

STATE OF HAWAII  
DEPARTMENT OF HAWAIIAN HOME LANDS  
LAND DEVELOPMENT DIVISION

July 10, 2018

Date

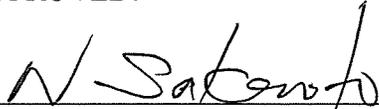
ADDENDUM NO. 2  
TO  
INVITATION FOR BIDS

IFB-18-HHL-009  
HO'OLEHUA WATER SYSTEM IMPROVEMENTS (PWS 230)  
BID PACKAGE 2 - KALAMA'ULA

NOTICE TO ALL PROSPECTIVE BIDDERS

This Addendum is hereby made a part of the Contract Documents for **IFB-18-HHL-009**, and it shall amend the said contract documents as detailed within this Addendum document.

APPROVED:



Norman L. Sakamoto, Acting Administrator  
Land Development Division  
Department of Hawaiian Home Lands

Date: 7/10/18

Please execute and immediately return the receipt below to the Department of Hawaiian Home Lands via facsimile to: **(808) 620-9299, Attention: James C. Richardson, Project Manager, Land Development Division.**

-----  
Receipt of Addendum No. 2 for the **IFB-18-HHL-009**, is hereby acknowledged.

_____	_____
Signed	Date
_____	_____
Print Name	Title
_____	
Name of Firm/Company	

## **ADDENDUM NO. 2**

**IFB-18-HHL-009**  
**HO'OLEHUA WATER SYSTEM IMPROVEMENTS (PWS 230)**  
**BID PACKAGE 2 - KALAMA'ULA**  
**KALAMA'ULA, MOLOKA'I, HAWAII**

### **General**

1. CONTRACTOR'S BID SUBMITTAL
  - a. Replace BID OFFER FORM in its entirety with attached revision.
2. DHHL CONTRACT: ATTACHMENT S-2 COMPENSATION AND PAYMENT SCHEDULE
  - a. Replace ATTACHMENT S-2 COMPENSATION AND PAYMENT SCHEDULE in its entirety with attached revision.
3. DHHL CONTRACT: ATTACHMENT S-5 SPECIAL CONDITIONS
  - a. SC-11 WATER CHARGES AND REQUIREMENTS – Revised the statement: “Contractor shall furnish, install, and maintain a temporary flow meter at the supply point as accepted by the Project Manager” to “DHHL shall furnish, install, and maintain a temporary flow meter at the supply point as accepted by the Project Manager.”
  - b. SC-13 NPDES PERMITS – Added the following statement: “NPDES Permit has been obtained for this project and the approval letter is attached. The Contractor shall comply with all requirements of the Permit.”
  - c. SC-19 CONTRACTOR'S DAILY REPORT – Added Item 9: Contractor shall provide at least six (6) photos depicting that day's work. Photos should show progress of work.
  - d. SC-27 INADVERTANT DISCOVERY OF HUMAN BURIALS – Replaced first sentence of the fourth paragraph with: “A total allowance of \$100,000 for required mitigation of inadvertent discovery of human burials is included in the payment provisions of the contract (\$85,000 for Bid Package No. 1 and \$15,000 for Bid Package No. 2), for CONTRACTOR'S time and materials as needed.”
  - e. SC-31 STRUCTURAL ENGINEER – Delete this Special Condition in its entirety.
  - f. SC-40 CONSTRUCTION YARD AND RIGHT-OF-ENTRY – Added the following statement: “The Contractor shall not perform any work that adversely impacts any DHHL lessee without the prior approval of the Construction Manager and the DHHL Project Manager.”

- g. SC-43 CONSTRUCTION PHASING – Revised first sentence of second paragraph to read: “The CONTRACTOR shall perform all excavation, earthwork, demolition and clearing or grubbing, or any other land disturbing activities within a six (6) week continuous period to be identified by the CONTRACTOR and approved by the Project Manager.”
  - h. SC-51 CONSTRUCTION MANAGER AND ENGINEER INSPECTIONS – Replace this Special Condition in its entirety.
  - i. SC-53 CONNECTION TO EXISTING WATER MAIN – Replace this Special Condition in its entirety.
  - j. Attached: Revised ATTACHMENT S-5 SPECIAL CONDITIONS
  - k. Attached: NPGC NPDES Permit R10F559 approval letter dated June 12, 2108.
4. PRE-BID CONFERENCE REPORT:
- a. Item XIII – Additional Questions/Comments, Revised Response to Question 1 (Q1) from 52,000 linear feet to 5,200 linear feet.
  - b. Attached: Revised PRE-BID CONFERENCE REPORT
5. REQUESTS FOR INFORMATION: See attached Summary of Questions and Responses.

#### Civil

- 1. SPECIFICATIONS: Replace SECTION 02640 – VALVES AND COCKS in its entirety with attached revision.
- 2. PLANS: DRAWING T001 – Addition of approval signatures from DHHL and DOT-HWY.
- 3. PLANS: DRAWING T001 – Revised Description of Drawing C500.
- 4. PLANS: DRAWING C003 – Revised and added Sections.
- 5. PLANS: DRAWING C200 – Deleted “PRV Replacement Plan” for intermediate PRV between Sites 1 and 2. Work was previously completed by DHHL.
- 6. PLANS: DRAWING C202 – Best Management Practices (BMP) Notes, Revised sheet reference in Note #1.
- 7. PLANS: DRAWING C304 – Revised Fence layout and various labels.
- 8. PLANS: DRAWING C401 – Revised Azimuth and Distance label between Water Line “A” stations 9+60 and 10+60.
- 9. PLANS: DRAWING C402 – Added Azimuth and Distance label between Water Line “A” stations 18+80 and 19+20.; Revised various labels.

10. PLANS: DRAWING C403 – Revised label in Schematic Connection Diagram.
11. PLANS: DRAWING C500 – Deleted “PRV Replacement Plan” for intermediate PRV between Sites 1 and 2. Work was previously completed by DHHL.
12. PLANS: DRAWING C503 – Revised Note.

**STATE OF HAWAI‘I  
DEPARTMENT OF HAWAIIAN HOME LANDS**

**BID OFFER FORM FOR**

**HO‘OLEHUA WATER SYSTEM IMPROVEMENTS  
BID PACKAGE 2 - KALAMAULA  
KALAMAULA, MOLOKAI, HAWAI‘I**

**TAX MAP KEYS:**

**Portions of: (2) 5-2-008, (2) 5-2-009, (2) 5-2-010 & (2) 5-2-033**

**IFB No.: IFB-18-HHL-009**

Chairman  
Hawaiian Homes Commission  
Department of Hawaiian Home Lands  
91-5420 Kapolei Parkway  
Kapolei, Hawai‘i 96707

The undersigned has carefully examined, read, and understands the terms and conditions in the Plans and Specifications, Special Conditions attached hereto, DHHL Construction General Conditions, and General Conditions specified in the Invitation for Bids (IFB) No. IFB-18-HHL-009. The State of Hawai‘i’s (State) Contract for Goods and Services Based on Competitive Sealed Bids AG-003 Rev. 6/22/2009, AG-008 103D General Conditions, are included by reference and made part hereof and available upon written request to the Procurement Officer. The undersigned hereby submits the following offer to perform the work for IFB No. IFB-18-HHL-009 as specified herein, all in accordance with the true intent and meaning thereof.

The undersigned understands and agrees that:

1. The State reserves the right to reject any and all offers and to waive any items that are defective when, in the State’s opinion, such rejection or waiver will be in the best interest of the State. A solicitation may be rejected in whole or part when in the best interest of the State.
2. If awarded the contract, all services will be in accordance with Hawai‘i Revised Statutes (HRS) § 103-55.5.
3. In submitting this offer, the Offeror is not in violation of HRS Chapter 84, concerning prohibited State contracts.
4. By submitting this offer, the Offeror certifies that the offer was independently arrived at without collusion and the Offeror did not participate in any practices to restrict competition.
5. It is understood that the failure to receive any addendum shall not relieve the Offeror from any obligation under this IFB.

Date: \_\_\_\_\_

The undersigned represents that it is: **(Check ✓ one only)**

- A **Hawai'i business** incorporated or organized under the laws of the State of Hawai'i; **OR**
- A **Compliant Non-Hawai'i business** not incorporated or organized under the laws of the State of Hawai'i, is or shall be registered at the State of Hawai'i Department of Commerce and Consumer Affairs Business Registration Division (DCCA-BREG) to do business in the State of Hawai'i.

State of incorporation: \_\_\_\_\_

Offeror is:

Sole Proprietor       Partnership       Corporation       Joint Venture       Other: \_\_\_\_\_

Federal ID No.: \_\_\_\_\_

Hawai'i General Excise Tax ID No.: \_\_\_\_\_

Telephone No.: \_\_\_\_\_

Fax No.: \_\_\_\_\_

E-Mail Address.: \_\_\_\_\_

Payment address (other than street address below)

\_\_\_\_\_  
(Street Address, City, State, Zip Code)

Business address

\_\_\_\_\_  
(Street Address, City, State, Zip Code)

Respectfully submitted:

\_\_\_\_\_  
Authorized (Original) Signature

\_\_\_\_\_  
Name and Title (Please Type or Print)

\* \_\_\_\_\_  
**Exact Legal Name of Company (Offeror)**

\*If Offeror shown above is a "dba" or a "division" of a corporation, furnish the exact legal name of the corporation under which the awarded contract will be executed:

\_\_\_\_\_  
The following bid is hereby submitted for the Ho'olehua Water System Improvements to the Department of Hawaiian Home Lands.

Ho'olehua Water System Improvements    2  
IFB-18-HHL-009  
Addendum No. 2

Bid Offer Form  
July 2018

**SITE 2 – KALAMAULA SYSTEM**

**12-FT ACCESS ROAD TO 0.2 MG KALAMAULA RESERVOIR**

1. 4,000 Linear Feet, Roadway grading and paving, including roadway excavation and backfill, asphaltic concrete pavement, base course and subbase, inclusive of hauling, spreading, laying, rolling and compacting; provide smooth-riding connection to existing and/or new pavement; Portland cement concrete pavement and subbase, inclusive of hauling, forming, spreading, laying and finishing; provide smooth-riding connection to existing and/or new pavement; gravel shoulder, chain-link fence and gates at reservoir, wire fence along access road.

