE
1	T-1	TITLE SHEET
2	C-1	GENERAL NOTES, LEGEND & ABBREVIATIONS
3	C-2	SEWER SYSTEM NOTES
4	D-1	EXISTING CONDITIONS AND DEMOLITION PLAN
5	C-3	8" FM PLAN & PROFILE 1
6	C-4	8" FM PLAN & PROFILE 2
7	C-5	PUMP STATION PLAN AND SECTION
8	C-6	STANDARD DETAILS 1
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10	C-8	TRAFFIC CONTROL NOTES
11	C-9	PALANI ROAD DETOUR PLAN
12	C-10	PALANI RD TRAFFIC CONTROL PLAN PHASE 1 AND PHASE 2
13	C-11	PALANI RD/KUAKINI HWY TRAFFIC CONTROL PLAN PHASE 3
14	C-12	PALANI RD/KUAKINI HWY TRAFFIC CONTROL PLAN ROADWAY SECTIONS

APPROVED:

MAYOR COUNTY OF HAWAII	DATE
DIRECTOR, DEPT. OF PUBLIC WORKS COUNTY OF HAWAII	DATE
DIRECTOR, DEPARTMENT OF ENVIRONMENTAL MANAGEMENT COUNTY OF HAWAII	DATE
CHIEF, ENVIRONMENTAL MANAGEMENT DIVISION DEPARTMENT OF HEALTH STATE OF HAWAII	DATE
MANAGER-CHIEF ENGINEER, DEPARTMENT OF WATER SUPPLY COUNTY OF HAWAII	DATE
PLANNING DIRECTOR COUNTY OF HAWAII	DATE



THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION

BY: EXP: 4/30/20

100% DESIGN SUBMITTAL

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (APPLICABLE NON--WASTEWATER SECTIONS, SEPTEMBER 1986), THE STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION, DEPARTMENTS OF PUBLIC WORKS, COUNTY OF HAWAII (APPLICABLE NON--WASTEWATER SECTIONS, SEPTEMBER 1984), WASTEWATER SYSTEM DESIGN STANDARDS, CITY AND COUNTY OF HONOLULU (JULY 2017), WASTEWATER SYSTEM STANDARD DETAILS, CITY AND COUNTY OF HONOLULU (JULY 2017) AND THE COUNTY OF HAWAII, DEPARTMENT OF ENVIRONMENTAL MANAGEMENT, WASTEWATER DIVISION (WWD) STANDARD DETAILS (WW--1THRU WW--9, CURRENT VERSION) SHALL BE APPLICABLE AND INCORPORATED HEREIN UNLESS OTHERWISE NOTED.
2. SURVEY CONTROL AND LAYOUT, WHEN REQUIRED, SHALL BE PERFORMED BY, OR UNDER THE DIRECT SUPERVISION OF A PROFESSIONAL LAND SURVEYOR LICENSED IN THE STATE OF HAWAII.
3. THE CONTRACTOR SHALL PROCURE AND CONFORM TO ALL PERMITS AND LICENSES REQUIRED, PAY ALL ASSOCIATED CHARGES AND FEES AND GIVE ALL NOTICES NECESSARY AND INCIDENTAL TO THE DUE AND LAWFUL PROSECUTION OF THE WORK.
 - A. THE CONTRACTOR SHALL PROCURE AND CONFORM TO A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FROM THE STATE OF HAWAII, DEPARTMENT OF HEALTH, CLEAN WATER BRANCH FOR ANY PROJECT WHERE CONSTRUCTION ACTIVITIES WILL DISTURB ONE (1) ACRE OR MORE OF TOTAL LAND AREA OR WHERE DEWATERING IS REQUIRED.
 - B. ALL STORMWATER POLLUTION PREVENTION MEASURES SHALL BE INSTALLED SO AS TO PREVENT STORMWATER RUNOFF, CONSTRUCTION WATER, FUELS, CHEMICALS, OR OTHER LIQUIDS BEING DIRECTED INTO OR ONTO ANY SANITARY SEWER FACILITIES WITHIN THE PROJECT LIMITS. BEST MANAGEMENT PRACTICES (BMPs) MAY INCLUDE, BUT SHALL NOT BE LIMITED TO, USE OF RAINSTOPPER MANHOLE INSERTS.
4. A MINIMUM HORIZONTAL SEPARATION OF 8 FEET BETWEEN WATER AND SEWER LINES ARE REQUIRED. IF NOT POSSIBLE, SECTION 24.128 OF THE "WASTEWATER SYSTEM DESIGN STANDARDS, CITY AND COUNTY OF HONOLULU, JULY 2017" APPLIES.
5. A MINIMUM OF 18 INCH VERTICAL CLEARANCE AT WATER AND SEWER MAIN CROSSINGS WITH SEWER UNDERNEATH THE WATER IS REQUIRED. IF NOT POSSIBLE, SECTION 24.128 OF THE "WASTEWATER SYSTEM DESIGN STANDARDS, CITY AND COUNTY OF HONOLULU, JULY 2017" APPLIES
6. THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, AND EQUIPMENT REQUIRED FOR THE COMPLETE INSTALLATION OF THE SUBJECT WORK UNLESS SPECIFICALLY NOTED OTHERWISE ON THE PLANS APPROVED BY THE WWD.
7. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PERFORM ALL WORK NECESSARY TO COMPLETE CONSTRUCTION PER THE APPROVED PLANS AND SPECIFICATIONS AND SUCH INCIDENTALS AS MAY BE NECESSARY TO MEET APPLICABLE AGENCY REQUIREMENTS INCLUDING, BUT NOT LIMITED TO, OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REGULATIONS, AND PROVIDE A COMPLETED PROJECT. ONLY PLANS APPROVED BY WWD SHALL BE USED FOR CONSTRUCTION OF, OR CONNECTION TO, THE COUNTY'S PUBLIC WASTEWATER SYSTEM. ANY ADDITIONS, DELETIONS, OR CHANGES TO THE WASTEWATER SYSTEM SHALL MEET THE WRITTEN APPROVAL OF THE COUNTY OF HAWAII, DEPARTMENT OF ENVIRONMENTAL MANAGEMENT, WASTEWATER DIVISION PRIOR TO STARTING THE REVISED WORK.
 - A. THE CONTRACTOR SHALL MAINTAIN ONE COMPLETE SET OF APPROVED PLANS ON THE CONSTRUCTION SITE AT ALL TIMES WHERE HE SHALL RECORD THE SIZES, MATERIALS, STATION LOCATIONS AND ELEVATIONS OF ALL EXISTING UTILITIES ENCOUNTERED. THESE FIELD RECORD DRAWINGS SHALL BE KEPT CONTINUOUSLY UP TO DATE AND SHALL BE AVAILABLE FOR INSPECTION BY THE WWD ON REQUEST.
8. INSPECTIONS SHALL BE REQUIRED FOR ALL WORK WHICH INVOLVES THE WWD'S SEWER MAINS, LATERALS, CLEANOUTS, AND ALL NEW SEWER CONSTRUCTION TO BE DEDICATED TO THE COUNTY OF HAWAII. CALL THE WASTEWATER DIVISION AT (808) 961-8338 DURING NORMAL BUSINESS HOURS (7:00 AM. TO 3:30 P.M., MONDAY THROUGH FRIDAY, EXCEPT COUNTY OF HAWAII HOLIDAYS) AT LEAST TWO (2) WORKING DAYS IN ADVANCE TO SCHEDULE AN INSPECTION.

B. WHEN WWD DETERMINES THROUGH INSPECTION THAT MATERIAL, EQUIPMENT OR WORKMANSHIP DO NOT MEET REQUIREMENTS, THE CONTRACTOR WILL BE GIVEN WRITTEN NOTICE OF NONCOMPLIANCE. IMMEDIATE CORRECTION OF THE DEFICIENCIES SHALL BE ADDRESSED BY THE CONTRACTOR WITH THE WWD ENGINEER AND/OR THEIR REPRESENTATIVE.

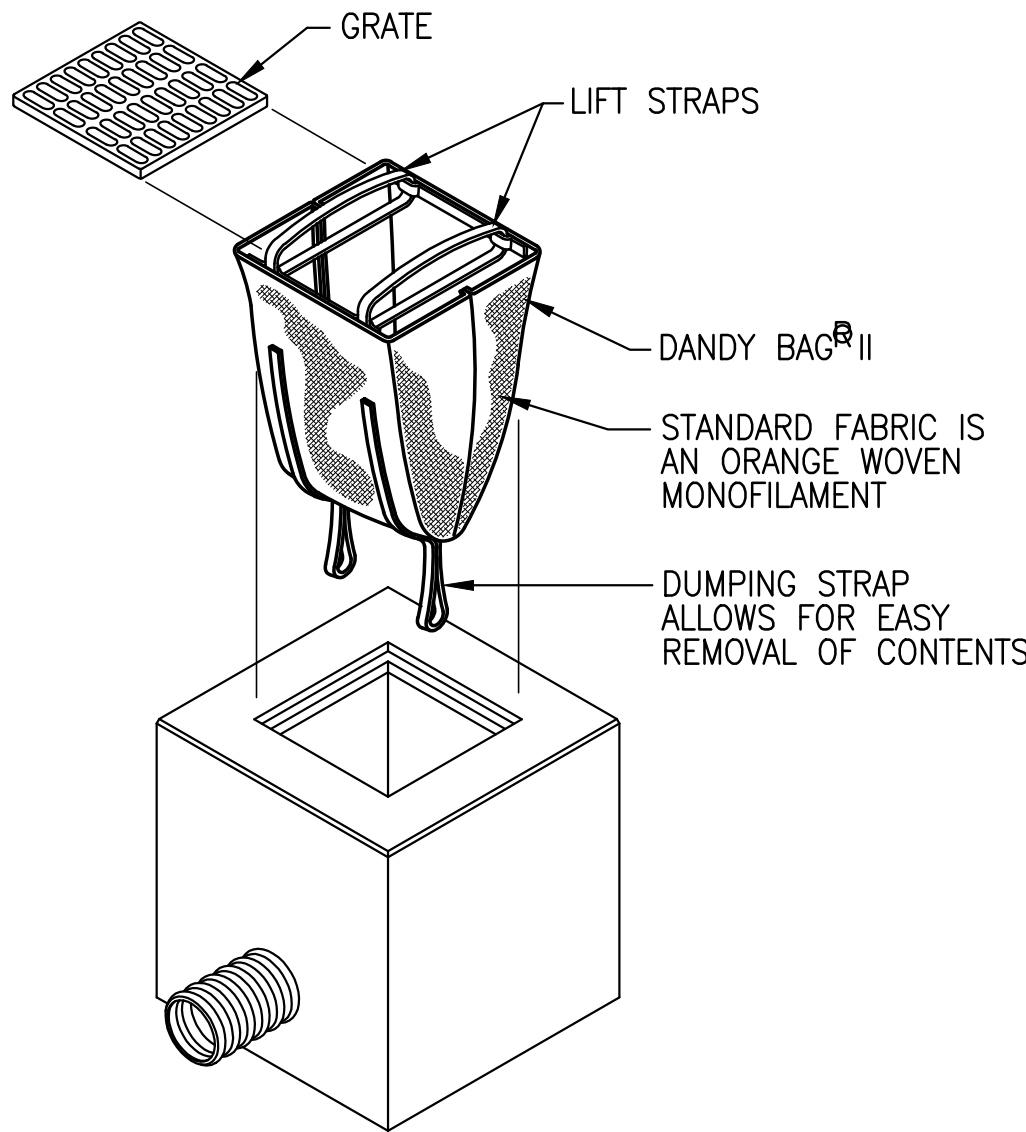
8. SEWER WORK SHALL BE SCHEDULED SUCH THAT WORK SHALL NOT BE PERFORMED ON SATURDAYS, SUNDAYS OR COUNTY OF HAWAII HOLIDAYS. IF SUCH WORK DICTATES PERFORMANCE ON THESE NON-WORK DAYS, OR AFTER NORMAL HOURS OF OPERATION (3:30 PM TO 7:00 AM), THE CONTRACTOR SHALL BE RESPONSIBLE FOR PAYMENT OF OVERTIME CHARGES TO THE WWD.
9. THE CONTRACTOR SHALL NOTIFY THE HAWAII ONE CALL CENTER OF ANY PLANNED EXCAVATION ON PUBLIC OR PRIVATE PROPERTY AT LEAST FIVE WORKING DAYS, BUT NOT MORE THAN TWENTY--EIGHT CALENDAR DAYS, PRIOR TO COMMENCING SUCH EXCAVATION (IN ACCORDANCE WITH HRS 269 E7). CALL 1-866-423-7287 (OR 811). ERRORS IN ONE CALL'S SANITARY SEWER LOCATES SHALL BE REPORTED IMMEDIATELY TO THE WWD AT (808)961-8338.
10. LOCATIONS AND DESCRIPTIONS OF EXISTING UTILITIES SHOWN ON THE PLANS ARE COMPILED FROM AVAILABLE RECORDS AND/OR FIELD SURVEY. THE ENGINEER AND UTILITY PROVIDERS DO NOT GUARANTEE THE ACCURACY OR COMPLETENESS OF SUCH RECORDS. THE CONTRACTOR SHALL FIELD VERIFY LOCATIONS, SIZES, MATERIALS AND DEPTHS OF ALL EXISTING UTILITIES WHERE PROPOSED FACILITIES CROSS.
11. THE CONTRACTOR SHALL FIELD VERIFY EXISTING SANITARY SEWER LOCATIONS, ELEVATIONS, AND MATERIALS WITHIN THE PROJECT LIMITS PRIOR TO CONSTRUCTION. POT-HOLING MAY BE REQUIRED FOR SUCH VERIFICATION.