Per Linear Foot \$ \_\_\_\_\_ \$ \_\_\_\_\_

**12-IN TRANSMISSION MAIN REPLACEMENT**

2. 2,800 Linear Feet, Installation of 12-inch water line, including trench excavation, cushion and backfill, gate valves, valve boxes, manholes, air-relief valves, cleanouts, lateral connections, fittings, concrete blocks, concrete anchor blocks, structural struts, connections to existing water lines, inclusive of testing, disinfection and sterilization, and all appurtenant and incidental items.

Per Linear Foot \$ \_\_\_\_\_ \$ \_\_\_\_\_

3.	20	Each, Replacement of 12-inch gate valve, including excavation, backfill, all appurtenant and incidental items, in place, complete.	Per Each	\$ _____	\$ _____
4.	2	Each, Replacement of pressure reducing valve, including excavation, backfill, all appurtenant and incidental items, in place, complete.	Per Each	\$ _____	\$ _____
5.	11	Each, Replacement of air relief valve, including excavation, backfill, pavement restoration, all appurtenant and incidental items, complete.	Per Each	\$ _____	\$ _____
6.	20	Each, Replacement of fire hydrant assembly (fire hydrant, riser and extension piece), including evaluation, excavation, backfill, pavement restoration, concrete blocks, riser, gate valve (as required), fittings, pipe, all appurtenant and incidental items, in place, complete.	Per Each	\$ _____	\$ _____
7.	1	Each, New of fire hydrant assembly (fire hydrant, riser and extension piece), including evaluation, excavation, backfill, pavement restoration, concrete blocks, riser, gate valve, fittings, pipe, all appurtenant and incidental items, in place, complete.	Per Each	\$ _____	\$ _____

8.	L.S.	Replace existing service lateral and meter reconnection along Mauna Loa Highway in Kalamaula, including excavation, backfill, pipe cushion, pavement restoration, all appurtenant and incidental items, in place, complete.		
		Lump Sum		\$ _____

**MISCELLANEOUS ITEMS**

9.	L.S.	Fire Contingency Plan, including preparation, submittal and processing for DHHL acceptance, and all labor, materials and equipment necessary for its implementation throughout the duration of the entire contract.		
		Lump Sum		\$ _____

10.	ALLOW	Field Office, including installation and removal, in place complete.		
		Allowance		\$ <u>17,500.00</u>

11.	1	Each, Project Sign for Department of Hawaiian Home Lands (DHHL) in place complete.		
		Per Each	\$ _____	\$ _____

12.	1	Each, Project Sign for United States Department of Agriculture (USDA) in place complete.		
		Per Each	\$ _____	\$ _____

- |     |       |  |           |                     |
|-----|-------|--|-----------|---------------------|
| 13. | L.S.  | Temporary Erosion Control Measures and compliance with the National Pollution Discharge Elimination System (NPDES) Permit, including submittals to the State Department of Health (inclusive of, but not limited to, renewal of the permit, installation and removal of silt fences, BMPs, watering and roadway cleaning). | Lump Sum  | \$ _____            |
| 14. | L.S.  | Mobilization, including obtaining insurance, bonds, grading/permits, scheduling, submittals and other activities to mobilize for project.  | Lump Sum  | \$ _____            |
| 15. | L.S.  | Demobilization, including removal and disposal of excess materials, debris and equipment, and site clean-up.   | Lump Sum  | \$ _____            |
| 16. | ALLOW | Archaeological Monitoring and implementation of Historic Preservation Plan.  | Allowance | \$ <u>42,500.00</u> |
| 17. | ALLOW | Required mitigation for the inadvertent discovery of human burials within the project areas.   | Allowance | \$ <u>15,000.00</u> |

TOTAL BID AMOUNT = \_\_\_\_\_  
\_\_\_\_\_ Dollars (\$ \_\_\_\_\_).

**The prices herein for the above items shall include all materials, labor, tools, equipment, machinery and all incidentals necessary, inclusive of general excise tax to install or to construct these items in place complete and in accordance with the plans and specifications contained in this IFB.**

The CONTRACTOR shall complete all work as specified or indicated in the Contract Documents on or before **Five Hundred Forty-Eight (548)** calendar days after receiving written Notice to Proceed, subject to extensions, as may be granted.

## APPRENTICESHIP AGREEMENT PREFERENCE

Hawai'i Revised Statutes §103-55.6 (ACT 17, SLH 2009) provides for a Hawai'i Apprenticeship Preference for public works contracts having an estimated value of \$250,000.00 or more. The preference shall be in the form of a 5% bid adjustment applied to the Bidder's amount for bidders that are parties to apprenticeship agreements. The estimated value of this public works contract is \$250,000.00 or more and the apprenticeship agreement preference **shall** apply.

To be eligible for the preference, the Bidder shall:

1. Be a party to an apprenticeship agreement registered with the DLIR at the time the bid is made for each apprenticeable trade the Bidder will employ to construct the public works project for which the bid is being made.
  - a. The apprenticeship agreement shall be registered and conform to the requirements of HRS Chapter 372.
  - b. Subcontractors do not have to be a party to an apprenticeship agreement for the Bidder to obtain the preference.
  - c. The Bidder is not required to have apprentices in its employ at the time the bid is submitted to qualify for the preference.
  - d. If a Bidder's employee is multi-skilled and able to perform work in more than one trade (for example, a project requires a carpenter and a laborer, and the employee is a carpenter, but is also able to perform the work of a laborer), the Bidder need only be a party to the carpenter's apprenticeship agreement and does not need to be a party to the laborer's apprenticeship agreement in order to qualify for the preference. The Bidder is not "employing" a laborer, only a carpenter, and so only needs to be a party to the carpenter's apprenticeship agreement.
  - e. Qualification for the preference is given on a project-by-project basis and depends upon the specific offer for a specific project. A Bidder's employees may vary from project to project and may qualify for the preference on one project but may not qualify on another project. For example, on one project, if the Bidder only employs carpenters to perform work in the carpentry and labor trades, then the Bidder only needs to be a party to the carpenter's apprenticeship agreement in order to qualify for the preference. However, on another project if the same Bidder employs both carpenters and laborers, then the Bidder will not qualify for the preference if the Bidder is only a party to the carpenter's apprenticeship agreement and not the laborer's apprenticeship agreement.
2. State the trades the Bidder will employ to perform the work;

3. For each trade to be employed to perform the work, the Bidder shall submit a completed signed original *CERTIFICATION OF BIDDER'S PARTICIPATION IN APPROVED APPRENTICESHIP PROGRAM UNDER ACT 17 (Certification Form 1)* verifying the participation in an apprenticeship program registered with the State Department of Labor and Industrial Relations (DLIR);
4. The *Certification Form 1* shall be authorized by an apprenticeship sponsor of the DLIR list of registered apprenticeship programs. The authorization shall be an original signature by an authorized official of the apprenticeship sponsor; and
5. The completed *Certification Form 1* for each trade must be submitted by the Bidder with the offer. A facsimile or copy is acceptable to be submitted with the offer; however, the completed signed original must be submitted within five (5) working days of the due date of the offer. If the signed original is not received within this timeframe, the preference may be denied. Previous certifications shall not apply.

Failure to comply with ALL of the conditions noted above, without exception, shall disqualify the Bidder from qualifying for, and thus receiving, benefit of the Hawai'i Apprenticeship Preference.

The *Certification Form 1* and the List of Construction Trades in Registered Apprenticeship Programs is available on the DLIR website at: <http://labor.hawaii.gov/wdd/>.

Upon receiving *Certification Form 1*, the DHHL will verify with DLIR that the apprenticeship program is on the list of apprenticeship programs registered with the DLIR. If the program(s) are not confirmed by the DLIR, the Bidder will not qualify for the preference.

If the Bidder is certified to participate in an apprenticeship program for each trade which will be employed by the Bidder for the project, a preference will be applied to decrease the Bidder's total bid amount by five per cent (5%) for evaluation purposes.

Should the Bidder qualify for other preferences, all applicable preferences shall be applied to the bid amount.

While preference for Hawai'i Apprenticeship will be taken into consideration to determine the low Bidder, the contract awarded shall be the original bid amount, exclusive of any preferences. The preference is only for evaluation purposes.

The Bidder hereby certifies that it will employ the following apprenticeable trades to perform the work for this project:





## METHOD OF AWARD

The Bidder is required to bid on the entire project. The low Bidder shall be determined by the procedures outlined in items 1) through 4) below:

1. Prior to opening of bids, the State will determine the amount of funds available for the project. This amount will be designated the "control amount". The control amount shall be announced at, and prior to the opening of bids.
2. The Base Bid and Alternate, if any, of each Bidder will be adjusted to reflect the applicable preferences in accordance with Chapter 103D, HRS. The Alternate, if any, will then be added to the Base Bid and compared with the control amount.
3. The low Bidder shall be the Bidder having the lowest aggregate amount, within the control amount (after application of the various preferences), for the Base Bid plus the Alternate, if any.
4. If adding the Alternate, if any, would make the aggregate amount exceed the control amount for all Bidders, the low Bidder shall be the Bidder having the lowest Base Bid after application of the various preferences.

It is further understood and agreed that:

5. The Chairman reserves the right to reject any and/or all bids and waive any defects when, in his opinion, such rejection or waiver will be in the best interest of the State.
6. After determining the low Bidder, an award may be made either on the amount of the Base Bid alone, or including the Alternate (exclusive of preferences), if:
  - a. It is in the best interest of the State;
  - b. Funds are available at time of the award; and
  - c. The combination of the Base Bid plus Alternate does not change the apparent low Bidder.
7. In the event the Base Bid for all Bidders exceed the control amount, the Chairman reserves the right to negotiate with the lowest responsible and responsive Bidder to award a contract within available funds.
8. In the event the award is made for the Base Bid alone, the Chairman reserves the right to amend the contract at a later date to include the Alternate should funds subsequently become available.

## OTHER CONDITIONS

1. The liquidated damages per working day for failure to complete the work on time have been determined and are noted in the Special Conditions of the sample contract.
2. By submitting this bid, the undersigned is declaring that his firm has not been assisted or represented on this matter by an individual who has, in a State capacity, been involved in the subject matter of this contract in the past one (1) year.
3. By submitting this bid, the undersigned is declaring that Bidder's own organization will perform at least 20% of the contractor's work. For the purposes of this section, the Contractor's work is defined as: direct cost labor for contractor's forces; direct cost materials installed by the contractor's direct cost labor force; direct cost equipment, either owned or leased, used by the contractor's direct cost labor force; and field overhead cost to include: field supervision, field office trailer (if any), field office equipment and supplies, etc.
4. Upon the acceptance of the bid by the Chairman, the undersigned must enter into and execute a contract for the same and furnish a Performance and Payment Bond, as required by law. These bonds shall conform to the provisions of Sections 103D-324 and 325, Hawai'i Revised Statutes, and any law applicable thereto.
5. The quantities given herewith are approximate only and are subject to increase or decrease.
6. The estimated quantities shown for items for which a UNIT PRICE is asked in this bid are only for the purpose of comparing on a uniform basis bids offered for the work under this contract. No claim shall be filed for anticipated profit or loss because of any difference between the quantities of the various classes of work done or the materials and equipment actually installed and the said estimated quantities. Payment on UNIT PRICE items will be made only for the actual number of units incorporated into the finished project at the contract UNIT PRICE.
7. If the product of the UNIT PRICE BID and the number of units does not equal the total amount stated by the undersigned in the Bid for any item, it will be assumed that the error was made in computing the total amount. For the purpose of determining the lowest Bidder, the stated UNIT PRICE alone will be considered as representing the Bidder's intention and the total amount bid on such items shall be considered to be the amount arrived at by multiplying the UNIT PRICE by the number of units.
8. Certification for Safety and Health Programs for Bids in Excess of \$100,000. In accordance with Sections 103D-327 and 396-18, Hawai'i Revised Statutes, by submitting this bid, the undersigned certifies that his firm will have a written Safety and Health Plan for this project that will be available and implemented by the Notice to Proceed date of this project. Details of the requirements of this plan may be obtained from the Department of Labor and Industrial Relations, Occupational, Safety and Health Division.

9. Any contract arising out of this offer is subject to the approval of the Department of the Attorney General as to form, and to all further approvals, including the approval of the Governor, required by statute, regulation, rule, order, or other directive.

Receipt of the following addenda issued by the Department is acknowledged by the date(s) of receipt indicated below:

	Date		Date
Addendum No. 1	_____	Addendum No. 5	_____
Addendum No. 2	_____	Addendum No. 6	_____
Addendum No. 3	_____	Addendum No. 7	_____
Addendum No. 4	_____	Addendum No. 8	_____

It is understood that failure to receive any such addendum shall not relieve the Contractor from any obligation under this IFB as submitted.

Bid Security in the amount of: \_\_\_\_\_

\_\_\_\_\_ DOLLARS (\$ \_\_\_\_\_)

as required by law, is enclosed herewith in the form of:

<input type="checkbox"/> Surety Bond (*1)	<input type="checkbox"/> Official Check (*3)
<input type="checkbox"/> Legal Tender (*2)	<input type="checkbox"/> Share Certificate (*3)
<input type="checkbox"/> Cashier's Check (*3)	<input type="checkbox"/> Teller's Check (*3)
<input type="checkbox"/> Certificate of Deposit (*3)	<input type="checkbox"/> Treasurer's Check (*3)
<input type="checkbox"/> Certified Check (*3)	

Respectfully submitted,

\_\_\_\_\_  
Name of Company, Joint Venture or Partnership

\_\_\_\_\_  
License No.

By \_\_\_\_\_  
Signature (\*4)

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_  
Telephone No.: \_\_\_\_\_

(IF A CORPORATION, AFFIX CORPORATE SEAL TO SIGNATURE, BE SURE TO FILL IN ATTACHED LIST OF SUBCONTRACTORS. THIS BID FORM MAY NOT BE ALTERED AND BIDDERS MAY NOT QUALIFY OR CONDITION THEIR BIDS IN ANY WAY.)

PLEASE FILL OUT THE ATTACHED CERTIFICATE OF RESOLUTION GIVING EVIDENCE OF THE AUTHORITY OF THIS OFFICER TO SUBMIT BIDS ON BEHALF OF THE COMPANY.

NOTES:

- \*1. Surety bond underwritten by a company licensed to issue bonds in this State;
- \*2. Legal tender; or
- \*3. A certificate of deposit; share certificate; or cashier's, treasurer's, teller's, or official check accepted by, and payable on demand to the State by a bank, a savings institution, or credit union insured by the Federal Deposit Insurance Corporation of the National Credit Union Administration.
  - a. These instruments may be utilized only to a maximum of \$100,000.

- b. If the required security or bond amount totals over \$100,000, more than one instrument not exceeding \$100,000 each and issued by different financial institutions shall be accepted.
- \*4. Please attach to this page evidence of the authority of this officer to submit bids on behalf of the Company, and also the names and residence addresses of all officers of the Company.
- \*5. Fill in all blank spaces with information asked for or bid may be invalidated. BID MUST BE INTACT; MISSING PAGES MAY INVALIDATE YOUR BID.

CERTIFICATE OF RESOLUTION

I, \_\_\_\_\_, Secretary of \_\_\_\_\_, a Hawai'i Corporation, do hereby certify that the following is a full, true and correct copy of a resolution duly adopted by the Board of Directors of said Corporation, at its meeting duly called and held at the office of the Corporation \_\_\_\_\_, Hawai'i, on \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, at which a quorum was present and acting throughout; and that said resolution has not been modified, amended or rescinded and continues in full force and effect.

“RESOLVED that any individual at the time holding the position(s) of \_\_\_\_\_, be, and each of them hereby is, authorized to execute on behalf of the Corporation any bid, proposal or contract for the sale or rental of the products of the Corporation or for the services to be performed by the Corporation and to execute any bond required by any such bid, proposal or contract with the United States Government or the State of Hawai'i or the City and County of Honolulu, or any County of Municipal Government of said State, or any department or subdivision of any of them.”

IN WITNESS THEREOF, I have hereunto set my hand and affixed the corporate seal of said

\_\_\_\_\_ this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
Secretary

END OF BID



STATE OF HAWAII

COMPENSATION AND PAYMENT SCHEDULE

Project: Hoolehua Water System Improvements
Package 2 - Kalamaula
Location: Kalamaula, Molokai, Hawaii
Contractor: TBD

The State shall pay the CONTRACTOR a sum not to exceed \_\_\_\_\_ AND \_\_\_/100 DOLLARS (\$\_\_\_\_\_)

SITE 2 – KALAMAULA SYSTEM

AMOUNT

12-FT ACCESS ROAD TO 0.2 MG KALAMAULA RESERVOIR

1 4,000 Linear Feet, Roadway grading and paving, including roadway excavation and backfill, asphaltic concrete pavement, base course and subbase, inclusive of hauling, spreading, laying, rolling and compacting; provide smooth-riding connection to existing and/or new pavement; Portland cement concrete pavement and subbase, inclusive of hauling, forming, spreading, laying and finishing; provide smooth-riding connection to existing and/or new pavement; gravel shoulder, chain-link fence and gates at reservoir, wire fence along access road.

\$ \_\_\_\_\_

12-IN TRANSMISSION MAIN REPLACEMENT

2 2,800 Linear Feet, Installation of 12-inch water line, including trench excavation, cushion and backfill, gate valves, valve boxes, manholes, air-relief valves, cleanouts, lateral connections, fittings, concrete blocks, concrete anchor blocks, structural struts, connections to existing water lines, inclusive of testing, disinfection and sterilization, and all appurtenant and incidental items.

\$ \_\_\_\_\_



STATE OF HAWAII

COMPENSATION AND PAYMENT SCHEDULE

			AMOUNT
3	20	Each, Replacement of 12-inch gate valve, including excavation, backfill, all appurtenant and incidental items, in place, complete.	\$ _____
4	2	Each, Replacement of pressure reducing valve, including excavation, backfill, all appurtenant and incidental items, in place, complete.	\$ _____
5	11	Each, Replacement of air relief valve, including excavation, backfill, pavement restoration, all appurtenant and incidental items, complete.	\$ _____
6	20	Each, Replacement of fire hydrant assembly (fire hydrant, riser and extension piece), including evaluation, excavation, backfill, pavement restoration, concrete blocks, riser, gate valve (as required), fittings, pipe, all appurtenant and incidental items, in place, complete.	\$ _____
7	1	Each, New of fire hydrant assembly (fire hydrant, riser and extension piece), including evaluation, excavation, backfill, pavement restoration, concrete blocks, riser, gate valve, fittings, pipe, all appurtenant and incidental items, in place, complete.	\$ _____
8	L.S.	Replace 3-inch lateral and meter reconnection along Mauna Loa Highway in Kalamaula, including excavation, backfill, pipe cushion, pavement restoration, all appurtenant and incidental items, in place, complete.	\$ _____



STATE OF HAWAII

COMPENSATION AND PAYMENT SCHEDULE

MISCELLANEOUS ITEMS

9	L.S.	Fire Contingency Plan, including preparation, submittal and processing for DHHL acceptance, and all labor, materials and equipment necessary for its implementation throughout the duration of the entire contract.	\$ _____
10	Allowance	Field Office, including installation and removal, in place complete.	\$ _____
11	1	Each. Project Sign for Department of Hawaiian Home Lands (DHHL) in place complete.	\$ _____
12	1	Each. Project Sign for United States Department of Agriculture (USDA) in place complete.	\$ _____
13	L.S.	Temporary Erosion Control Measures and compliance with the National Pollution Discharge Elimination System (NPDES). Permit, including submittals to the State Department of Health (inclusive of, but not limited to, obtaining the permit, installation and removal of silt fences, BMPs, watering and roadway cleaning).	\$ _____
14	L.S.	Mobilization, including obtaining insurance, bonds, grading/permits, scheduling, submittals and other activities to mobilize for project.	\$ _____
15	L.S.	Demobilization, including removing excess materials and equipment, clean-up.	\$ _____
16	Allowance	Archaeological Monitoring and implementation of Historic Preservation Plan.	\$ _____



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**COMPENSATION AND PAYMENT SCHEDULE**

17 Allowance Required mitigation for the inadvertent discovery of human burials within the project areas.

\$ \_\_\_\_\_

**TOTAL BID AMOUNT**

\$ \_\_\_\_\_



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SPECIAL CONDITIONS

**Project:** Hoolehua Water System Improvements  
**Location:** Kalamaula, Molokai, Hawaii  
**Contractor:** TBD

**SC-01 INTERCHANGEABLE TERMS**

The following terms are one and the same:

- a. “Contract” and “Agreement”.
- b. “Department of Hawaiian Home Lands” “Department” “DHHL” and “STATE”.
- c. “Project Manager” and “DHHL Project Manager”

**SC-02 INSURANCE COVERAGE**

The CONTRACTOR shall obtain separate insurance coverage for this project that complies with the requirements set forth in the DHHL Construction General Conditions, Article 7, Section 7.3, as amended. Payment for all work required to comply with this item will not be paid for separately but shall be considered incidental to the various contract items.