13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR EXPOSING POTENTIAL UTILITY CONFLICTS FAR ENOUGH AHEAD OF CONSTRUCTION TO MAKE NECESSARY LINE AND GRADE MODIFICATIONS WITHOUT DELAYING THE WORK.
14. ALL EXISTING UTILITIES EXCEPT THOSE SPECIFICALLY DESIGNATED FOR ABANDONMENT OR REMOVAL ON THE APPROVED PLANS, INCLUDING WASTEWATER LINE(S), WHETHER OR NOT SHOWN ON THE PLANS, SHALL BE PROTECTED AND REPAIRED BY THE CONTRACTOR IF DAMAGED DURING CONSTRUCTION. THE CONTRACTOR SHALL LEAVE EXISTING FACILITIES IN AN EQUAL TO OR BETTER THAN ORIGINAL CONDITION. THE CONTRACTOR SHALL PAY ALL ASSOCIATED EXPENSES: IN THE EVENT OF DAMAGE TO EXISTING UTILITY FACILITIES OTHER THAN SANITARY SEWER, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE UTILITY SERVICE PROVIDER. IN THE EVENT OF DAMAGE TO EXISTING SANITARY SEWER FACILITIES, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE WWD AT (808)961-8338.
15. THE CONTRACTOR SHALL NOTIFY AND COORDINATE WITH PRIVATE UTILITIES FOR ADJUSTMENT TO OR RELOCATION OF POWER POLES, VAULTS, ETC. TO AVOID CONFLICT WITH COUNTY SEWER STRUCTURES, LINES AND ASSOCIATED APPURTENANCES.
16. EXPOSED ENDS OF SEWER LINES THAT ARE ABANDONED OR TO BE ABANDONED IN PLACE SHALL BE CAPPED OR PLUGGED WITH CONCRETE FOR A MINIMUM LENGTH EQUAL TO TWO TIMES THE DIAMETER OF THE ABANDONED PIPE AND INTERFERING PORTIONS REMOVED BY THE CONTRACTOR TO THE EXTENT NECESSARY TO ACCOMPLISH THE WORK, UNLESS OTHERWISE SPECIFIED.
17. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL SANITARY SEWER STRUCTURES AND MANHOLES AT ALL TIMES.
18. BYPASSING OR SPILLING OF SEWAGE TO THE GROUND, DRAINAGE SYSTEM OR STATE WATERS IS PROHIBITED. IN SUCH CASES, THE CONTRACTOR SHALL IMMEDIATELY CALL THE WWD AT (808)961-8338, TAKE IMMEDIATE ACTION TO CONTAIN THE SEWAGE, AND PAY PENALTIES, INCLUDING LEGAL FEES AND OTHER COSTS RELATED TO THE BYPASS AND/OR SPILL.
19. THE CONTRACTOR SHALL BE IN PERSON ON THE JOB SITE OR BE REPRESENTED ON THE JOB SITE BY A RESPONSIBLE AGENT WITH AUTHORITY TO ACT FOR THE CONTRACTOR IN CONNECTION WITH THIS PROJECT AT ALL TIMES.
20. THE CONTRACTOR SHALL, AT ALL TIMES DURING THE WORK, KEEP THE PREMISES CLEAN AND ORDERLY. PUBLIC STREETS AND RIGHTS-OF-WAY SHALL BE KEPT CLEAN OF MUD, DUST AND DEBRIS. THE CONTRACTOR SHALL ADEQUATELY WATER DISTURBED AREAS ON-SITE FOR DUST ABATEMENT, AS NEEDED. UPON COMPLETION OF THE WORK, THE CONTRACTOR SHALL REPAIR ALL DAMAGE CAUSED BY EQUIPMENT AND LEAVE THE PROJECT FREE OF RUBBISH AND EXCESS MATERIALS OF ANY KIND. DROPPING OR WASHING DEBRIS OR RUBBISH OF ANY KIND INTO THE SANITARY SEWER SYSTEM IS PROHIBITED.

1. THE CONTRACTOR SHALL OBSERVE AND COMPLY WITH ALL FEDERAL, STATE AND LOCAL LAWS REQUIRED FOR THE PROTECTION OF PUBLIC HEALTH, SAFETY AND ENVIRONMENTAL QUALITY.
2. THE CONTRACTOR, AT HIS OWN EXPENSE, SHALL KEEP THE PROJECT AND SURROUNDING AREAS FREE FROM DUST, NUISANCES, ETC. THE WORK SHALL BE DONE IN CONFORMANCE WITH THE AIR POLLUTION CONTROL STANDARDS AND ALL OTHER APPLICABLE REGULATIONS OF THE STATE DEPARTMENT OF HEALTH. THE COUNTY MAY REQUIRE SUPPLEMENTARY MEASURES AS NECESSARY.
3. THE CONTRACTOR SHALL PROVIDE, INSTALL AND MAINTAIN ALL NECESSARY SIGNS, LIGHTS, FLARES, BARRICADES, MARKERS, CONES AND OTHER PROTECTIVE FACILITIES, AND SHALL TAKE ALL NECESSARY PRECAUTIONS FOR THE PROTECTION, CONVENIENCE AND SAFETY OF THE PUBLIC.
4. SHOULD HAZARDOUS MATERIAL BE ENCOUNTERED, THE ENGINEER SHALL BE NOTIFIED AND ALL WORK SHALL BE SUSPENDED UNTIL THE MATERIAL IS PROPERLY REMEDIATED, HANDLED AND DISPOSED OF OFF-SITE IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS AND REQUIREMENTS. SHOULD SOFT, YIELDING OR NONHOMOGENEOUS SOILS BE ENCOUNTERED, THE SOIL SHALL BE OVEREXCAVATED UNTIL COMPETENT UNDERLYING MATERIAL IS REACHED, AND DISPOSED OF PROPERLY OFF-SITE. THE OVEREXCAVATED LOCATIONS SHALL BE BACKFILLED AND COMPACTED PROPERLY IN ACCORDANCE WITH THE PROJECT DRAWINGS, AND SPECIFICATIONS.

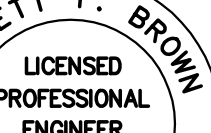

1. THE CONTRACTOR SHALL OBSERVE AND COMPLY WITH THE STATE DEPARTMENT OF HEALTH REGULATIONS REGARDING STORM WATER DISCHARGE.
2. THE CONTRACTOR SHALL INSTALL MEASURES TO PREVENT ANY SEDIMENT LADEN RUNOFF FROM LEAVING THE SITE.
3. PROVIDE A FILTER AT DRAIN INLET OPENINGS TO PREVENT SEDIMENT FROM ENTERING SEE DETAIL AT RIGHT.
4. DURING CONSTRUCTION, DUST POLLUTION SHALL BE KEPT TO A MINIMUM.
5. EXCAVATED MATERIAL THAT WILL BE USED FOR BACKFILL SHALL BE PLACED ADJACENT TO THE WORK AREA. IN THE EVENT OF A RAIN STORM, THE MATERIAL SHALL BE COVERED TO MINIMIZE SEDIMENT RUNOFF.
6. THE CONTRACTOR SHALL ENSURE THAT ALL TIRES OF CONSTRUCTION VEHICLES ARE SUFFICIENTLY CLEANED OFF SO THAT DIRT OR DEBRIS IS NOT TRACKED OFF THE CONSTRUCTION SITE. WASHING OFF TIRES WITH WATER WILL NOT BE ACCEPTABLE UNLESS THE RUNOFF IS CONTAINED AND DOES NOT ENTER THE STORM DRAIN SYSTEM.

1. THE CONSTRUCTION AREA SHALL BE CLEARED OF ALL TRASH AND DEBRIS.
2. ALL MOBILIZED EQUIPMENT SHALL BE REMOVED.
3. EXCESS EXCAVATED MATERIAL NOT UTILIZED FOR BACKFILL SHALL BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH THE COUNTY REGULATIONS.
4. THE CONTRACTOR SHALL REMOVE FILTERS DURING TIMES OF ABOVE NORMAL RAINFALL EVENTS AND REPLACE THEM WHEN EVENT HAS PASSED.



1. DANDY BAG II IS MANUFACTURED BY DANDY PRODUCTS, INC. GROVE CITY, OHIO.
2. THE CONTRACTOR SHALL REMOVE FILTERS DURING TIMES OF ABOVE NORMAL RAINFALL EVENTS AND REPLACE THEM WHEN EVENT HAS PASSED.
3. THE CONTRACTOR SHALL REMOVE ALL ACCUMULATED SEDIMENT AND DEBRIS FROM VICINITY OF UNIT AFTER EACH STORM EVENT. THE SEDIMENT BAG SHOULD BE CHECKED AFTER EACH STORM EVENT AND AT REGULAR INTERVALS. IF THE CONTAINMENT AREA IS MORE THAN 1/3 FULL OF SEDIMENT, THE UNIT MUST BE EMPTIED.

SCALE: NTS

				
	REVISION	DATE	BRIEF	BY
 <small>ASB TOWER, SUITE 1600 • 1501 BISHOP ST., HONOLULU, HAWAII 96813</small>				
COUNTY OF HAWAII DEPARTMENT OF ENVIRONMENTAL MANAGEMENT				
LANIHAU WWPS FORCE MAIN REPLACEMENT KAILUA-KONA, ISLAND OF HAWAII, HAWAII				
GENERAL NOTES, LEGEND & ABBREVIATIONS				
BY: _____ EXP: 4/30/20				
<div style="font-size: 2em; font-weight: bold; margin-bottom: 10px;">C-1</div> <div style="display: flex; justify-content: space-between;"> DESIGNED BY _____ JB DRAWN BY _____ HC/JB CHECKED BY _____ JB </div>				
APPROVED BY: _____				
COUNTY OF HAWAII, DEPARTMENT OF ENVIRONMENTAL MANAGEMENT _____ DATE _____				

SEWER SYSTEM REQUIREMENTS:

1. FORCE MAIN:
- A. FORCE MAIN PIPING SHALL BE POLYVINYL CHLORIDE (PVC) C900 DR-18.

B. METALLIC TRACER TAPE SHALL BE INSTALLED ABOVE ALL BURIED PIPING. TRACER TAPE SHALL BE ACID AND ALKALI-RESISTANT, GREEN OR YELLOW, 6-INCHES (MINIMUM) WIDTH, 9-MIL (MINIMUM) THICKNESS AND BE REINFORCED FOR INCREASED BREAKING STRENGTH. METALLIC TRACER TAPE SHALL BE THORTEC DETECTABLE WARNING TAPE OR APPROVED EQUAL AND SHALL HAVE WORDING SIMILAR TO "CAUTION - FORCE MAIN BURIED BELOW." TRACER TAPE SHALL BE INSTALLED AT A DEPTH OF APPROXIMATELY 12-INCHES FROM GRADE (MINIMUM COVERAGE OF 6-INCHES REQUIRED). TAPE SHALL BE PLACED ON COMPACTED BACKFILL AND SHALL BE LAID IN CONTINUOUS LENGTHS WITH WORDING FACING UPWARDS.

C. SCOTCHMARK 3M FULL RANGE MARKERS, 15-INCHES IN DIAMETER, PRODUCT NUMBER 1253, COLOR CODED TO APWA STANDARDS DESIGNED FOR APPLICATIONS UP TO EIGHT FEET IN DEPTH) SHALL BE INSTALLED ABOVE BURIED PIPING AT A MAXIMUM DEPTH OF 6- FEET. MARKERS SHALL BE PLACED AT ALL PIPING DIRECTIONAL CHANGES (HORIZONTAL AND/OR VERTICAL) AND AT MAXIMUM INTERVALS OF 50- FEET. ELECTRONIC MARKERS SHALL BE INSTALLED WITH 12-INCHES OF NO. 4 CRUSHED AGGREGATE SCREENING ALL AROUND (TOP, BOTTOM, SIDES) THE MARKER TO PROTECT IT FROM DAMAGE DURING BACKFILLING OPERATIONS. ELECTRONIC MARKERS SHALL BE INSTALLED IN THE HORIZONTAL POSITION TO MAXIMIZE LOCATOR EFFICIENCY.

D. PRIOR TO EXCAVATION WITHIN 6 FEET OF ACTIVE FORCE MAINS, THE CONTRACTOR SHALL PURCHASE AND HAVE ON-SITE THE FOLLOWING REPAIR ITEMS TO BE USED IN THE EVENT OF DAMAGE TO THE EXISTING LINES DURING EXCAVATION WORK:

I. TWO (2) EACH STAINLESS STEEL PIPE REPAIR CLAMPS OF APPROPRIATE SIZE AND PRESSURE RATING FOR EACH TYPE OF EXISTING FORCE MAIN WHERE THE EXCAVATION IS TAKING PLACE.

II. TWO (2) EACH "DRESSER" TYPE COUPLINGS OF THE APPROPRIATE SIZE AND PRESSURE RATING FOR EACH TYPE OF EXISTING FORCE MAIN WHERE THE EXCAVATION IS TAKING PLACE.

III. ONE (1) EACH PIPE LENGTH OF THE APPROPRIATE SIZE AND PRESSURE RATING FOR EACH TYPE OF EXISTING FORCE MAIN WHERE THE EXCAVATION IS TAKING PLACE. AS AN ALTERNATIVE, THE CONTRACTOR MAY PROVIDE PIPING OF A DIFFERENT MATERIAL (PVC, HDPE, CAST IRON, OR DUCTILE IRON) PROVIDED THAT SUFFICIENT WWD APPROVED ADAPTERS ALSO AVAILABLE AT SITE.
2. TRENCHING, PIPE BEDDING, AND BACKFILL:
- A. THE CONTRACTOR SHALL HAVE APPROPRIATE EQUIPMENT ON-SITE TO PRODUCE A DRY, FIRM, SMOOTH, UNDISTURBED SUBGRADE AT THE TRENCH BOTTOM THAT IS TRUE TO LINE AND GRADE. THE TRENCH BOTTOM SHALL BE FREE OF LOOSE MATERIALS OR TOOTH GROOVES FOR THE ENTIRE TRENCH WIDTH PRIOR TO PLACING PIPE BEDDING MATERIAL.

B. THE CONTRACTOR SHALL FURNISH AND INSTALL SUFFICIENT TRENCH BOXES, SHORING, SHEETING, OR BRACING TO INSURE THE SAFETY OF WORKMEN AND THE PUBLIC, PROTECT THE WORK, AND PROTECT EXISTING FACILITIES.

I. SHORING, SHEETING, AND BRACING SHALL COMPLY WITH OSHA RULES, ORDERS AND REGULATIONS.

II. WHERE REQUIRED BY OSHA, THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE DRAWINGS AND/OR CALCULATIONS FOR SPECIALLY DESIGNED BRACING AND SHORING, PREPARED AND STAMPED BY A HAWAI'I REGISTERED PROFESSIONAL ENGINEER, TO THE WWD A MINIMUM OF FIVE (5) WORKING DAYS PRIOR TO BEGINNING ASSOCIATED EXCAVATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ADEQUACY OF ALL SHEETING, SHORING AND BRACING AND COMPLIANCE WITH THE LAW. FAILURE OF THE INSPECTOR TO SUSPEND THE WORK OR NOTIFY THE CONTRACTOR OF ANY INADEQUACY OF SHEETING, SHORING, BRACING OR NONCOMPLIANCE WITH THE LAW SHALL NOT RELIEVE THE CONTRACTOR OF THIS RESPONSIBILITY.

III. THE CONTRACTOR SHALL FURNISH AND MAINTAIN SHORING, SHEETING AND BRACING UNTIL AFTER THE PIPELINE AND APPURTENANCES HAVE BEEN INSTALLED AND THE INSPECTOR HAS APPROVED THE PLACEMENT OF SUFFICIENT BACKFILL. THE CONTRACTOR SHALL PROVIDE ADEQUATE SAFETY MEASURES TO ALLOW FOR ACCESS BY THE INSPECTOR OR TESTING PERSONNEL TO PERFORM COMPACTION TESTING AND INSPECTION OF THE LIFTS OF BACKFILL PLACED.

C. NO TRENCHES IN ROADS OR DRIVEWAYS SHALL BE LEFT OPEN OVERNIGHT. ALL SUCH TRENCHES SHALL BE PLATED OR CLOSED AND NORMAL TRAFFIC FLOW RESTORED BEFORE THE END OF EACH WORK DAY.

I. THE STEEL TRENCH PLATES SHALL BE CAPABLE OF SUPPORTING HS-20 LOADING.

II. THE PLATES MUST EXTEND BEYOND THE EDGE OF THE TRENCH WALL FAR ENOUGH TO ADEQUATELY SUPPORT HS-20 TRAFFIC LOADS. IN NO CASE SHALL THE PLATES EXTEND LESS THAN TWELVE (12) INCHES BEYOND THE TRENCH WALL.

III. EACH PLATE MUST BE FULLY SUPPORTED AROUND ITS PERIMETER TO PREVENT WOBBLING OR ROCKING.

IV. THE PLATES SHALL BE SECURED TO PREVENT ANY MOVEMENT.

V. TRENCHES AND EXCAVATIONS BENEATH THE PLATES SHALL BE ADEQUATELY SHORED AND BRACED TO WITHSTAND HS-20 TRAFFIC LOADS.

VI. TEMPORARY PAVING OR COLD-MIX ASPHALTIC CONCRETE (CUTBACK) SHALL BE PLACED AND CONTINUOUSLY MAINTAINED AROUND ALL OUTSIDE EDGES OF THE TRENCH PLATES UNTIL THEY ARE REMOVED.
- SEWER SYSTEM REQUIREMENTS:
- C. TRENCHES SHALL BE PROPERLY BACKFILLED AND COMPACTED AS SHOWN ON THE APPROVED PLANS.