CONTRACTOR shall maintain insurance acceptable to the STATE in full force and effect throughout the term of this Contract. The policies of insurance maintained by CONTRACTOR shall provide the following minimum coverage:

<u>Coverage</u>	<u>Limit</u>
<b>General Liability Insurance</b> (occurrence form)	Bodily Injury and Property Damage (combined single limit): <u>\$1,000,000</u> per occurrence and <u>\$2,000,000</u> aggregate  Personal Injury: <u>\$1,000,000</u> per occurrence and <u>\$2,000,000</u> aggregate
<b>Automobile Insurance</b> (covering all owned, non-owned and hired automobiles)	Bodily Injury: <u>\$1,000,000</u> per person and <u>\$1,000,000</u> per occurrence.  Property Damage: <u>\$1,000,000</u> per accident or combined single limit of <u>\$2,000,000</u> .
<b>Workers Compensation</b> (statutory limit is required by laws of the State of Hawaii)	Insurance to include Employer’s Liability. Both such coverages shall apply to all employees of the CONTRACTOR and, in case any sub-contractor fails to provide adequate similar protection for all his employees, to all employees of subcontractors.
<b>Builder’s Risk covering the CONTRACTOR and all subcontractors</b>	100% Replacement Value
<b>Fire and extended coverage</b>	100% Replacement Value



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**SPECIAL CONDITIONS**

**Malicious Mischief** 100% Replacement Value  
**Flood Insurance**, if applicable Maximum Coverage available

- a. The State of Hawaii, Department of Hawaiian Home Lands, its elected and appointed officials, officers, employees, and agents shall be named as additional insured with respect to operations, services or products provided to the State of Hawaii. CONTRACTOR agrees to provide to the DHHL, before the effective date of the Contract, certificate(s) of insurance necessary to evidence compliance with insurance provisions of this Contract. CONTRACTOR shall keep such insurance in effect and the certificate(s) on deposit with DHHL during the entire term of this Contract. Upon request by the STATE, CONTRACTOR shall furnish a copy of the policy or policies.
- b. Failure of CONTRACTOR to provide and keep in force such insurance shall be regarded as a material default under this Contract. The STATE shall be entitled to exercise any or all of the remedies provided in this Contract for default of CONTRACTOR.
- c. The procuring of such required policy or policies of insurance shall not be construed to limit CONTRACTOR's liability under this Contract or to fulfill the indemnification provisions and requirements of this Contract. Notwithstanding said policy or policies of insurance, CONTRACTOR shall be obliged for the full and total amount of any damage, injury, or loss caused by negligence or neglect connected with this Contract.
- d. CONTRACTOR shall immediately provide written notice to the contracting department or agency should any of the insurance policies evidenced on its Certificate of Insurance form be cancelled, limited in scope, or not renewed upon expiration.
- e. DHHL is a self-insured State agency. CONTRACTOR's insurance shall be primary. Any insurance maintained by the State of Hawaii shall apply in excess of, and shall not contribute with, insurance provided by CONTRACTOR.
- f. The CONTRACTOR shall require all subcontractors to have in full force and effect the same insurance coverage as required of the CONTRACTOR. Such insurance shall name the State of Hawaii, Department of Hawaiian Home Lands, its elected and appointed officials, officers, employees, and agents as additional insured with respect to operations, services or products provided to the State of Hawaii. The CONTRACTOR shall be responsible to enforce its subcontractors' compliance with these insurance requirements and CONTRACTOR shall, upon request, provide the STATE a copy of the policy or policies of insurance for any subcontractor.

**SC-03 COMPLETION SCHEDULE AND LIQUIDATED DAMAGES**

The CONTRACTOR shall complete all work as specified or indicated in the Contract Documents on or before **Five Hundred Forty-Eight (548)** calendar days after receiving written Notice to Proceed, subject to extensions, as may be granted.

In case of failure on the part of the CONTRACTOR to complete the work within the time specified, the CONTRACTOR shall pay to DHHL as liquidated damages, and not as a penalty, **\$1,000.00** per calendar day for each day that the project, in its entirety, remains incomplete.



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**SPECIAL CONDITIONS**

**SC-04 PROCESS THROUGH DHHL**

Until Notice to Proceed (NTP) is issued, any and all submittals, reports, request claims, and notices under the contract pertaining to work for this project shall be processed through the Land Development Division Project Manager, at Hale Kalaniana'ole, 91-5420 Kapolei Parkway, Kapolei, Hawaii 96707.

After Notice to Proceed has been issued, any and all submittals, reports, requests, claims, and notices under the contract that pertain to this project shall be processed through the Construction Manager (CM) with copies submitted to DHHL and the above Consultant as applicable. The CM contract person and number will be identified at the pre-construction meeting.

**SC-05 SURVEYING SERVICES**

Refer to DHHL Interim General Condition 5.9.3.

The CONTRACTOR shall submit the name of the surveyor, who shall be licensed in the State of Hawaii and will be doing this work for it throughout the course of the project, to DHHL prior to beginning work at the site.

Upon request, DHHL shall provide subdivision plat maps to the CONTRACTOR to enable its surveyor to stake out the various work.

Property pins for the existing lots adjacent to the project site may remain intact and may be visible. However, DHHL makes no warranty that these existing pins are accurate or have not been disturbed.

The CONTRACTOR shall not disturb any existing property pins and is solely responsible for their replacement. The CONTRACTOR shall accurately replace any existing property pins disturbed or removed by it and shall certify that they have been re-installed in the correct locations at no cost to DHHL.

The CONTRACTOR and CONTRACTOR's Licensed Professional Land Surveyor shall provide a letter jointly certifying that all work, including the grading, were built to the lines and grades shown on the record drawings.

Except where specifically provided for in the proposal, all work necessary for, or related to surveying services shall be considered incidental to the various contract items.

Any surveying services required shall be the responsibility of the CONTRACTOR and considered incidental to the scope of work under this contract and therefore covered under the terms of this Contract. No separate payment shall be made.

Upon completion, the CONTRACTOR shall prepare an as-built plan for the project site in which the finished grades are certified by a Hawaii Licensed Professional Land Surveyor. Six (6) copies of the as-built plan shall be submitted to the Construction Manager and Project Manager. The cost of the as-built plan shall be incidental to the Contract. No separate payment shall be made.



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**SC-06 ALLOWANCES**

The proposal may contain payment items designated as allowances (i.e. mitigation of any inadvertent discovery of human remains). Funds listed in allowance items are to be spent at the direction of DHHL. The allowance is an estimate only and is subject to increase or decrease depending on the actual cost of the item. The funds are for the direct costs of an item and all pricing, submittal and review, overhead, installation, profit, insurance, surety, processing of the issuance of checks for payment to other parties, and all other costs will be included. No payment will be made for incidental costs.

Allowances specifically set aside for construction work and materials will be negotiated when the scope of work is determined. Any unspent allowance costs will be deducted from the Contract by change order prior to final payment.

**SC-07 SCHEDULE OF PRICES**

The CONTRACTOR shall submit a schedule of values in accordance with DHHL Construction General Conditions, Article 7.2.4 Schedule of Prices within 14 calendar days of the Notice to Proceed. The format and breakdown of the schedule of values shall be acceptable to DHHL.

The schedule of values shall show the work of each subcontractor and shall be based on installed work. No payment will be made until the CONTRACTOR has presented an acceptable schedule of values to DHHL. Performance and Payment Bonds costs shall be a separate line item and the cost shall be authenticated by surety invoice. All overhead and profit shall be prorated across all payment line items.

**SC-08 PERMITS AND FEES**

The CONTRACTOR shall apply and pay for all permits and inspection fees as required by all governmental agencies having jurisdiction over this project.

All work necessary to comply with this item will not be paid for separately but shall be considered incidental to the various contract items. No separate payment will be made.

**SC-09 COORDINATION WITH OTHER PARTIES**

The CONTRACTOR shall coordinate all the necessary work for temporary utility services, permanent service and appurtenances with the appropriate agencies, including but not limited to the State Department of Transportation, the State Department of Health, the County of Maui (County) and Maui Electric Company (MECO).

The CONTRACTOR shall coordinate all the necessary work for maintaining water service to include disruption or restriction to water service, temporary utility services, permanent service and appurtenances with the Project Manager and appropriate agencies, including but not limited to DHHL for potable water, and the Molokai Fire Department for fire protection.

The CONTRACTOR shall request, coordinate and schedule all inspections during



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construction, including but not limited to preliminary, pre-final, and final inspections, by all necessary government agencies having jurisdiction or vested interests over or in any and all elements of the project.

All work necessary to comply with this item shall be considered incidental to the various contract items. No separate payment will be made.

**SC-10 CONTRACTOR'S LICENSING**

It is the CONTRACTOR's sole responsibility to review the requirements of this project and determine the appropriate contractor's licenses that are required to complete the project. If the CONTRACTOR does not hold all of the licenses required to perform a particular item of work on this project with its own workers, when bidding, he must list subcontractors that hold the appropriate licenses in its proposal.

**SC-11 WATER CHARGES AND REQUIREMENTS**

DHHL will make reasonable quantities of potable water available for the CONTRACTOR use at no cost to the CONTRACTOR. CONTRACTOR shall coordinate and obtain authorization for the water supply point(s) and amounts of water required with the Project Manager. DHHL shall furnish, install, and maintain a temporary flow meter at the supply point. Flow meter shall be calibrated as accepted by the Project Manager. Contractor shall provide weekly reports of water usage to the Project Manager.

**SC-12 SOIL AND DUST CONTROL**

To control the dust during construction, the CONTRACTOR shall have an adequate supply of water for dust control and if necessary, moisture conditioning of fill material at all times. The CONTRACTOR shall institute an erosion control program and dust control program to minimize soil erosion and wind erosion and airborne fugitive dust nuisance, respectively for the entire duration of this project.

**SC-13 NPDES PERMITS**

DHHL will submit an NPDES Permit application to the Department of Health. Authorization to proceed with clearing, grubbing or grading work will not be granted until the permit is approved.

The CONTRACTOR agrees to schedule and sequence his operations to take all of the foregoing into account along with the requirements of DHHL General Condition 7.21.4 shall govern in the event of any delay(s) in DHHL obtaining approvals for these NPDES permits.

The CONTRACTOR shall provide the Consultant with the additional pertinent information required for preparation of the site-specific Best Management Practices (BMPs) Plan, and the Solid Waste Disclosure Form for Construction Sites for this project.

NPDES Permit has been obtained for this project and the approval letter is attached. The Contractor shall comply with all requirements of the Permit.



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**SC-14 NOTIFICATION OF WORK**

The CONTRACTOR shall notify the Project Manager, and give a minimum of five (5) working days' notice before starting any work. The CONTRACTOR shall notify the Project Manager a minimum of five (5) working days prior to start of any critical activities including, but not limited to, activities impacting noise, access, and air quality.

**SC-15 EXISTING OCCUPIED LOTS**

The CONTRACTOR shall provide and maintain continuous vehicular access and utility service (water, telephone and electrical) to the various occupied lots within and surrounding the project for the duration of construction and to the satisfaction of the Project Manager. The CONTRACTOR shall identify, locate and protect all utility services to these lots prior to any construction activity.

The CONTRACTOR shall provide safe and convenient access to these lots at all times to the satisfaction of the Project Manager. The CONTRACTOR shall also coordinate any temporary utility services with the proper utility companies. The CONTRACTOR shall pay all utility installation charges and fees to any utility company for any temporary utility connections.

**SC-16 FINAL INSPECTION**

Throughout the construction period, the work may be subject to periodic inspection by DHHL, the Construction Management (CM) Inspector, the Department of Health, the County and other applicable government agencies. Once work has been satisfactorily completed, the County, accompanied by DHHL and CM Inspector, will make the final inspection of the work to determine whether all work has been done in complete compliance with the requirements of the plans and these specifications.

The CONTRACTOR shall therefore schedule the final inspection with the County, Department of Health, Department of Transportation and the CM Inspector, and notify the DHHL Project Manager one week prior to the final inspection.

Neither the scheduling nor the conduct of the aforementioned final inspection shall be deemed a waiver of DHHL's right to subsequently require CONTRACTOR to complete all unfinished or defective work to the satisfaction of DHHL.

**SC-17 GENERAL CONDITIONS**

In the event of conflicts and/or discrepancies, the DHHL Construction General Conditions shall govern over Form AG-008, 103D General Conditions (eff. 10/17/13).



## STATE OF HAWAII

**SPECIAL CONDITIONS****SC-18 CAMPAIGN CONTRIBUTIONS BY STATE AND COUNTY CONTRACTORS**

CONTRACTORS are hereby notified of the applicability of Section 11-355, HRS, which states that campaign contributions from specified State or County government contractors during the term of the Contract if the contractors are paid with funds appropriated by a legislative body.

**SC-19 CONTRACTOR'S DAILY REPORT**

The CONTRACTOR shall submit a daily report electronically, for DHHL review. The report shall include:

1. Date
2. Weather
3. Activity at the site for the CONTRACTOR
  - a. Labor – who and what classification, i.e., carpenter, laborer, supervisor, etc.
  - b. Equipment
  - c. Materials delivered
  - d. Work performed
4. Activity at the site for subcontractors
  - a. Labor – who and what classification, i.e., carpenter, laborer, supervisor, etc.
  - b. Equipment
  - c. Materials delivered
  - d. Work performed
5. Visitors to the site – Construction Manager, Inspectors, etc.
6. Problems or Questions (including suggested resolutions, if any)
7. Safety report status
8. Quality control report status
9. Contractor shall provide at least six (6) photos depicting that day's work. Photos should show progress of work.

**SC-20 APPRENTICESHIP AGREEMENT PREFERENCE – CONTRACTOR'S RESPONSIBILITY**

1. For the duration of the contract awarded utilizing the Hawai'i Apprenticeship Preference, the CONTRACTOR shall certify each month that work is being conducted on the project, that it continues to be a participant in the relevant apprenticeship program for each trade it employs.
2. Monthly certification shall be made on *MONTHLY REPORT OF CONTRACTOR'S PARTICIPATION IN APPROVED APPRENTICESHIP PROGRAM UNDER ACT 17 (Monthly Certification Form 2)* prepared and made available by the DLIR. *Monthly Certification Form 2* shall be a signed original by the respective apprenticeship program sponsor's authorized official, and submitted by the CONTRACTOR with its monthly payment requests. *Monthly Certification Form 2* is available on the DLIR website at: <http://hawaii.gov/labor/wdd>



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3. Should the CONTRACTOR fail or refuse to submit its monthly certification forms, or at any time during the construction of the project, cease to be a party to a registered apprenticeship agreement for each apprenticeable trade the CONTRACTOR employs, the CONTRACTOR will be subject to the following sanctions:
  - a. Withholding of the requested payment until the required form(s) are submitted;
  - b. Temporary or permanent cessation of work on the project, without recourse to breach of contract claims by the CONTRACTOR; provided the DHHL shall be entitled to restitution for nonperformance or liquidated damages claims; or
  - c. Proceed to debar pursuant to HRS §103D-702.
4. If events such as “acts of God,” acts of a public enemy, acts of the State or any other governmental body in its sovereign or contractual capacity, fires, floods, epidemics, freight embargoes, unusually severe weather, or strikes or other labor disputes prevent the CONTRACTOR from submitting the certification forms, the CONTRACTOR shall not be penalized as provided herein, provided the CONTRACTOR completely and expeditiously complies with the certification process when the event is over.

**SC-21 FEDERAL LABOR STANDARDS**

The CONTRACTOR and its subcontractors shall comply with the Davis-Bacon Act (40 U.S.C. 3141-3144, and 3146-3148) as supplemented by Department of Labor regulations (29 CFR Part 5, “Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction”). CONTRACTOR and its subcontractors shall pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in the wage determination made by the Secretary of Labor. CONTRACTOR and its contractors shall also pay wages not less than once a week.

**SC-22 ENERGY EFFICIENCY**

The CONTRACTOR and its subcontractors shall comply with the Energy Policy and Conservation Act (P.L. 94-163) and all mandatory State and County standards and policies relating to energy efficiency.

**SC-23 COPELAND "ANTI-KICKBACK" ACT**

The CONTRACTOR shall comply with the Copeland Anti-Kickback Act (18 USC 874 and 40 USC 276c) as supplemented by Department of Labor regulations (29 CFR Part 3, “Contractors and Subcontractors on Public Buildings or Public Works Financed in Whole or in Part by Loans or Grants of the United States”). The Act provides that CONTRACTOR or subcontractor shall be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public facilities, to give up any part of the compensation to which they are otherwise entitled.

**SC-24 CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT**

Developer and its subcontractors shall to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251-1387).



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**SC-25 CONTRACT WORK HOURS AND SAFETY STANDARDS**

Developer and its subcontractors shall comply with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5).

**SC-26 EQUAL EMPLOYMENT OPPORTUNITY**

Developer and its subcontractors shall comply with the equal opportunity clause provided under 41 CFR 60-1.4(b), in accordance with Executive Order 11246, “Equal Employment Opportunity” (30 FR 12319, 12935, 3 CFR Part, 1964-1965 Comp., p. 339), as amended by Executive Order 11375, “Amending Executive Order 11246 Relating to Equal Employment Opportunity,” and implementing regulations at 41 CFR part 60, “Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor,” incorporated herein by reference.

**SC-27 INADVERTENT DISCOVERY OF HUMAN BURIALS**

Although not expected, in the event human burials are inadvertently discovered, the CONTRACTOR shall immediately stop work in the vicinity of the burial and contact the following parties and agencies immediately: State Historic Preservation Division (SHPD), DHHL, Office of Hawaiian Affairs (OHA) and the Maui - Lanai Islands Burial Council.

The discovery of human remains should not prevent the contractor from working on other areas at the work site.

DHHL may provide the CONTRACTOR with a Supplemental Agreement for additional time added to the CONTRACTOR’s performance schedule for the mitigation of any inadvertent discovery of human remains per the DHHL Construction General Conditions, sections 7.21.5 through 7.21.5.4.

A total allowance of \$100,000 for required mitigation of inadvertent discovery of human burials is included in the payment provisions of the contract (\$85,000 for Bid Package No. 1 and \$15,000 for Bid Package No. 2), for CONTRACTOR’S time and materials as needed. Funds listed in allowance items are to be spent at the direction of DHHL. The allowance is an estimate only and is subject to increase or decrease depending on the actual cost of the item. The funds are for the direct costs of an item and all pricing, submittal and review, overhead, installation, profit, insurance, surety, processing of the issuance of checks for payment to other parties, and all other costs will be included. No payment will be made for incidental costs.

The CONTRACTOR shall provide unit cost prices for the mitigation work, and time and materials will be negotiated when the scope of work is determined. No work shall be performed by the CONTRACTOR without prior written authorization from DHHL. Any unspent allowance costs will be deducted from the Contract by change order prior to final payment.

**SC-28 ARCHEOLOGICAL MONITORING PLAN, ARCHEOLOGICAL MONITOR, ARCHEOLOGICAL MONITORING REPORT AND HISTORIC PRESERVATION PLAN**

An Archaeological Inventory Survey (AIS), an Archaeological Monitoring Plan (AMP) and a Historic Preservation Plan (HPP) have been prepared for the project and are attached.