D. PIPE BEDDING SHALL BE CLASS B $\frac{3}{4}$ " AGGREGATE BASE COURSE PLACED WITHIN THE DRY TRENCH, AT NOT LESS THAN 4 INCHES BUT NOT MORE THAN 5 INCHES IN COMPACTED THICKNESS. BEDDING SHALL BE COMPACTED TO 95 PERCENT MAXIMUM DRY DENSITY, UNLESS OTHERWISE NOTED ON PLANS, TO AVOID STRESS CONCENTRATIONS AND ASSOCIATED IRREGULAR PIPE DEFORMATIONS. RECESSES CONSTRUCTED IN THE BEDDING, FOLLOWED BY HAND COMPACTION OF BACKFILL AROUND THE BELLS, WILL PROVIDE CONTINUOUS LONGITUDINAL SUPPORT AND UNIFORM BEARING BELOW THE PIPE JOINTS.

E. THE REMAINDER OF THE PIPE EMBEDMENT SHALL ALSO BE CLASS B AGGREGATE BASE COURSE, PROPERLY PLACED, IN LIFTS NOT TO EXCEED 6", AROUND THE PIPE HAUNCHES AND EXTENDING TO A MINIMUM OF 12" COMPACTED THICKNESS OVER THE TOP OF THE PIPE. PIPE ZONE EMBEDMENT SHALL BE COMPACTED TO 95 PERCENT MAXIMUM DRY DENSITY, UNLESS OTHERWISE NOTED ON PLANS, TO PROVIDE ADEQUATE SIDE SUPPORT AND ENSURE THE PIPES FULL STRENGTH IS ACHIEVED WHILE AVOIDING PIPE DEFLECTION, VERTICAL AND LATERAL DISPLACEMENT.

F. CONTROLLED LOW-STRENGTH MATERIAL (CLSM) SHALL BE USED AS THE FINAL TRENCH BACKFILL UNLESS OTHERWISE NOTED ON THE PLANS OR APPROVED IN WRITING BY THE WWD ENGINEER.

G. COMPACTION TESTING FOR BEDDING AND EMBEDMENT MATERIALS FOR SEWER MAIN INSTALLATION SHALL BE PERFORMED BY AN INDEPENDENT TESTING AND QUALITY CONTROL LABORATORY. COMPACTION TEST FREQUENCY SHALL BE A MINIMUM OF ONE (1) TEST PER 150 LINEAL FEET PER LIFT OR A FRACTION THEREOF ON ALTERNATING SIDES OF THE PIPE OR STRUCTURE. THE ENGINEER RESERVES THE RIGHT TO INCREASE OR DECREASE THE FREQUENCY OF COMPACTION TESTING TO MATCH FIELD CONDITIONS. TEST RESULTS SHALL BE SUBMITTED TO THE WWD ENGINEER FOR EVALUATION AS PART OF THE FINAL ACCEPTANCE PROCESS.
- EXISTING CONDITION ASSESSMENT:
1. THE CONTRACTOR SHALL KEEP ALL PROJECT ACTIVITIES WITHIN THE PROJECT AREA. IN THE EVENT THAT A PREVIOUSLY UNKNOWN ARCHAEOLOGICAL FEATURE, HISTORIC PROPERTY, OR HUMAN REMAINS (INCLUDING HUMAN SKELETAL REMAINS, CREMATIONS, CEREMONIAL OBJECTS, FUNERARY OBJECTS, BURIAL GOODS, ETC.) ARE EXPOSED BY CONSTRUCTION, THE CONTRACTOR SHALL CEASE WORK IN THE VICINITY IMMEDIATELY AND NOTIFY THE WWD, STATE OF HAWAII HISTORIC PRESERVATION DIVISION (SHPD), THE APPROPRIATE MEDICAL EXAMINER OR CORONER, AND THE APPROPRIATE POLICE DEPARTMENT, OF THE DISCOVERY. THE CONTRACTOR SHALL PROTECT THE AREA OF THE REMAINS WITH AN APPROPRIATE MATERIAL. THE CONTRACTOR SHALL COOPERATE WITH THE POLICE OR DEPARTMENT OF LAND AND NATURAL RESOURCES IN THE INVESTIGATION, RECORDING, PRESERVATION, AND SALVAGE.
- SURVEY NOTES:
1. AZIMUTHS AND COORDINATES ARE REFERRED TO GOVERNMENT. SURVEY TRIANGULATION STATION" KAILUA NORTH MERIDIAN"

2. OWNERS OF ADJOINING LANDS AS SHOWN ON MAP ARE FROM AVAILABLE RECORDS FILED AT THE REAL PROPERTY TAX MAPPING BRANCH. MAP IS COMPILED FROM RECORDS FOUND AT THE STATE SURVEY OFFICE, REAL PROPERTY TAX MAPPING BRANCH AND BUREAU OF CONVEYANCES. RECORDED DATA HAS NOT BEEN VERIFIED BY AN ACTUAL SURVEY ON THE GROUND.

3. THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKE NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.

4. ELEVATIONS ARE REFERRED TO SURVEY STREET MONUMENT @ BASELINE STATION 0+00 0/S 0.59' RT., AS SHOWN ON SHEET C-13 OF KUAKINI HIGHWAY IMPROVEMENTS JOB NO. P-3278 AS-BUILT PLANS PROVIDED BY COUNTY OF HAWAII PUBLIC WORKS DEPARTMENT. ELEVATION=29.16 DATE OF SURVEY: AUGUST 25, 2017.
- FINAL PROJECT SUBMITTALS:
1. "AS-BUILT" PLANS AND CERTIFIED EASEMENTS RECORDED WITH THE BUREAU OF CONVEYANCES, IF APPLICABLE ARE REQUIRED FOR FINAL CONTRACT ACCEPTANCE OF SEWER CONSTRUCTION BY WWD. UPON FINAL PROJECT INSPECTION AND DECLARATION OF SATISFACTORY COMPLETION BY THE WASTEWATER DIVISION CHIEF, SUBMIT TO WWD ONE (1) SET OF FIELD RECORD DRAWINGS AND ONE (1) SET OF "AS-BUILT" PLANS ONE (1) ELECTRONIC SET IN AUTOCAD 2009 OR NEWER VERSION AND ONE (1) ELECTRONIC SET IN ADOBE PDF FORMAT.

2. IT IS MANDATORY THAT THE "AS-BUILT" PLANS SHOW CORRECTLY IDENTIFIED PROPERTY TMK NUMBERS, LOCATION OF SEWER MANHOLES, LATERALS, CLEANOUTS AND ALL OTHER MAJOR COMPONENTS OF THE WASTEWATER COLLECTION SYSTEM INCLUDING RIM AND INVERT ELEVATIONS AT ALL SEWER MANHOLES, LATERAL CONNECTIONS AT THE MAIN, AND LATERAL ELEVATIONS AT THE CLEANOUT. SUBMITTED DOCUMENTATION SHALL BE CERTIFIED BY A HAWAI'I LICENSED PROFESSIONAL LAND SURVEYOR ATTESTING TO THE ACCURACY OF LOCATIONS AND ELEVATIONS OF ALL MAJOR COMPONENTS OF THE WASTEWATER COLLECTION SYSTEM AS SHOWN ON THE AS-BUILT PLANS.
- SOLID WASTE CONSTRUCTION NOTES:
1. UNLESS OTHERWISE SPECIFIED, THE CONTRACTOR IS RESPONSIBLE FOR THE PROPER HANDLING, STORAGE AND/OR DISPOSAL OF ALL WASTE GENERATED BY THIS CONSTRUCTION, INCLUDING GRUBBING AND EXCESS EXCAVATED MATERIAL. ANY MATERIAL BROUGHT TO THE COUNTY LANDFILLS WILL BE SUBJECTED TO THE INSTITUTED TIPPING FEE SYSTEM, WITH NO EXCEPTIONS OR EXEMPTIONS.

2. ALL WASTES GENERATED BY CONSTRUCTION, INCLUDING GRUBBING, DEMOLITION AND EXCESS EXCAVATION MATERIAL MAY BE BROUGHT TO THE WEST HAWAI'I OR THE HILO LANDFILL. THE CONTRACTOR SHALL CHECK WITH THE SOLID WASTE DIVISION FOR DISCLOSURE OF THE CURRENT LANDFILL FEE AND CONSIDERATION OF THAT FEE SHALL BE INCLUDED IN THE CONTRACTOR'S BID SUM.

3. CONSTRUCTION, DEMOLITION AND GRUBBING MATERIAL SHALL NOT BE DEPOSITED AT ANY OF THE COUNTY TRANSFER STATIONS, BUT SHALL BE TRANSPORTED FOR DISPOSAL TO EITHER THE WEST HAWAI'I OR HILO LANDFILL.

4. ASBESTOS MATERIAL MUST BE SEPARATED, DOUBLE BAGGED AND LANDFILLED IN ACCORDANCE WITH REGULATIONS OF THE SOLID WASTE DIVISION, DEPARTMENT OF PUBLIC WORKS. INFORMATION MAY BE OBTAINED BY CALLING THE DIVISION AT (808)961-8339 BETWEEN 7:00 A.M. AND 4:00 P.M. MONDAY THROUGH FRIDAY.
- WATER LINE NOTES:
1. ALL WORK SHALL BE DONE ACCORDING TO THE WATER SYSTEM STANDARDS, STATE OF HAWAI'I, DATED 2002, AS AMENDED.

2. THE CONTRACTOR SHALL INFORM THE DEPARTMENT OF WATER SUPPLY (D.W.S.) ENGINEER 72 HOURS PRIOR TO THE BEGINNING OF ANY WATER LINE WORK AND ONE WEEK PRIOR TO ANY CONNECTION, CHLORINATION, SHUT-OFF OR RELOCATION.

3. ALL WORK, EQUIPMENT, AND MATERIAL SHALL BE PAID FOR BY THE CONTRACTOR.

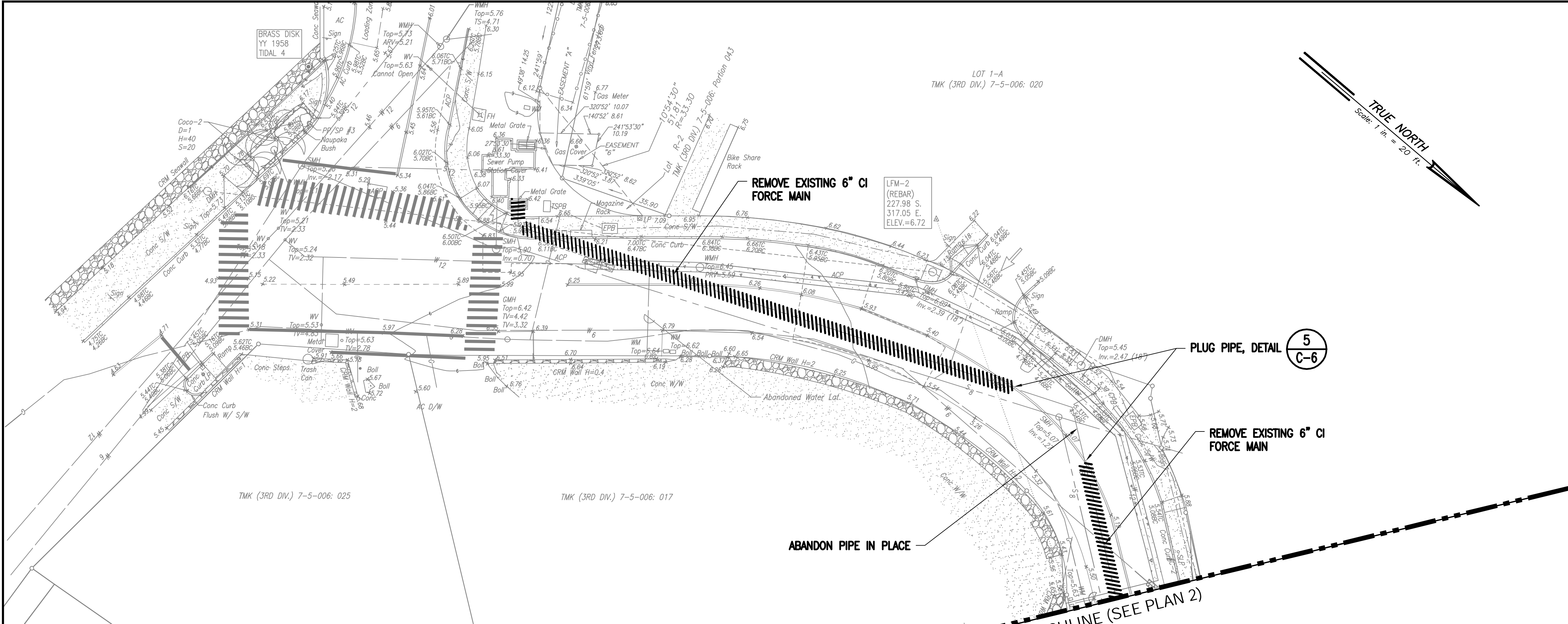
4. ALL EXISTING WATER LINE, WATER LINE APPURTENANCES AND OTHER UTILITY LOCATIONS SHOWN ON THE PLANS ARE OBTAINED FROM LATEST RELIABLE SOURCES. THE CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY THE EXACT LOCATION OF ALL UTILITIES IN THE FIELD AND SHALL BEAR ALL COSTS FOR DAMAGES DONE UNTO THEM DURING THE CONTRACT PERIOD.

5. MINIMUM HORIZONTAL CLEARANCE BETWEEN WATER LINES AND OTHER UTILITIES SHALL BE 8- FEET FOR ROAD RIGHT-OF-WAYS OF 50 FEET OR LESS. MINIMUM VERTICAL CLEARANCE BETWEEN WATER LINES AND STORM DRAIN LINES SHALL BE 18 INCHES. MINIMUM VERTICAL CLEARANCE BETWEEN WATER LINE AND OTHER UTILITIES SHALL BE 12 INCHES PROVIDED THE OTHER UTILITY IS CONCRETE JACKETED AND 18 INCHES IF NO CONCRETE JACKETS ARE USED. IN ALL APPLICABLE INSTANCES THE WATER LINES SHALL BE AT A GRADE HIGHER THAN OTHER OTHER UTILITIES.