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Archaeological sites within the vicinity of the project area have been identified and the CONTRACTOR shall comply with all requirements contained within the AMP and HPP. The CONTRACTOR should be aware that additional archaeological sites may be encountered during the construction of this project. If the CONTRACTOR encounters a potential archaeological site during construction, he shall immediately cease all operations in the area and contact the Project Manager

Pacific Legacy prepared the Project's Archaeological Inventory Survey (AIS) and has been secured to prepare an Archeological Monitoring Plan (AMP) and a Historic Preservation Plan (HPP) to be implemented, referenced, and enforced during construction activities.

The CONTRACTOR is responsible for implementing the plan, conducting all work in accordance with the AMP and HPP. The CONTRACTOR shall also be responsible for contracting with an approved and licensed/certified archeological consulting firm to conduct the fieldwork and monitoring required as part of the plan. Such firm will fulfill the role of the Archeological Monitor as required by the AMP. The Archeological Monitor shall have the ability and authority to halt work if necessary, should the presence of human burials be discovered or may be reasonably expected or anticipated by the Archeological Monitor. Work shall not resume until conditions are satisfactory to the Archeological Monitor, if human burials are sufficiently avoided or protected.

The CONTRACTOR, however, will be completely responsible for their own, and their subcontractor's, work, and ensure that the requests of the Archeological Monitor are met in a timely and efficient manner.

The CONTRACTOR is also responsible for ensuring that the Archeological Monitor prepares and submits an Archeological Monitoring Report (AMR) to DHHL and the appropriate agencies, including but not limited to State Historic Preservation Division (SHPD), the Office of Hawaiian Affairs (OHA), and the Maui - Lanai Islands Burial Council. The AMR will be prepared to the satisfaction of DHHL and the other approving agencies.

The cost for the Archeological Monitor to perform the required fieldwork and monitoring, as well as the cost to prepare, submit, and process the AMR, will be the responsibility of the CONTRACTOR and will be considered incidental to the contract cost and scope of work. This cost shall be in the contract bid amount. No separate payment shall be made.

**SC-29            CERTIFICATION**

The CONTRACTOR and CONTRACTOR's Hawaii Licensed Professional Land Surveyor shall jointly certify the finish elevation(s) of any new work, referenced to mean sea level (MSL).

**SC-30            GEOTECHNICAL ENGINEER**

The services of a geotechnical engineering firm will be retained by CONTRACTOR. The CONTRACTOR shall notify the Project Manager and the Construction Manager whenever the geotechnical engineering firm's presence is needed at the site. The geotechnical engineer shall be present to observe site grading and other work concerning excavation,



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placing and compacting soil materials, and to take field density tests. Also, the geotechnical engineer shall perform laboratory testing of all imported soils or on-site soils to determine its acceptability for its intended use as select material or general fill material. The geotechnical engineer shall compile the daily observations, test data, test results and recommendations into a weekly submittal to the Construction Manager. The geotechnical engineer shall ensure that the geotechnical work complies with the specifications and drawings.

Upon completion of the grading operation, the geotechnical engineer shall provide the information needed to complete the “Grading Report” as required by the Maui County Code Section 20.08.250. As a minimum, six (6) copies of compaction data with 11”x17” location map, moisture content at the time of compaction, and certification letter (stamped and signed by a licensed engineer in the State of Hawaii) that the work was done in conformity to the specifications.

**SC-31      STRUCTURAL ENGINEER**

~~The services of a Hawaii Licensed Professional Structural Engineer will be retained by CONTRACTOR. The CONTRACTOR shall notify the Project Manager and the Construction Manager whenever the Structural Engineer’s presence is needed at the site. The Structural Engineer shall be present to observe foundation work, construction of the new water tank and retaining walls. The Structural Engineer shall compile the daily observations, test data, test results and recommendations into a weekly submittal to the Construction Manager. The geotechnical engineer shall ensure that the structural work complies with the specifications and drawings.~~

**SC-32      SAMPLING AND TESTING**

The CONTRACTOR shall retain the services of a geotechnical engineering firm and/or certified testing laboratory to perform sampling and testing as called for by this Contract. Testing for water quality shall be by a State Department of Health certified laboratory. Sampling and testing shall include materials testing and field testing as required. Sampling and testing shall be as required by the Contract to include but not limited to the following:

1. Concrete compressive strength and slump in laboratory and field tests per the Water System Standards
2. Microbiological tests for pipeline and tank disinfection

Cost for this work shall be considered included in the contract bid amount. No separate payment shall be made.

**SC-33      FIRE PREVENTION PLAN**

The site is dry and subject to fires. As such, the CONTRACTOR shall prepare a Comprehensive Fire Prevention Plan, post the regulations clearly at the site and enforce the plan.

Prior to the start of any work, the CONTRACTOR shall prepare and file written fire contingency plans with the Project Manager for review and acceptance.



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A Fire Contingency Plan shall be prepared for the work. The Plan shall incorporate the following features as a minimum:

1. Communication System. Prior to any on-site actions the CONTRACTOR shall establish a communications system capable of reaching local emergency services. The job supervisor or his designee must carry a cellular telephone at all times. Communications linkages must be maintained with all emergency services until completion and acceptance of the work covered by this contract.
2. Development of a Firefighting Plan. The CONTRACTOR will be responsible to maintain fire control at all times. The CONTRACTOR shall establish an organization for firefighting, to include personnel training, equipment, and procedures. Elements of the plan will include, as a minimum:
  - a. Providing two trained personnel to operate a water tanker. These personnel will be given work assignments that always place them in the immediate area of construction and with immediate access to the tanker upon notice of suspicion of fire.
  - b. Ensuring that the tanker personnel receive, and certify in the Fire Contingency Plan that they have received, the following:
    - Training in Tanker Operation Instruction in priority contact with Hawaii County Fire Department, the CONTRACTOR's job supervisor, the Hawaii County Office of Civil Defense, DLNR-DOFAW (Hilo Office) and the Project Manager.
    - Identification and knowledge of the location(s) of nearest water source(s) for filling tanker.
    - Training in the recognition, prevention and correction of fire hazards.

The CONTRACTOR shall not commence with any clearing and grubbing until DHHL has accepted the Fire Contingency Plan and notified the CONTRACTOR that he may proceed. This work, including preparation, submittal, filing, and processing the Fire Contingency Plan for DHHL acceptance, and all labor, materials and equipment necessary for its implementation throughout the duration of the contract shall be paid for under the lump sum item indicated in the proposal.

### SC-34 FIELD OFFICE

The CONTRACTOR shall provide a field office for exclusive use and entry of the Construction Manager and DHHL personnel, or their representatives, at a location approved by the Project Manager within the Project limits. It shall be available within thirty (30) calendar days after the Notice to Proceed date of the Contract.

The field office shall:

1. Be separated by a soundproof wall if it adjoins the CONTRACTOR'S office.
2. Have security measures (i. e., window bars) to discourage illegal entry into the field office and theft and vandalism of the contents.



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3. Be weatherproof.
4. Have a minimum gross floor area of 45 feet by 12 feet.
5. Have a monitored wireless security alarm system.
6. Have an aggregate window area not less than 10 percent of the floor area.
7. Have two exterior doors with a keyed cylinder type lock.
8. Be furnished with a conference room table with sufficient chairs, one plan rack holding a minimum of 10 sets of plans, two new executive desks of minimum 36 inch x 72 inch size, two new executive type black chairs, one new 3-tier shelf with each tier a minimum of 13 inches high and 12 inches deep, one broom, telephone service, electric lighting, one new 4-drawer (legal size) file cabinet, one facsimile machine with automatic document feeder, hot/cold bottled drinking water dispenser unit, bottled water delivery service, and sewer system (as necessary).
9. Window-type air conditioning unit(s) capable of keeping the field office at 76°F. or cooler.
10. Have three telephone exchange lines to the field office. One line shall be dedicated for a facsimile machine. One exchange line for telephone, complete with 2-line handsets with touch-tone and call forwarding capability. The third telephone exchange line shall be dedicated to modem/e-mail.
11. Have a high-speed cable or DSL modem with wireless capability compatible with the internet service account. CONTRACTOR to pay for internet services.
12. Be provided with potable water service, water closet, lavatory, paper towels, toilet paper, paper cups, and soap. If the office cannot be equipped with a water closet and lavatory, the CONTRACTOR shall make other arrangements to provide such facilities for the Construction Management personnel as approved by the Project Manager.
13. Be provided with electrical service and lighting.

At the discretion of the Project Manager: 1) the field office may be located outside of the Project limits; and 2) the above requirements for the field office may be reduced.

The CONTRACTOR shall maintain the field office in good repair and clean and sanitary condition and shall provide disposable items (paper towels, toilet paper, paper cups, soap, etc.) to the satisfaction of the Project Manager throughout the duration of the Project. Should the Project Manager, in his judgment, feel that the office is not being adequately maintained, operated or repaired, partial or full retention of the CONTRACTOR'S monthly progress payment may be enforced until such inadequacies are corrected.

The field office, equipment, and telephone shall be maintained in good repair and in a clean and sanitary condition by the CONTRACTOR until final payment or an earlier date as determined by the Project Manager. The ownership of the field office and equipment shall remain with the CONTRACTOR and shall not be removed until instructed by the Project Manager.



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Payment for furnishing and maintaining the Project field office, equipment, furnishings, supplies, and all appurtenances shall be made at the lump sum price bid as provided for in the Proposal Schedule.

**SC-35      STANDARD SPECIFICATIONS**

The "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2005, State of Hawaii and all applicable updates is by reference incorporated herein and made a part of these specifications. The term "Standard Specifications" used hereinafter refers to this "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2005." Copies of the Standard Specifications are available for purchase from State of Hawaii, Department of Transportation, Highways Division.

**SC-36      STANDARD DETAILS**

The "STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION, September 1984", as amended of the Departments of Public Works, County of Kauai, County of Maui, County of Hawaii and City and County of Honolulu, of the State of Hawaii, is by reference incorporated herein and made a part of these specifications. The term "Standard Details" used hereinafter refers to this "STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION, September 1984." Copies of the Standard Details are on file and may be inspected at the Division of Purchasing during regular business hours of the City and County of Honolulu.

The work embraced herein shall be done in accordance with the Standard Details insofar as they may apply.