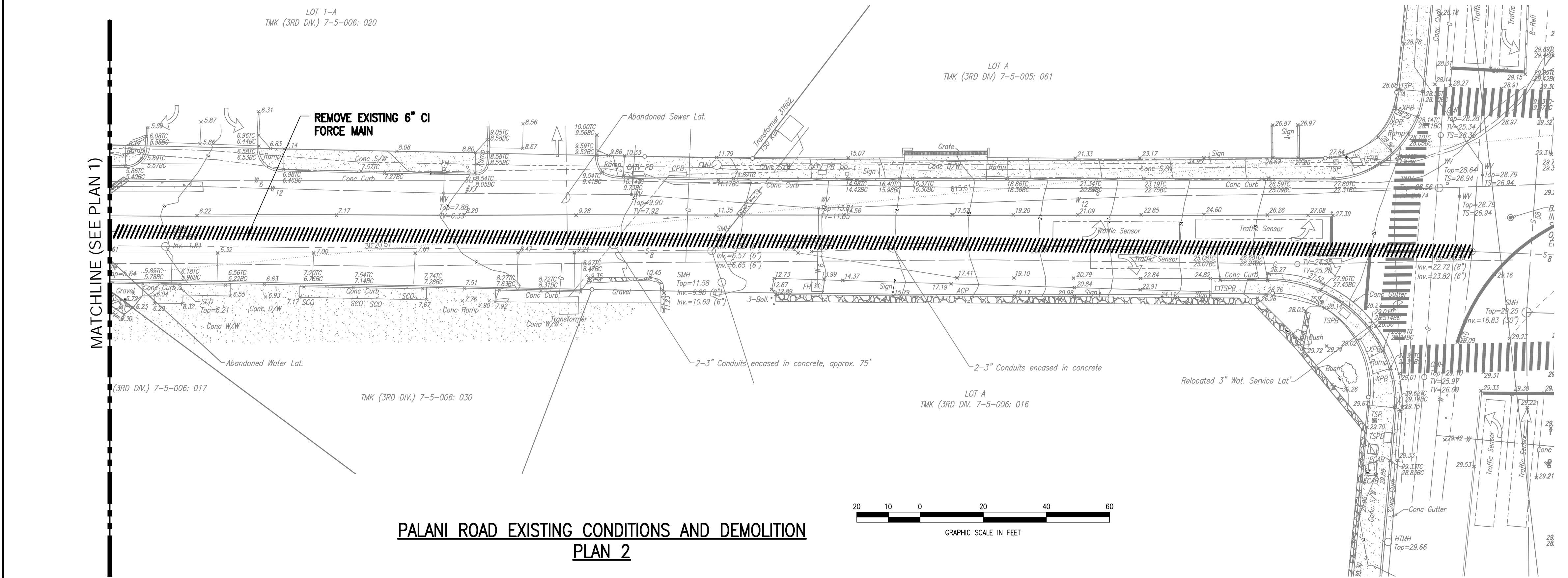
6. WHEN WATERLINE IS WITHIN 6- FEET OF A PRESSURIZED SEWER LINE OR WITHIN 18-INCHES OF A GRAVITY SEWER LINE, THE SEWER MAIN SHALL BE REINFORCED CONCRETE JACKETED. WHENEVER A WATER MAIN CROSSES UNDER A SEWER MAIN, THE SEWER MAIN SHALL HAVE REINFORCED CONCRETE JACKET ON BOTH SIDES OF CROSSING TO A DISTANCE OF 5 FEET FROM THE WATERLINE (MEASURED PERPENDICULAR TO WATERLINE). STANDARD CONCRETE JACKET DETAILS FOR SEWER LINES, AS SPECIFIED BY THE DEPARTMENT OF PUBLIC WORKS STANDARDS SHALL BE FOLLOWED. PLASTIC PIPES SHALL NOT BE JACKETED. DUCTILE IRON OR CONCRETE CYLINDER PIPE SHALL BE USED FOR THE PORTION TO BE JACKETED.

7. TEMPORARY WATER SERVICE SHALL BE METERED AND PAID FOR BY THE CONTRACTOR.

8. ALL WATER MANHOLES SHALL BE ADJUSTED TO BE FLUSH WITH PAVEMENT RESTORATION.
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LAST UPDATE: July 02, 2018 @ 10:47:00 am
PLOT DATE: July 02, 2018 @ 12:03:54 pm
- 100% DESIGN SUBMITTAL
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|---|--|------|-------|----|--------|--|
| <div><div><div>JARRETT T. BROWN</div><div>LICENSED PROFESSIONAL ENGINEER</div><div>No. 17903-C</div><div>HAWAII U.S.A.</div></div><div><div>THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION</div><div>BY: _____</div><div>EXP: 4/30/20</div></div></div> <div>C-2</div> <div>SHEET 3 OF 14</div> | | | | | | |
| | REVISION | DATE | BRIEF | BY | APPR'D | |
| | <div><div>AECOM</div><div>ASB TOWER, SUITE 1600 - 1001 BISHOP ST., HONOLULU, HAWAII 96813</div><div>COUNTY OF HAWAII</div><div>DEPARTMENT OF ENVIRONMENTAL MANAGEMENT</div><div>LANIAHU WWPS FORCE MAIN REPLACEMENT</div><div>KAILUA-KONA, ISLAND OF HAWAII, HAWAII</div><div>SEWER SYSTEM NOTES</div></div> | | | | | |
| | DESIGNED BY _____JB_____ DRAWN BY _____HC/JB_____ CHECKED BY _____JB_____ | | | | | |
| | APPROVED BY: _____
COUNTY OF HAWAII, DEPARTMENT OF ENVIRONMENTAL MANAGEMENT _____ DATE _____ | | | | | |

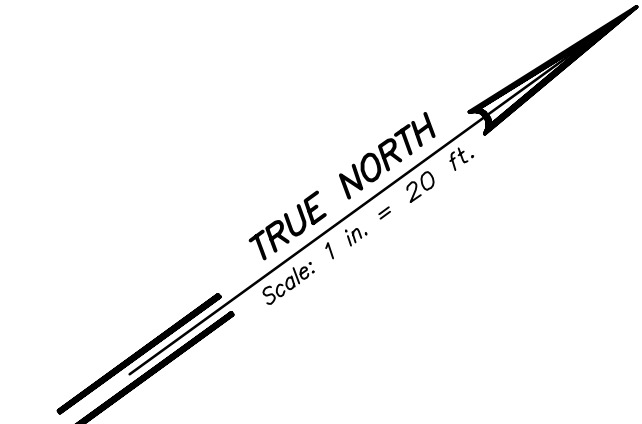


PALANI ROAD EXISTING CONDITIONS AND DEMOLITION
PLAN 1



PALANI ROAD EXISTING CONDITIONS AND DEMOLITION
PLAN 2

- DEMOLITION NOTES:
1. REMOVE EXIST 6" CI FORCE MAIN JUST PRIOR TO INSTALLATION OF 8" PVC FORCE MAIN.
 2. PLUG AND ABANDON 6" CI FORCE MAIN WHERE INDICATED ON THE DRAWINGS. MINIMUM SEPARATION BETWEEN 8" PVC FORCE MAIN AND ABANDONED PIPE IS 2 FT.



PROJECT: PALANI ROAD EXISTING CONDITIONS AND DEMOLITION (10% SUBMITTAL) (4 OF 1) DEMOLITION PLAN (W)

100% DESIGN SUBMITTAL

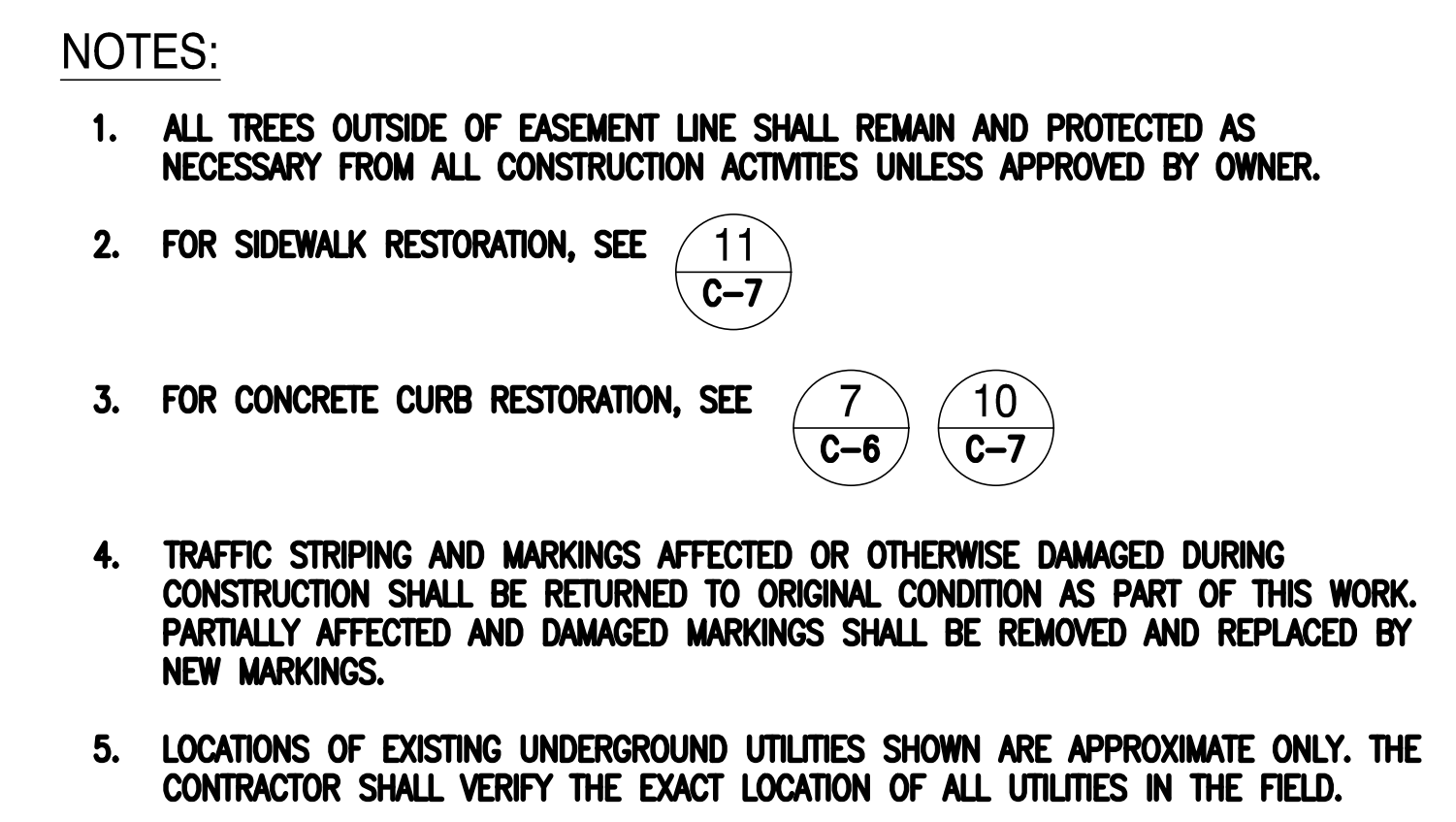
JARRETT T. BROWN
LICENSED
PROFESSIONAL
ENGINEER
No. 17903-C
HAWAII U.S.A.

THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION
BY: _____ EXP: 4/30/20

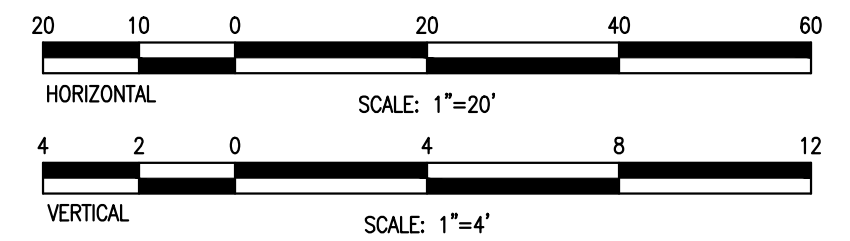
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SHEET 4 OF 14

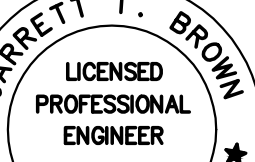
REVISION	DATE	BRIEF	BY	APPR'D
<div><div>COUNTY OF HAWAII DEPARTMENT OF ENVIRONMENTAL MANAGEMENT</div><div>LANIHAU WWPS FORCE MAIN REPLACEMENT</div><div>KAILUA-KONA, ISLAND OF HAWAII, HAWAII</div><div>EXISTING CONDITIONS AND DEMOLITION PLAN</div></div>				
APPROVED BY: _____				
COUNTRY OF HAWAII, DEPARTMENT OF ENVIRONMENTAL MANAGEMENT _____ DATE _____				



SCALE: HORIZ 1"=20'



REVISION	DATE	BRIEF			BY
					APPROVED



AECOM

ASB TOWER, SUITE 1600 • 1001 BISHOP ST. HONOLULU, HAWAII 96813

COUNTY OF HAWAII
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

LANIHAW WWPS FORCE MAIN REPLACEMENT

KAILUA-KONA, ISLAND OF HAWAII, HAWAII

8" FM PLAN & PROFILE 1

THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION

BY: _____ EXP: 4/30/20

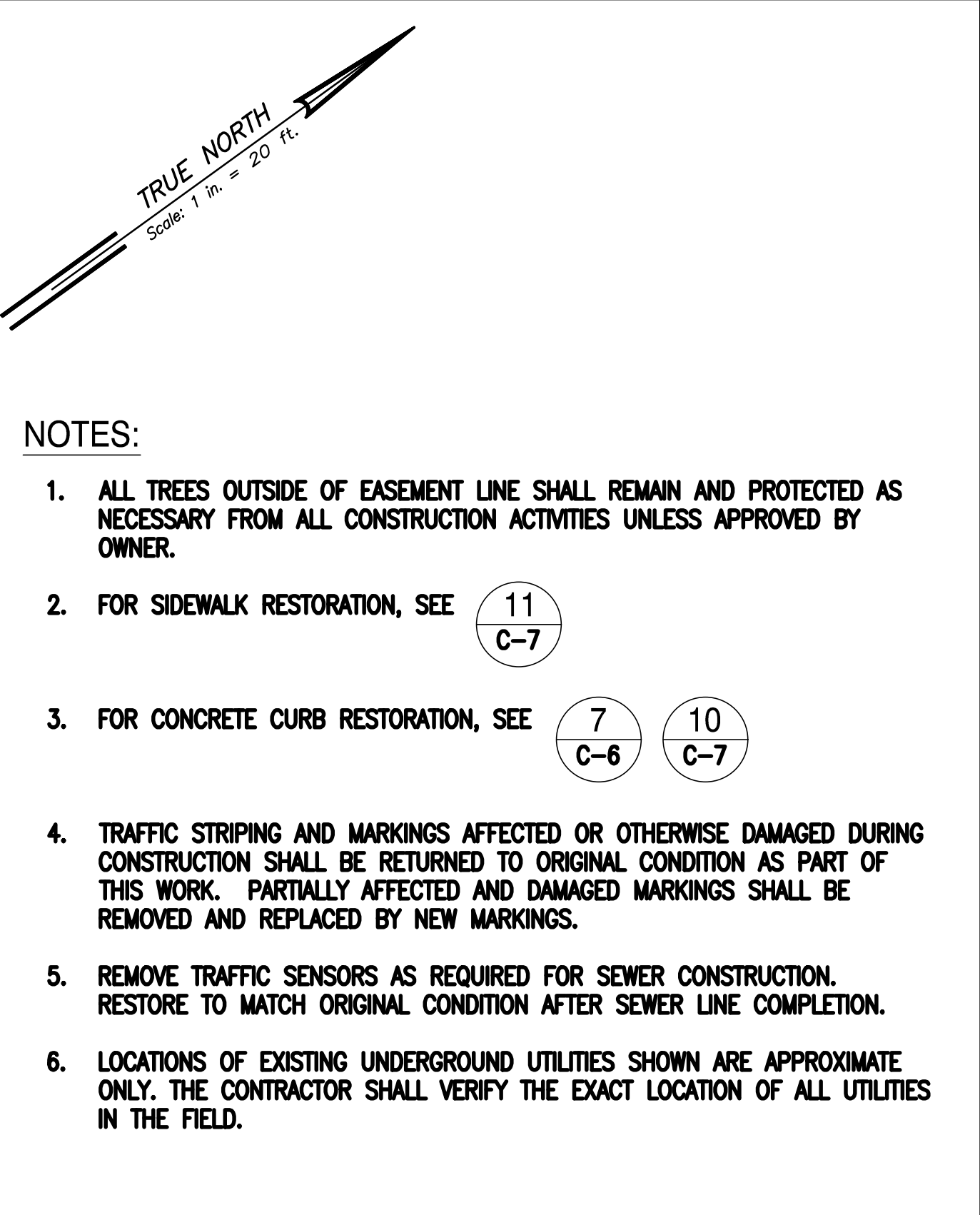
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DESIGNED BY _____ JB DRAWN BY _____ HC/JB CHECKED BY _____ JB

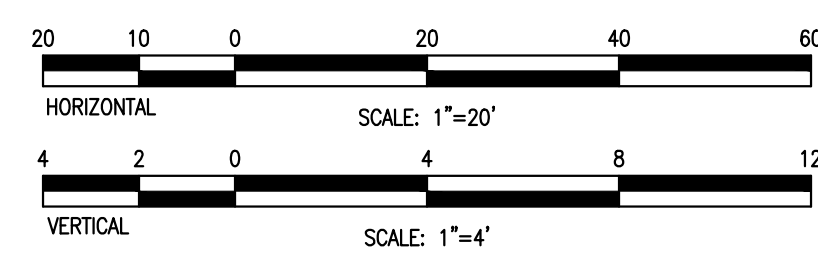
APPROVED BY: _____

COUNTY OF HAWAII, DEPARTMENT OF ENVIRONMENTAL MANAGEMENT _____ DATE _____

SHEET 5 OF 14

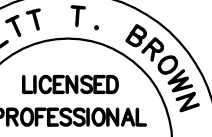



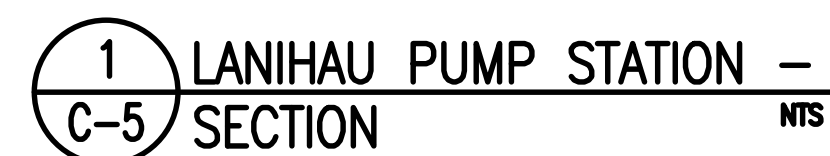
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PLAN - FORCEMAIN REPLACEMENT
SCALE: HORIZ 1"=20'



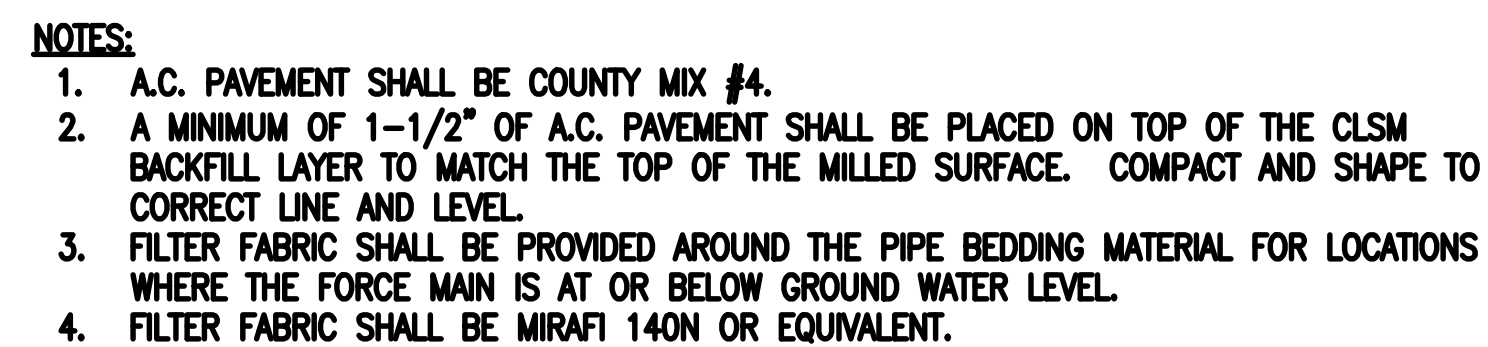
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PROFILE - FORCEMAIN REPLACEMENT

SCALE: HORIZ 1"=20'
 VERT 1"=4'

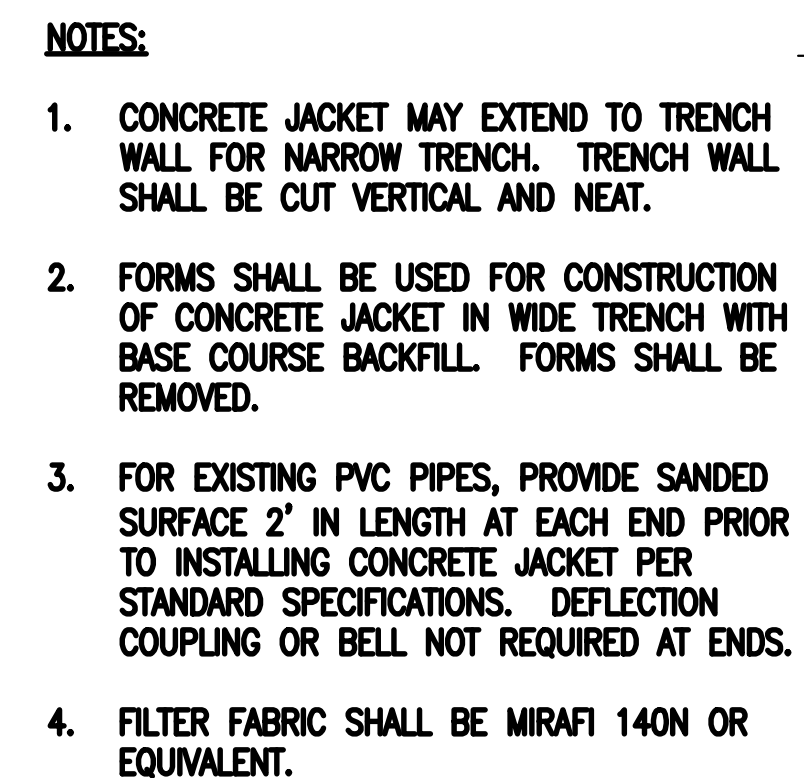
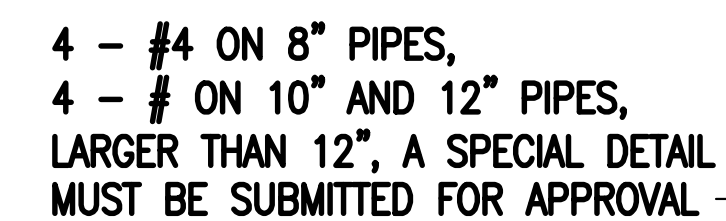
					
	REVISION	DATE	BRIEF	BY	APPR'D
					
	ASB TOWER, SUITE 1600 • 1001 BISHOP ST., HONOLULU, HAWAII 96813				
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION BY: _____	COUNTY OF HAWAII DEPARTMENT OF ENVIRONMENTAL MANAGEMENT				
	LANIAHU WWPS FORCE MAIN REPLACEMENT				
	KAILUA-KONA, ISLAND OF HAWAII, HAWAII				
	8" FM PLAN & PROFILE 2				
<div style="font-size: 48px; font-weight: bold; margin: 0;">C-4</div>	DESIGNED BY _____ JB DRAWN BY _____ HC/JB CHECKED BY _____ JB				
	APPROVED BY: _____				
	COUNTY OF HAWAII, DEPARTMENT OF ENVIRONMENTAL MANAGEMENT _____ DATE _____				
SHEET 6 OF 14					



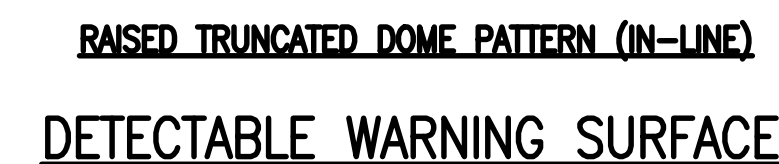
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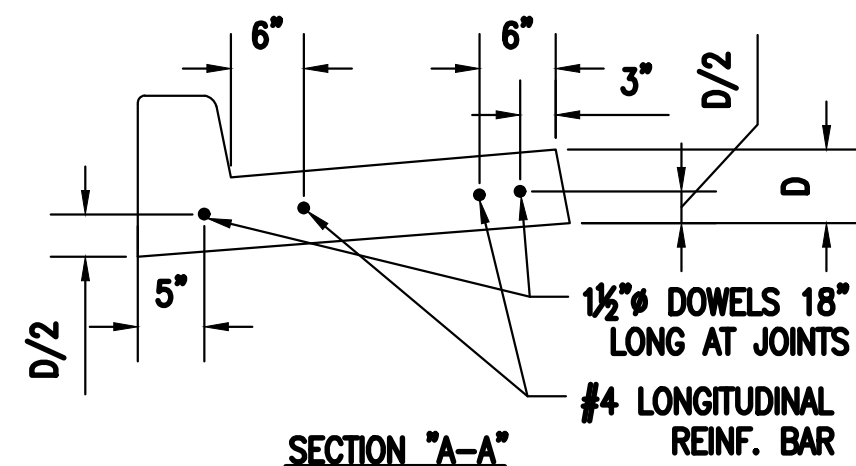


3 TYPICAL FORCE MAIN TRENCH
C-6 NTS

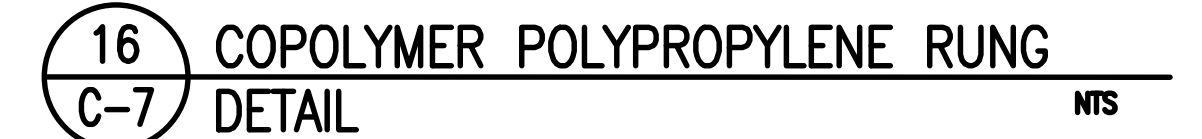
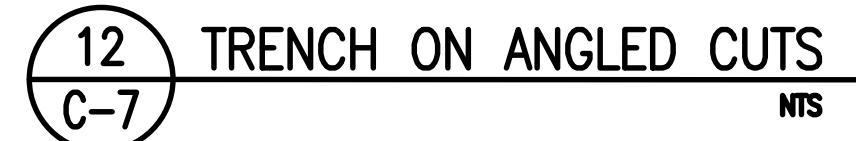


8 C-6 REINFORCED CONCRETE JACKET FOR PIPES12-INCH AND SMALLER NTS





- 10 TYPICAL RESTORATION OF CURB & GUTTER
C-7 NTS



NOTES FOR WORK WITHIN THE COUNTY RIGHT-OF-WAY (MODIFIED):

- ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE COUNTY OF HAWAII, DEPARTMENT OF PUBLIC WORKS (DPW), "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION," DATED SEPTEMBER 1986 AND "STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION," DATED SEPTEMBER 1984.
- THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES, WHETHER SHOWN ON THE PLAN OR NOT, AND SHALL BE RESPONSIBLE FOR THE REPAIR OR REPLACEMENT OF SAME IN THE EVENT OF DAMAGES DUE TO HIS CONSTRUCTION PRACTICES. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH THE RESPECTIVE UTILITY COMPANIES.
- THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH THE CURRENT EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS," AND AS DIRECTED BY THE DEPARTMENT OF PUBLIC WORKS.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS 48 HOURS BEFORE THE COMMENCEMENT OF ANY UTILITY LINE WORK TO SCHEDULE A FIELD REVIEW AND SECURE APPROVAL OF THE PROPOSED UTILITY LINE LOCATION WITHIN THE COUNTY RIGHT-OF-WAY.
- THE PROPOSED UTILITY LINE LOCATION SHALL BE LAID OUT IN THE FIELD PRIOR TO THE CONDUCTING OF THE FIELD REVIEW BY THE DEPARTMENT OF PUBLIC WORKS.
- FIELD ADJUSTMENTS SHALL BE MADE AS DIRECTED BY THE DEPARTMENT OF PUBLIC WORKS PRIOR TO THE COMMENCEMENT OF ANY UTILITY LINE WORK.
- THE REQUIRED PERMIT, UNDER CHAPTER 22, ARTICLE 4, DIVISION 1 OF THE HAWAII COUNTY CODE, SHALL BE OBTAINED FROM THE DEPARTMENT OF PUBLIC WORKS BY THE CONTRACTOR FOR WORK WITHIN THE COUNTY RIGHT-OF-WAY.
- THE CONTRACTOR SHALL PROVIDE AT LEAST ONE (1) LANE FOR TRAFFIC MOVEMENT AT ALL TIMES.
- THE EXISTING PAVEMENT SHALL BE SAW-CUT BEFORE COMMENCEMENT OF TRENCHING WORK.
- ANY PAVEMENT OUTSIDE THE CONTRACT ZONE LIMITS DAMAGED AS A RESULT OF CONSTRUCTION OPERATIONS SHALL BE RESTORED TO ITS ORIGINAL CONDITION, OR BETTER, AS DIRECTED BY THE DPW.
- A TEMPORARY COLD MIX PATCH SHALL BE APPLIED IMMEDIATELY UPON COMPLETION OF THE BACKFILLING OPERATION AND SHALL BE MAINTAINED BY THE CONTRACTOR UNTIL A PERMANENT PATCH IS AUTHORIZED BY THE DEPARTMENT OF PUBLIC WORKS.
- NO MATERIAL, EXCEPT THE TRENCH EXCAVATED MATERIAL, SHALL BE STOCKPILED CLOSER THAN SIX (6) FEET FROM THE EXISTING EDGE OF PAVEMENT.
- NO CONSTRUCTION EQUIPMENT SHALL BE PARKED WITHIN THE ROAD RIGHT-OF-WAY IN SUCH A MANNER THAT THE EQUIPMENT WILL OBSTRUCT THE NORMAL MOVEMENT AND SIGHT DISTANCE OF THE DRIVING MOTORIST, EXCEPT DURING ACTUAL WORKING HOURS.