**SC-37      WATER SYSTEM SPECIFICATIONS**

The "WATER SYSTEM STANDARDS," State of Hawaii, dated 2002, and all subsequent amendments and additions, are by reference incorporated herein and made a part of these contract documents. The work embraced herein shall be performed by the CONTRACTOR in accordance with the "WATER SYSTEM STANDARDS," and the various sections of the Special Conditions.

The term "Water System Standards" used in these contract documents refers to the "WATER SYSTEM STANDARDS" State of Hawaii, dated 2002, and all subsequent amendments and additions.

**SC-38      CONTINGENT ITEMS**

Depending upon the site and soil conditions, and other factors, the Project Manager may decide to delete the contingent items in its entirety. A Change Order may be issued to delete the work and the contract amount shall be reduced by subtracting the entire corresponding bid amount. If part of the work is done, or if the work exceeds the estimated quantities, payment shall be made on the actual number of units incorporated in the work at the unit price bid.



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**SC-39 EARTHWORK QUANTITIES**

Prior to any grading operations, the CONTRACTOR shall submit to the Project Manager a list of estimated quantities for excavation and embankment. The CONTRACTOR shall also estimate a reasonable percentage for loss/shrinkage and percentage of unsuitable excavated materials. The percentages shall be updated as the grading work progresses. The CONTRACTOR is responsible for disposal of all excavated material offsite. Borrow material shall not be imported until all excavation work is completed and authorized by the Project Manager.

**SC-40 CONSTRUCTION YARD AND RIGHT-OF-ENTRY**

CONTRACTOR'S staging area may be located on-site, within the designated project area, and within the DHHL Right-of-Way, as approved by the Construction Manager. Should the staging area measure more than 1 acre, the CONTRACTOR will be responsible to apply for and obtain a National General Permit Coverage (NGPC) for Storm Water Associated with Construction Activities from the State Department of Health, Clean Water Branch, including associated fees, before starting any work.

Access to the project site will be specified by the DHHL Project Manager and the Construction Manager.

The Contractor shall not perform any work that adversely impacts any DHHL lessee without the prior approval of the Construction Manager and the DHHL Project Manager.

**SC-41 COUNTY OF MAUI INSPECTION**

All work within the proposed well site and any County maintained easements and roadways shall be inspected and approved by the applicable agencies of the County of Maui. The CONTRACTOR shall make arrangements directly with the appropriate agencies to arrange for inspection of work. All work and/or fees necessary to comply with this item shall be considered incidental to the various Contract items. No separate payment shall be made.

**SC-42 STATE GENERAL EXCISE TAX**

This project is not exempt from the State of Hawaii General Excise Tax. The CONTRACTOR's prices shall include the General Excise Tax for all work.

**SC-43 CONSTRUCTION PHASING**

The CONTRACTOR shall prepare and submit to the Project Manager, prior to start of field construction work, a construction phasing plan that outlines and describes the work scope and sequence, in order to maintain public access with minimal interruption and restriction to usage. Plan shall describe all planned phases of work to include estimated times and durations. Measures to maintain access may include and are not limited to: creating separate areas of work and sequencing and phasing work on specific areas in lieu of closing off the entire site, and construction fencing.

Notification to include lead times for notification to public and governmental service agencies shall be identified and scheduled.



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The CONTRACTOR shall perform all excavation, earthwork, demolition and clearing or grubbing, or any other land disturbing activities within a six (6) week continuous period to be identified by the CONTRACTOR and approved by the Project Manager. Limiting the timeframe of the land disturbing activities will assist with limiting the cost associated with the Archeological Monitor and the required fieldwork and reporting requirements.

Should land disturbing activities require additional time, the CONTRACTOR shall be responsible for any additional costs incurred for the Archeological Monitor, fieldwork and reporting for the AMR. This cost shall be considered part of the contract bid amount. No separate payment shall be made.

DHHL will not provide additional time to the CONTRACTOR or the CONTRACTOR's performance schedule should land disturbing activities exceed the time duration identified in this condition.

The CONTRACTOR shall coordinate the construction plans as well as the development of the construction phasing plan with the Project Manager.

The CONTRACTOR shall ensure that all materials, equipment, labor and incidentals are on-site as needed to ensure rapid and continuous work to minimize or avoid water service disruptions to the DHHL water system and its service customers.

**SC-44 DELETED ITEMS**

Depending on the site conditions, soil conditions and other factors, the Project Manager may decide to delete a portion or all of a proposal item in its entirety. A change order shall be issued to delete the work and the contract amount shall be reduced by subtracting the corresponding proposal item amount.

No claim shall be filed for anticipated profit or loss resulting from deletion of all or part of the proposal item except as indicated in DHHL Construction General Condition 4.6.

**SC-45 RESTORATION OF DHHL PROPERTY**

Any areas cleared or graded by the CONTRACTOR for field office(s), staging or storage operations located in DHHL lots shall be backfilled to the original (or finished) elevations, slopes and grades (shown on the plans) and/or graded to provide proper drainage prior to the completion of the project. The backfilled areas shall be covered with a 2-inch layer of topsoil and immediately grassed.

**SC-46 FINAL SETTLEMENT OF CONTRACT**

The following shall be made additional conditions of compliance with DHHL Construction General Condition 7.33:

1. The CONTRACTOR shall coordinate with all government agencies and utility companies on behalf of DHHL to obtain letter(s) from each respective government agency or utility company indicating that acceptance of the contract work for the project has been granted to DHHL. Copies of the letters shall be submitted to DHHL.
2. Signature, execution, and return of the "Record Drawing" Title tracings.



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Payment for all work required to comply with the above items will not be paid for separately but shall be considered incidental to the various contract items.

**SC-47 SHOP DRAWINGS AND OTHER SUBMITTALS**

The CONTRACTOR is required to submit a complete list of shop drawings and other submittals to the Construction Manager, for DHHL and the consultant team's review, by one week after the notice to proceed (NTP) is given, or at the pre-construction meeting, whichever comes first.

The CONTRACTOR is then required to submit all submittals and shop drawings that are listed within ONE MONTH after the notice to proceed is given. The CONTRACTOR will not be given schedule or cost considerations for delay of materials if shop drawings or submittals are not submitted by this time.

**SC-48 PROJECT SIGNS**

The CONTRACTOR shall furnish, erect, maintain and remove one project sign each, for DHHL and USDA.

The project signboard shall be 3/4 inch thick, "AC" exterior grade fir plywood, 4 feet in height and 7 feet long each. All lettering type and size and color selection shall be as specified by DHHL and USDA (refer to Exhibit A).

All paints used shall be exterior enamel paints manufactured either by Ameritone-Devoe, Boysen, DuPont, Dutch Boy Fuller-O'Brien, Glidden, Pittsburg, Sherwin—Williams, Sinclair, or approved equal, and made primarily for the purpose for which they are used, and shall be prepared and applied strictly in accordance with the manufacturer's directions. Signs shall be painted with one prime coat and two finish coats.

Final layout shall be based upon sign plans submitted by the CONTRACTOR and approved by the DHHL.

The Project Sign shall be erected at a location directed by the DHHL and shall be adequately braced in such a way that does not interfere with the viewing of the signs. The sign shall be maintained in good condition throughout the progress of the work until final completion of the project. The project sign shall be erected within five (5) days after approval of the sign layout. After the final approval of the construction work by the DHHL, the project sign shall be removed from the site and shall become the property of the CONTRACTOR.

Payment will be made for one project sign painted, with lettering specified by DHHL, in place complete (see attachment). Payment for sign removal shall be incidental to said item.

**SC-49 COMPLIANCE WITH THE USDA LETTER OF CONDITIONS**

The CONTRACTOR shall comply with all conditions prescribed in the USDA Letter of Conditions to the extent allowed by law. Including, but not limited to, the following:

*Excerpted from the USDA Letter of Conditions (LOC), dated: August 26, 2016:*



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“At the conclusion of the proposal's environmental review process, specific action(s) were determined necessary to avoid or minimize adverse environmental impacts. As outlined in the Environmental Report dated February 2016, the following actions are required for successful completion of the project and must be adhered to during project design and construction:

### 1. Historic and Cultural Resources:

The pohaku in Kalama'ula is located in the middle of the roadway. Many years ago, construction workers attempted to remove it to build Kalaniana'ole Avenue. They were unsuccessful and built the road around the stone. While construction is not proposed near the pohaku, increased traffic can be expected on the roadway when construction vehicles must pass it to get to DHHL Water System facilities. Contractors shall be advised to avoid the pohaku.

As espoused by various mo'olelo, the area, in general, has a mystical past and retains some supernatural qualities. To respect the spiritual connections that people have with the 'aina, any major event or construction related activity shall be preceded by traditional Hawaiian blessing ceremony performed by a kahuna (priest or priestess) or kahu pule (minister/preacher).

The sites that were identified will be recorded and mitigation measures shall be approved by the State Historic Preservation Officer (SHPO) and shall be implemented. The historic properties (particularly those in Kalama'ula) will be marked prior to construction to ensure disturbance does not occur. For inadvertent finds during construction, the construction documents shall include a provision that, should any remains such as artifacts, burials, or concentrations of shell or charcoal be encountered during construction activities, work will cease immediately in the immediate vicinity of the find, and the find will be protected. The contractor shall immediately contact the State Historic Preservation Division, which will assess the significance of the find and recommend appropriate mitigation measures, if necessary.

- Record the 17 sites that have been identified in the Archaeological Inventory Survey.
- Avoid archeological sites. The exact location of the roadways and water line will be adjusted during the design and construction phases to avoid impacting archaeological sites identified for preservation.
- Mark archaeological sites identified for preservation prior to construction to ensure disturbance does not occur.
- Stop work and notify SHPO if previously unidentified cultural and archaeological resources are discovered during construction activities for significance assessment of the find and for recommendation of appropriate mitigation measures.
- Major events or construction related activities will be preceded by traditional Hawaiian blessing ceremony in respect to the spiritual connections between the 'aina and its people.
- Avoid the large, naturally occurring pohaku (boulder) located within Kalama'ula along Kalaniana'ole Avenue.



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**2. Biological Resources:**

To ensure that threatened and endangered species are not likely to be adversely affected by the proposed action, the following mitigation measures shall be included in the letter of conditions for financial assistance.