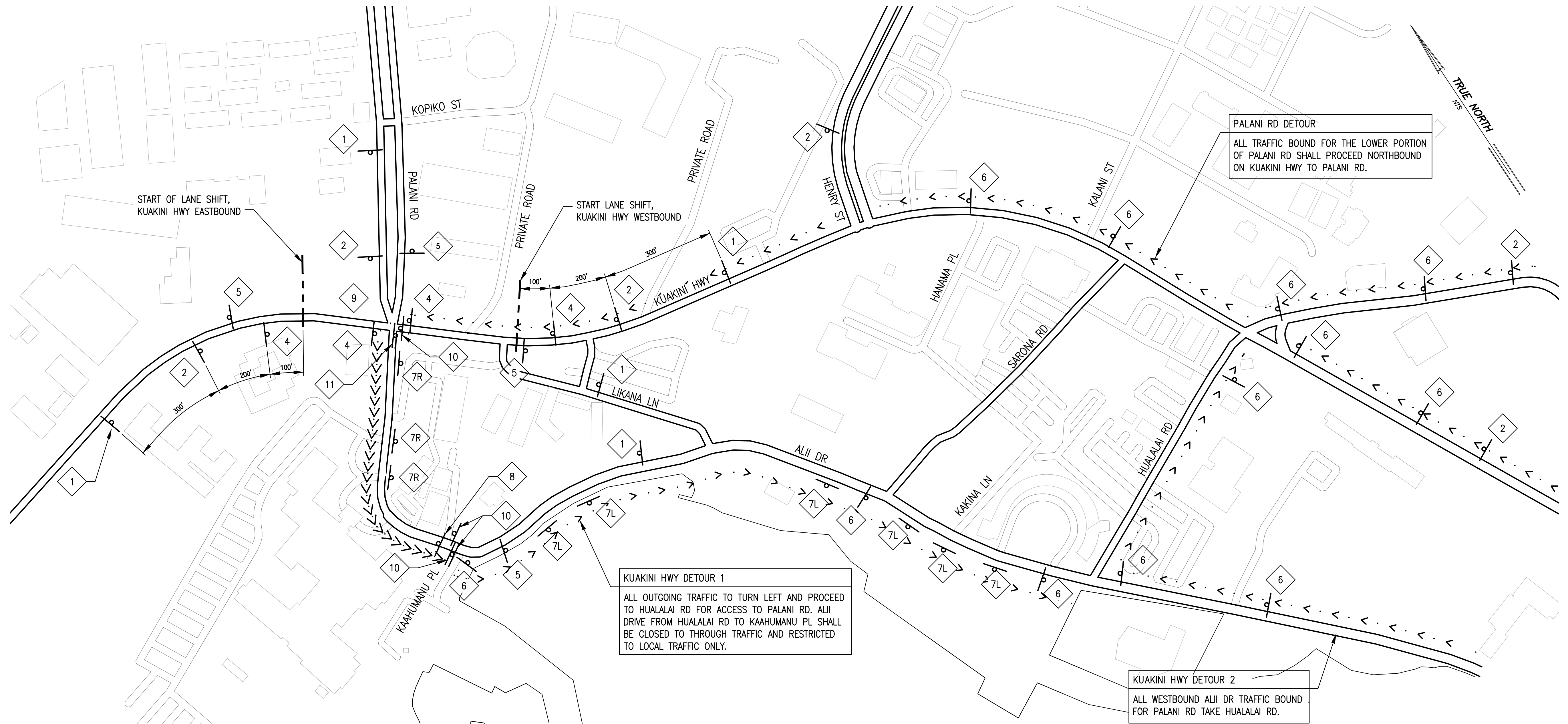
SUPPLEMENTAL TRAFFIC CONTROL NOTES:

- ALL TRAFFIC CONTROL DEVICES SHALL BE MADE AND ERECTED IN ACCORDANCE WITH THE DETAILS SHOWN ON THE PLANS AND THE MUTCD.
- ALL TRAFFIC CONTROL DEVICES SHALL BE APPROVED BY THE ENGINEER.
- ALL PORTABLE SIGNS SHALL BE MOUNTED A MINIMUM OF 1 FOOT ABOVE THE LEVEL OF PAVEMENT EDGE FOR DIRECTIONAL TRAFFIC OF TWO (2) LANES OR LESS AND A MINIMUM OF 7 FEET FOR DIRECTIONAL OF THREE (3) OR MORE LANES. ALL PORTABLE SIGNS AND SIGN MOUNTING DEVICES UTILIZED IN THE WORK SHALL BE NCHRP 350 COMPLIANT. PORTABLE SIGNS MAY BE USED WHEN THE DURATION OF THE WORK IS LESS THAN 3 DAYS.
- WHEN THE CONSTRUCTION AREA HAS INTERSECTIONS, WORK WILL BE PERFORMED IN SUCH A MANNER TO PERMIT TRAFFIC TO OPERATE THROUGH THE INTERSECTION. ADDITIONAL CHANNELIZATION AND SIGNING SHALL BE INSTALLED, AS REQUIRED, TO ALLOW TRAFFIC TO REMAIN OPERATIONAL. WHEN REQUIRED, FLAGGERS WILL BE UTILIZED TO CONTROL AND PROHIBIT MOVEMENT INTO THE PROJECT AT THAT POINT UNTIL CONSTRUCTION HAS CLEARED THE RESTRICTION SUFFICIENT TO RETURN TO OPERATIONAL STATUS.
- FOR NIGHT TIME OPERATIONS, DRUMS SHALL HAVE A SIX (6") INCH ORANGE REFLECTORIZED TOP STRIPE ON EACH DRUM FOR LENGTH OF THE TAPER ONLY. SPACING OF DEVICES SHALL BE AS SHOWN IN PLANS. DURING DAYLIGHT HOURS, CONES (28" MIN.) MAY BE USED IN ADVANCE OF AND THROUGHOUT WORK AREA.
- SIGN LOCATIONS ARE APPROXIMATE AND MAY BE ADJUSTED TO MEET FIELD CONDITIONS, BUT MUST BE WITHIN THE LIMITATIONS SET FORTH IN THE MUTCD.
- A PORTABLE SELF-SUSTAINED SEQUENTIAL OR FLASHING ARROW SIGN SHALL BE USED AT THE BEGINNING OF EACH LANE CLOSURE ON MULTI-LANE HIGHWAYS. ARROW PANELS SHALL NOT BE USED ON TWO-LANE TWO-WAY HIGHWAYS EXCEPT IN CAUTION MODE.
- WHEN NOT IN USE PORTABLE SIGNS SHALL BE REMOVED FROM THE TRAVELWAY SO THAT THE MESSAGE IS NOT VISIBLE TO THE MOTORIST. INTERIM SIGNS THAT ARE PERMANENTLY MOUNTED SHALL BE COVERED WHEN NOT APPLICABLE.
- THE COST OF ALL MATERIALS, LABOR AND EQUIPMENT NECESSARY TO COMPLETE THE WORK SHALL BE INCLUDED IN THE PRICE BID FOR TEMPORARY TRAFFIC CONTROL, LUMP SUM, WHEN SHOWN AS A PAYMENT ITEM IN THE PROPOSAL. OTHERWISE, ALL THE COST WILL BE INCLUDED IN THE OVER-ALL BID SUBMITTED.
- MARKINGS AND / OR SIGNS IN CONFLICT WITH INTERIM TRAFFIC CONTROL SHALL BE REMOVED, RELOCATED OR COVERED; APPLICABLE EXISTING AND INTERIM MARKINGS AND / OR SIGNING SHALL BE MAINTAINED.
- EXISTING GUIDE SIGNS SHALL REMAIN IN PLACE SO LONG AS THEY DO NOT CONFLICT WITH THE CONSTRUCTION OF THIS PROJECT. WHEN IN CONFLICT, THEY SHALL BE RELOCATED ON TEMPORARY POSTS AT THE LOCATION AS DIRECTED BY THE ENGINEER. ANY DISTANCE SHOWN ON THE SIGN SHALL BE ADJUSTED ACCORDINGLY. IF THE SIGNS CANNOT BE RELOCATED, THEN THE SIGN SHALL BE REMOVED AND STORED AT A PLACE DESIGNATED BY THE ENGINEER.
- THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL LOCAL BUSINESSES AND RESIDENCES AT ALL TIMES DURING CONSTRUCTION.

\\hwy\hwyname: S:\Project\2016\6051103_Lanikai\605-045\11-C-04\10-SHEETS (100% Submittal)\11-C-15 Traffic Control Plan.dwg
User: jrb Date: 09/09/2016 Time: 12:30:00 pm
Plot Date: 09/09/2016 Time: 12:30:00 pm

100% DESIGN SUBMITTAL

<div><div><div><div>JARRETT T. BROWN</div><div>LICENSED PROFESSIONAL ENGINEER</div><div>No. 17903-C</div><div>HAWAII U.S.A.</div></div></div><div><div>THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION</div><div>BY: _____ EXP: 4/30/20</div></div></div> <div>C-8</div> <div>SHEET 10 OF 14</div>						
	REVISION	DATE	BRIEF	BY	APPR'D	
	<div><div>AECOM</div><div>ASB TOWER, SUITE 1600 • 1001 BISHOP ST., HONOLULU, HAWAII 96813</div><div>COUNTY OF HAWAII DEPARTMENT OF ENVIRONMENTAL MANAGEMENT</div><div>LANIHAE WWPS FORCE MAIN REPLACEMENT</div><div>KAILUA-KONA, ISLAND OF HAWAII, HAWAII</div><div>TRAFFIC CONTROL NOTES</div></div>					
	DESIGNED BY <u>JB</u> DRAWN BY <u>HC/JB</u> CHECKED BY <u>JB</u>					
APPROVED BY: COUNTY OF HAWAII, DEPARTMENT OF ENVIRONMENTAL MANAGEMENT _____ DATE _____						



TRAFFIC CONTROL DETOUR PLAN

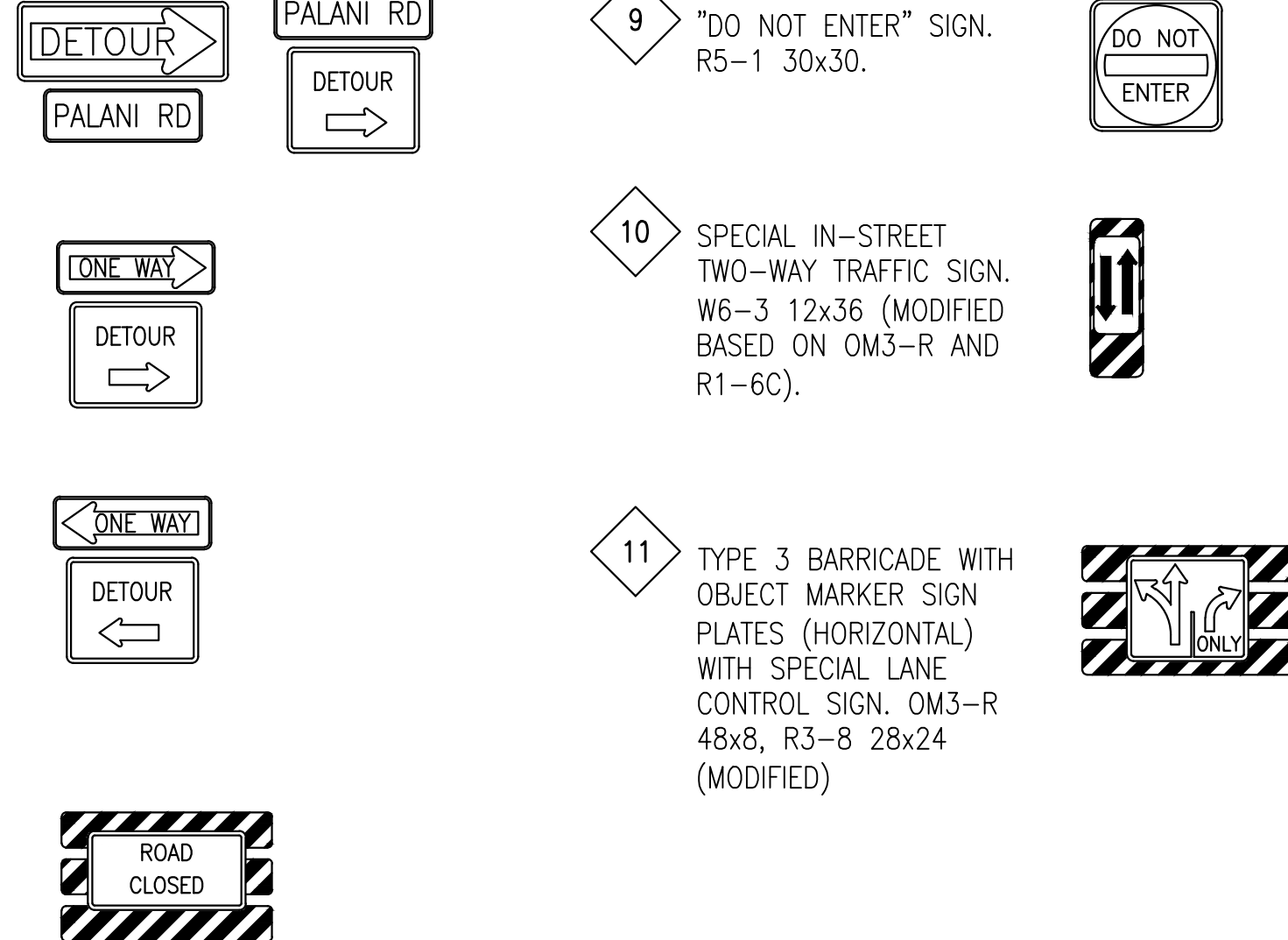
NOT TO SCALE

LEGEND:

- ROADWAY
- ROAD OPEN TO ONE-WAY TRAFFIC ONLY DURING CONSTRUCTION
- DETOUR DURING CONSTRUCTION
- CONSTRUCTION SIGN
- CONSTRUCTION BARRICADE AND SIGN

SIGN KEY NOTES:

- 1 CHANGEABLE MESSAGE BOARD
- 2 ADVANCE WARNING CONSTRUCTION SIGN. "ROAD WORK AHEAD" SIGN. W20-1 36x36.
- 3 "DETOUR AHEAD" CONSTRUCTION SIGN. W20-2 36x36.
- 4 CONSTRUCTION LANE SHIFT SIGN. LANE SHIFT/CURVE SIGN. W1-3(L)/W1-3(R) 36x36.
- 5 END CONSTRUCTION ZONE SIGN. "END ROAD WORK" SIGN. G20-2 36x18.
- 6 CONSTRUCTION DETOUR SIGN. "DETOUR" SIGN. VARIES M4-10(L/R) 48x18, M4-9(L/R) 30x24.
- 7R CONSTRUCTION RIGHT TURN ONLY SIGN. "ONE WAY" AND "DETOUR" ASSEMBLY. R6-1(R) 36x12/M4-9(R) 30x24.
- 7L CONSTRUCTION LEFT TURN ONLY SIGN. "ONE WAY" AND "DETOUR" ASSEMBLY. R6-1(L) 36x12/M4-9(L) 30x24.
- 8 TYPE 3 BARRICADE WITH OBJECT MARKER SIGN PLATES (HORIZONTAL) WITH SPECIAL "ROAD CLOSED" SIGN. OM3-R 48x8, R11-2 30x24 (MODIFIED).

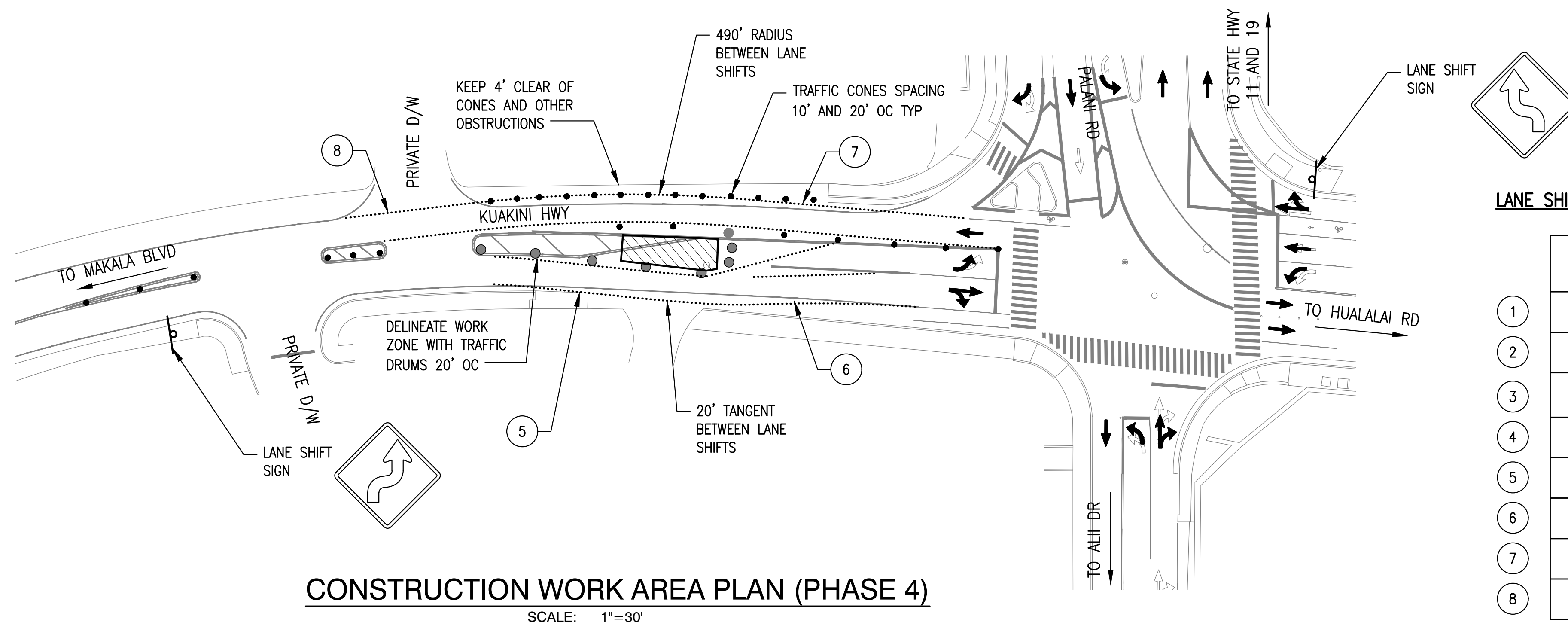
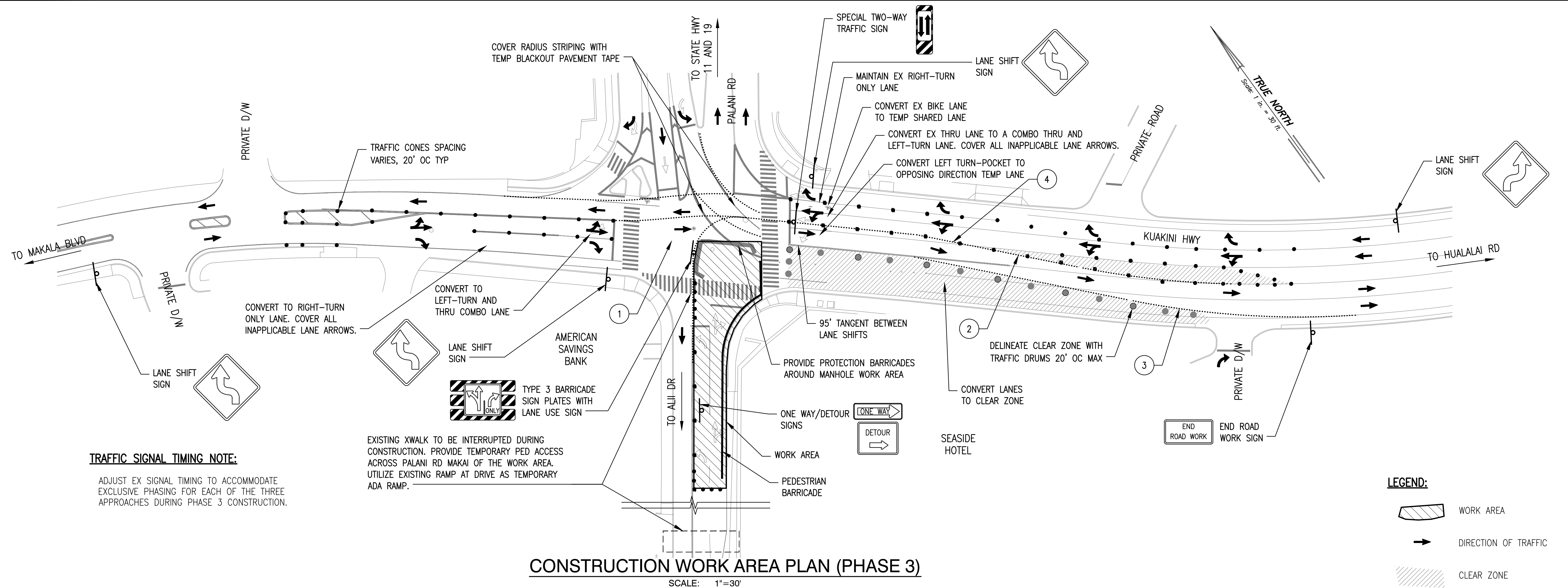


DETOUR NOTES:

- 1. THE MAUKA (NORTHBOUND) LANE OF PALANI RD FROM KAAHUMANU PL TO KUAKINI HWY SHALL BE CLOSED. ROADWAY WILL BE OPEN FOR MAKAI (SOUTHBOUND) TRAFFIC ONLY DURING CONSTRUCTION.
- 2. ALL TRAFFIC BOUND FOR THE LOWER PORTION OF PALANI RD SHALL PROCEED NORTHBOUND ON KUAKINI HWY TO PALANI RD.
- 3. ALL OUTGOING TRAFFIC TO TURN LEFT AND PROCEED TO HUALALAI RD FOR ACCESS TO KUAKINI HWY. ALII DRIVE FROM
- 4. ALL WESTBOUND ALII DR TRAFFIC BOUND FOR PALANI RD TAKE HUALALAI RD.
- 5. HUALALAI RD TO KAAHUMANU PL SHALL BE CLOSED TO THROUGH TRAFFIC AND RESTRICTED TO LOCAL TRAFFIC ONLY.

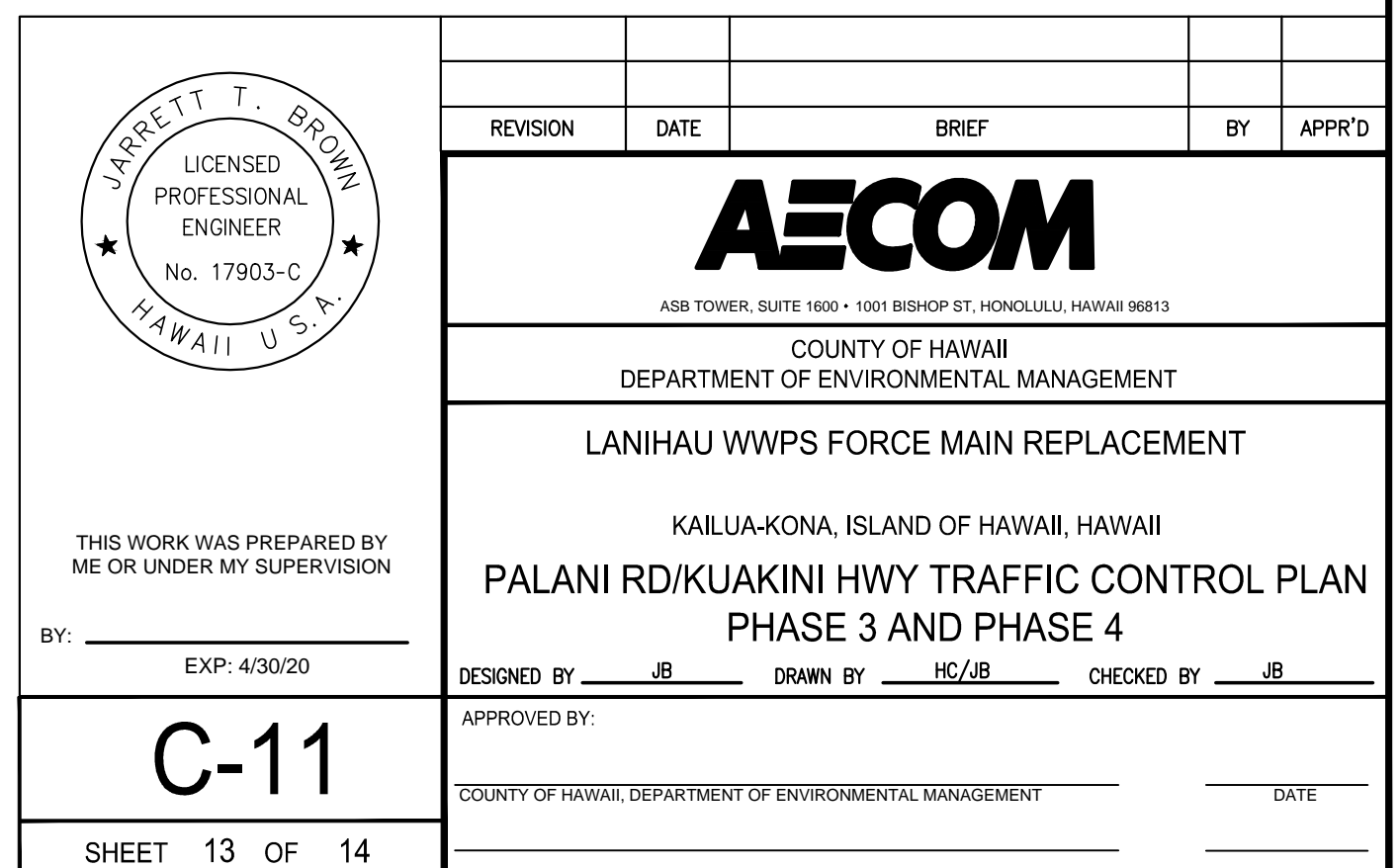
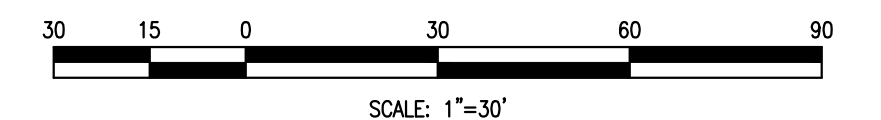
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	DESIGNED BY: <u>JB</u> DRAWN BY: <u>HC/JB</u> CHECKED BY: <u>JB</u> APPROVED BY: _____ DATE: _____ COUNTY OF HAWAII, DEPARTMENT OF ENVIRONMENTAL MANAGEMENT				

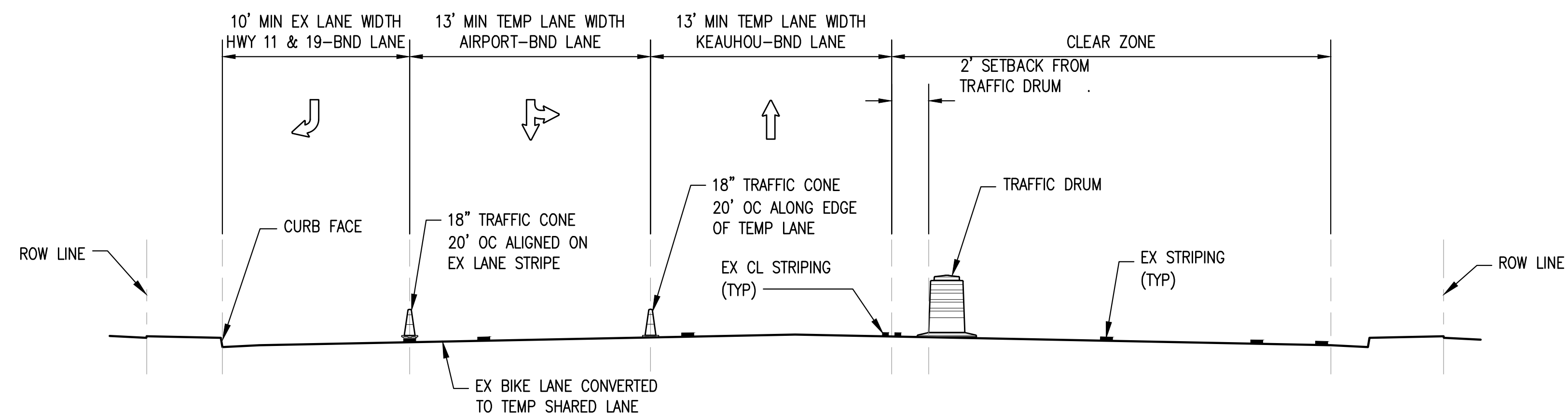
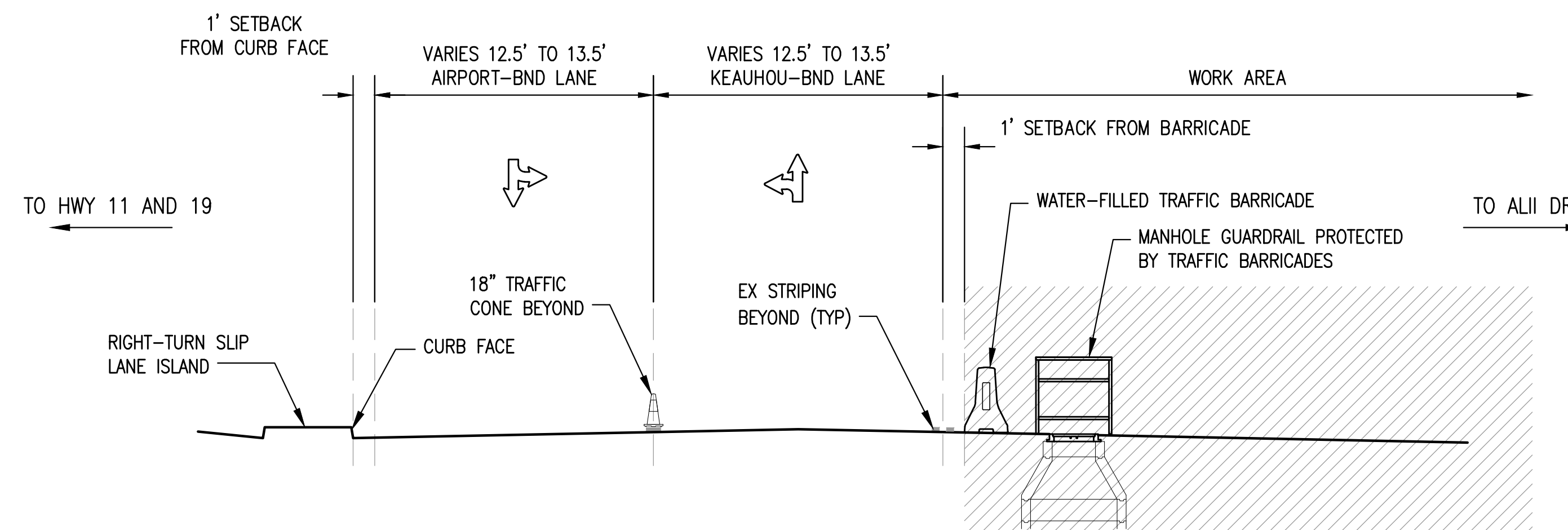
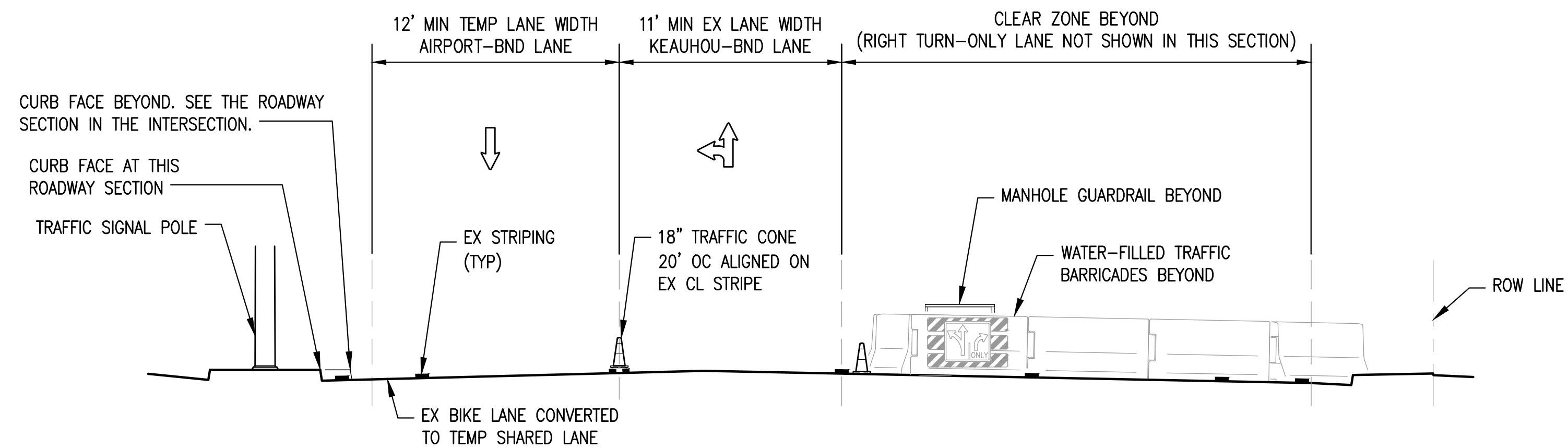
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
BY: _____ EXP: 4/30/20
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SHEET 11 OF 14



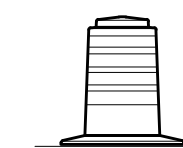
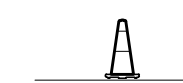
LANE SHIFT KEY NOTES:

	SHIFT	REQUIRED TAPER LENGTH	PROPOSED TAPER LENGTH
1	4'	21'	48'
2	12'	65'	64'
3	11'	58'	160'
4	3'	16'	35'
5	4'	21'	45'
6	4'	21'	45'
7	5'	27'	55'
8	5'	27'	80'






LEGEND:



PATH/FILENAME: S:\Projects\CON\6055168_Lumina\600-CUD-051910-CUD-20-SHEETS (100% Submitted)\10-13 Traffic Control Plan.dwg
 LAST UPDATE: July 09, 2018 @ 12:33:30 pm
 PLOT DATE: July 09, 2018 @ 12:34:57 pm

REVISION	DATE	BRIEF		BY	APPR'D



AECOM

ASB TOWER, SUITE 1600 • 1001 BISHOP ST. HONOLULU, HAWAII 96813

COUNTY OF HAWAII

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

LANIHAU WWPS FORCE MAIN REPLACEMENT

KAILUA-KONA, ISLAND OF HAWAII, HAWAII

PALANI RD/KUAKINI HWY TRAFFIC CONTROL PLAN

ROADWAY SECTIONS

THIS PLAN WAS PREPARED BY
ME OR UNDER MY SUPERVISION

BY: _____ EXP: 4/30/20

C-12

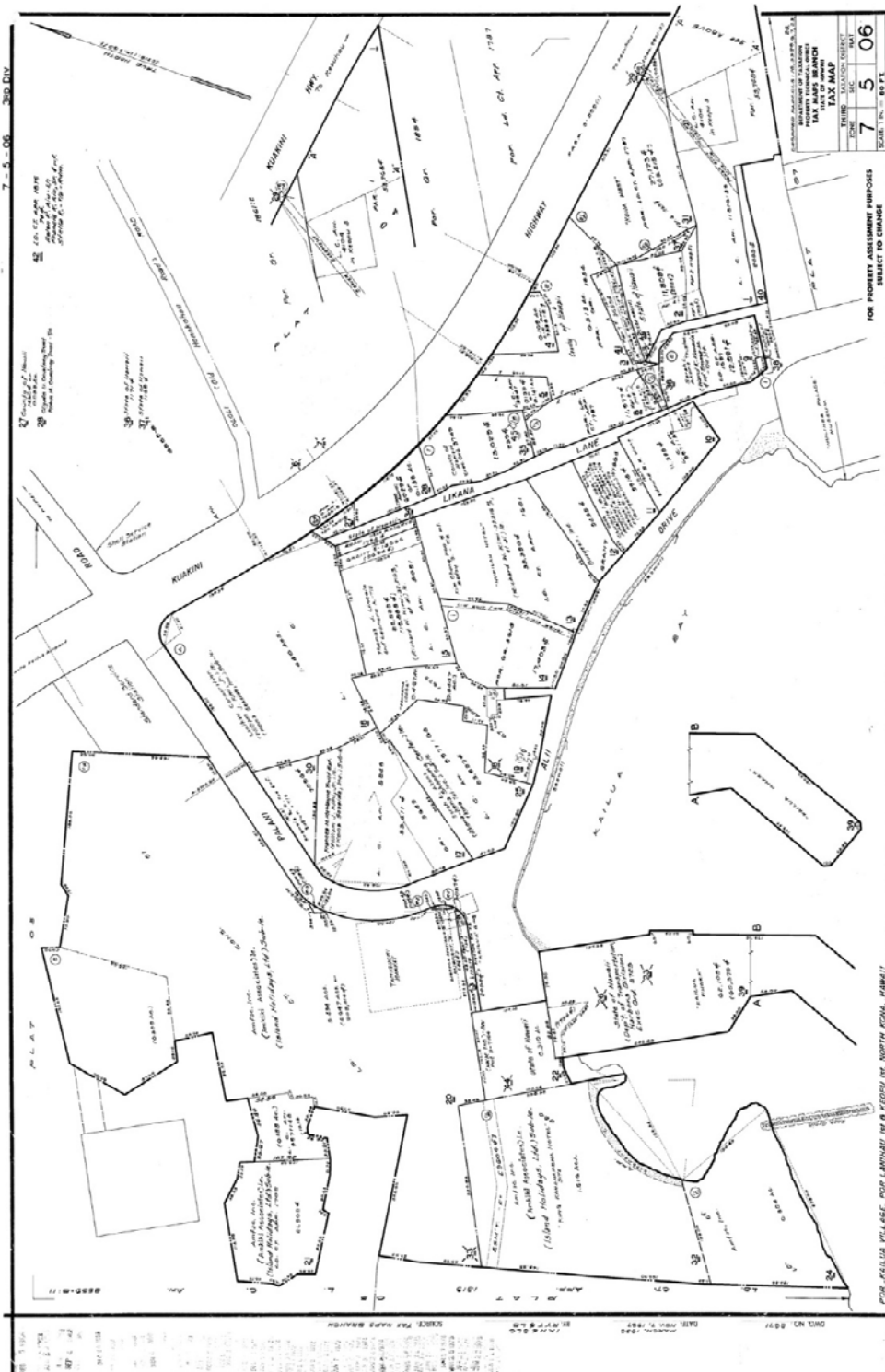
DESIGNED BY _____ JB DRAWN BY _____ HC/JB CHECKED BY _____ JB

APPROVED BY: _____

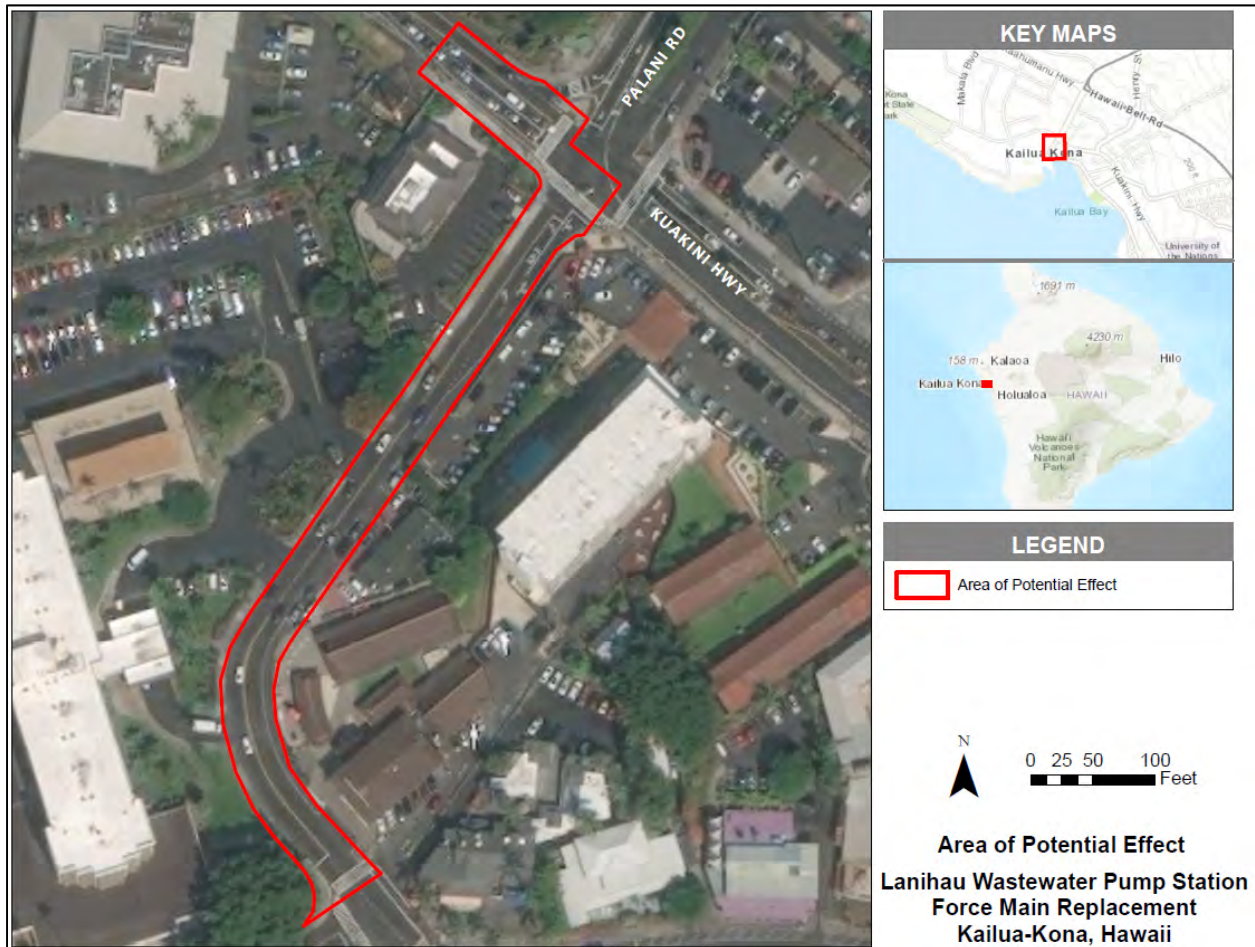
COUNTY OF HAWAII, DEPARTMENT OF ENVIRONMENTAL MANAGEMENT _____ DATE _____

SHEET 14 OF 14

Enclosure 4: TMK Map



Enclosure 5: Area of Potential Effect (APE) Boundary Map



Enclosure 6. Photographs of Project Area Existing Conditions



Photograph 1. Sewer pump station located on west mauka corner of Palani Road and Kaahumanu Place within the APE.



Photograph 2. View of sewer pump station, looking west from the intersection of Palani Road and Kaahumanu Place/Ali'i Drive in the APE.



Photograph 3. Looking northeast from the sewer pump station, up and across Palani Road within the APE.



Photograph 4. View north along Palani Road within the project area, from near the sewer pump station.



Photograph 5. View south (makai) on Palani Road in the APE – sewer pump station visible at right.



Photograph 6. View north (mauka) along Palani road within the APE, at the bend in the roadway adjacent to King Kamehameha Kona Beach Hotel (just out of view on the left).

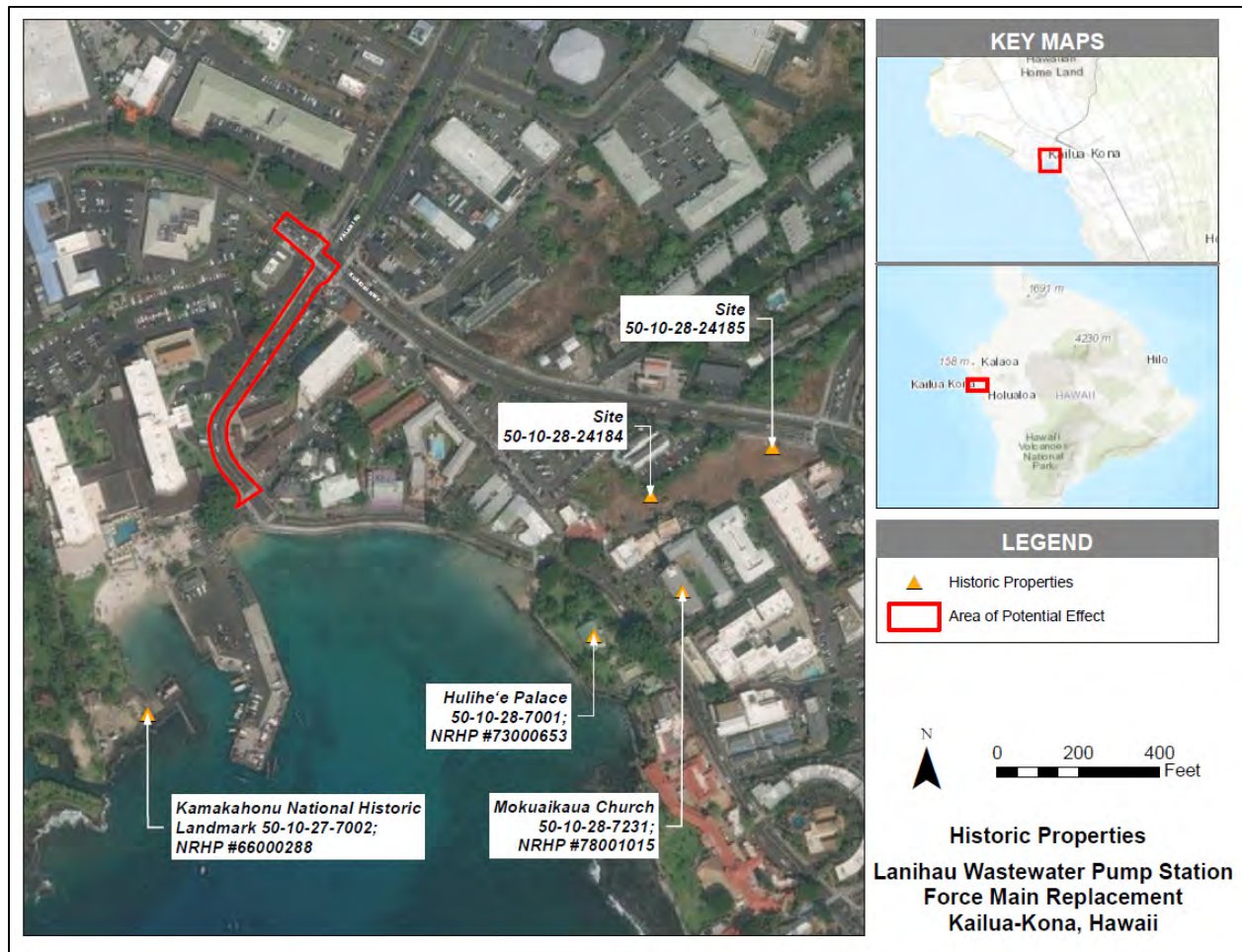


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Photograph 7. View north (mauka) along Palani Road within the APE. Looking towards the intersection with Kuakini Highway.



Photograph 8. View across Kuakini Highway at the north (mauka) end of the APE, intersection with Palani Road.

Enclosure 7. Map of Historic Properties Relative to APE



Enclosure 8: References

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