**3. Transport of New Terrestrial Invasive Plant Species Minimization Measures:**

To avoid the unintentional introduction or transport of new terrestrial invasive plant species to Moloka'i during this Project, all construction equipment and vehicles arriving from outside of Moloka'i shall be washed and inspected, and, when possible, raw materials (e.g., gravel, rock, and soli) shall be purchased from a local supplier on Moloka'i to avoid introducing non-native plant species not present on the Island.

**4. Hawaiian hoary bat:**

The Hawaiian hoary bat is known to occur across a broad range of habitats throughout the State of Hawaii. This bat roosts in both exotic and native woody vegetation and, while foraging, leaves young unattended in "nursery" trees and shrubs. If trees or shrubs suitable for bat roosting are cleared during the Hawaiian hoary bat breeding season (June 1 to September 15), there is a risk that young bats that cannot yet fly on their own could inadvertently be harmed or killed. Woody plants greater than 15 feet tall shall not be removed or trimmed during the bat breeding season.

Additionally, Hawaiian hoary bats forage for insects from as low as three feet to higher than 500 feet above the ground. When barbed wire is used in fencing, Hawaiian hoary bats can become entangled. Barbed wire shall not be used for fencing.

- There shall be no clearing or grubbing of vegetation over 15 feet tall during the breeding season (June 1 through September 15).
- Barbed wire shall not be used for any fencing (temporary or permanent) and if a bat arrives in the construction area after work begins, work shall cease until the bat leaves the on its own accord.

**5. Nene:**

Nene are known to occupy various habitat and vegetation community types ranging from coastal dune vegetation and nonnative grasslands (such as golf courses, pastures, and rural areas) to sparsely vegetated low- and high-elevation lava flows, mid-elevation native and non-native shrubland, cinder deserts, native alpine grasslands and shrublands, and nonnative alpine shrubland-woodland community habitats. There is the potential for disturbance activities, including noise, to reduce the reproductive success or survival of nene. Nene have an extended breeding season with eggs reported from all months except May, June, and July, although the majority of nene in the wild nest during the wet (winter) season between October and March. Nesting peaks in December and most goslings hatch from December to January. Nene nest on the ground in a shallow scrape in the dense shade of a shrub or other vegetation. In order to avoid impacts to nene, a qualified biologist shall survey the project area prior to the initiation of any work and conduct nest searches for nene if the project will occur during the breeding season. If a nest is discovered, work should cease immediately and our office



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be contacted for further guidance. A 100-foot (30m) buffer should be established and maintained around all active nests and broods until the goslings have fledged. No disruptive activities shall occur within this buffer. If a nene appears during ongoing work, all activity shall be temporarily suspended until the animal leaves on its own accord.

- A survey shall be conducted by a qualified biologist around the construction sites prior to the initiation of any work or after any subsequent delay of work for three or more days once foraging/loafing nene have been observed at the project site. If a nest is discovered within a radius of 100 feet of the project area, all work will cease immediately and the U.S. Fish and Wildlife Service shall be contacted within 24 hours.
- Projects shall be temporarily suspended if a nene appears within 100 feet of ongoing work and will not resume until the nene has left on Its own accord.

**6. Seabirds:**

Hawaiian petrels and Newell's shearwaters (collectively known as seabirds) may transit over the project area when flying between the ocean and nesting sites in the mountains during their breeding season (March through November). Seabird fatalities resulting from collisions with artificial structures that extend above the surrounding vegetation have been documented in Hawaii where high densities of transiting seabirds occur. Additionally, artificial lighting such as flood lighting or for construction work and site security, can adversely impact seabirds by causing disorientation which may result in collision with utility lines, buildings, fences and vehicles. Fledging seabirds are especially affected by artificial lighting and may exhaust themselves while circling the light sources and become grounded. Too weak to fly, these birds become vulnerable to depredation by feral predators such as small Indian mongoose (*Herpestes auropunctatus*), cats (*Felis catus*), and dogs (*Canis familiaris*). Night work requiring artificial illumination shall be avoided during the seabird fledging season (approximately September 15 through December 15).

- No nighttime construction shall occur during the seabird fledging period (September 15 through December 15) and outdoor lighting installations shall be designed to minimize glare and constructed in a manner that fully shields lighting sources and directs light downwards. The U.S. Fish and Wildlife Service shall be consulted for additional minimization measures regarding seabirds and lights if night work is proposed after the fledging season (December 16 through September 14).

**7. Blackburn's sphinx moth:**

The Blackburn's sphinx moth may be in the vicinity of the proposed project area. Adult moths feed on nectar from native plants, including beach morning glory (*Ipomoea pes-caprae*), lileie (*Plumbago zeylanica*), and malaplo (*Capparis sandwichiana*); larvae feed upon non-native tree tobacco (*Nicotiana glauca*) and native aiea (*Nothocestrum latifolium*). To pupate, the larvae burrow into the soil and can remain in a state of torpor for up to a year (or more) before emerging from the soli. Soil disturbance can result in



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death of the pupae. A qualified biologist shall survey areas of proposed construction activities for Blackburn's sphinx moth and its host plants prior to work initiation. Surveys shall be conducted during the wettest portion of the year (usually November-April or several weeks after a significant rain) and immediately prior to construction. Surveys should include searches for eggs, larvae, and signs of larval feeding (chewed stems, frass, or leaf damage). Any host plants of Blackburn's sphinx moth identified should not be cut or disturbed without further discussions with the U.S Fish and Wildlife Service. If moths or their host plants are found during the survey, the U.S Fish and Wildlife Service shall be contacted for additional guidance to avoid take.

- A biologist shall survey the project area for the presence of larval host plants. If larval host plants are discovered, the U.S Fish and Wildlife Service shall be contacted for further guidance prior to construction activities.
- Once an area has been cleared as part of the project construction, the area shall be kept clear of non-native species until construction activities are complete.

### **8. Guidance for Solar Facilities:**

Please note that some photovoltaic systems on the United States mainland are resulting in impacts to migratory waterfowl and shorebirds. This source of mortality has been described previously (Mccrary et. al. 1986), and recent impacts are being observed at solar facilities in California, including the Desert Sunlight Solar Farm and Genesis Solar Energy Project. Birds have been inadvertently attracted to these sites due to solar panels' resemblance to water and their proximity to important migratory flyways (Donnelly-Shores 2013 and Clarke 2013). Once attracted, collisions with the solar arrays have resulted in injuries and mortalities; once grounded, birds are also subject to predation (Kagan et. at. 2014). While attraction to solar arrays has not yet been documented in Hawaii, the State harbors a significant diversity of water bird and shorebird species, including the federally endangered Hawaiian coot (*Fulica alai*), Hawaiian stilt (*Himantopus mexicanus knudseni*), Hawaiian moorhen (*Gallinula chloropus*), Hawaiian duck (*Anas wyvilliana*), and Hawaiian goose. Personnel at the solar site be educated about the potential for birds to be attracted and Inadvertently harmed. If monitoring indicates that species are occurring at the photovoltaic system, or additional information about the facility's impacts to native Hawaiian species becomes available. the U.S Fish and Wildlife Service shall be contacted for further guidance regarding minimizing impacts.

### **9. Fugitive Dust Mitigation:**

During construction a dust control measure shall be implemented. Frequent water sprinkling may be the most effective dust control measure given the size of the sites and the type and scale of proposed improvements. Additional measures could include:

- Landscaping and rapid covering of bare areas;
- Disturbing only the areas of construction that are in the immediate zone of construction to limit the amount of time that the areas will be subject to erosion:



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- Provisions for adequate dust control measures during weekends, after hours, and before daily start of construction activities:
- Installation of appropriate structural controls in areas of disturbance; and/or
- Siting of staging areas on impervious surface when possible.

Pollution control measures shall comply with Hawai'i Administrative Rules, Title 11, Chapter 60.1, Air Pollution Control regulations of the DOH.

**10. Asbestos Containing Materials (ACM) Mitigation:**

Certified contractors shall be involved in the inspection, project design, and abatement of ACM. The Asbestos Abatement Office of the DOH-Indoor and Radiological Health Branch shall be kept apprised of the Project and shall be engaged as necessary once the Project reaches the design phase.”

**SC-50 AS-BUILT DRAWINGS / RECORD DRAWINGS**

As-Built Drawings:

The CONTRACTOR shall provide as-built drawings. The As-Built drawings shall show the actual construction so that any future renovations or tie-ins can be anticipated accurately.

The CONTRACTOR shall record all deviations from the drawings that were authorized by the Project Manager onto the copy of the field plans. The changes shall be recorded immediately after they have been constructed in place to assure they are recorded before they are forgotten.

The CONTRACTOR shall record the changes onto the field office plans using a red pencil. The CONTRACTOR shall stamp, sign and date each sheet of the field office plans. The stamp shall contain the words: “AS-BUILT DRAWINGS’ and include a statement signed by the CONTRACTOR certifying that the drawings on the sheet accurately and completely reflect and show the actual as-built construction. The stamp format and wording shall be submitted to the Project Manager for prior approval.

The CONTRACTOR shall submit the marked-up field office plans for the project, stamped, signed and dated, to the Project Manager after the improvements for each respective portion of the project have been completed.

Record Drawings:

All changes shown on the As-Built drawings will be recorded on the original tracings, which will then become the Record Drawings. The Consultant(s) shall be responsible for preparing the Record Drawings. The Consultant(s) shall stamp, sign and date the Title Sheet tracing of the Record Drawings. The stamp shall contain the words “Record Drawings.”

The CONTRACTOR shall review the changes made and certify the Record Drawings by signing and dating the Record Drawing Title Sheet tracing where indicated. Any deviations from the plans determined by the Project Manager to missing from, incomplete, or inaccurately drawn on the As-Built Drawings shall be corrected on the Record Drawing



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tracings by the State and the CONTRACTOR shall be charged for the services. The State will keep a record of the associated cost impacts and deduct them from the Contract price.

Payment for all work required to comply with this item will not be paid for separately but shall be considered incidental to the various Contract items.

**SC-51 CONSTRUCTION MANAGER AND ENGINEER INSPECTIONS**

The DHHL will engage the Engineer and the Construction Manager (CM) for limited construction observation and/or full observation to supplement the inspections performed or required by the State and/or the County.

CM's and Engineer's authority shall be as described in DHHL Construction General Condition 5.4.

**SC-52 COMPENSATION FOR REMOVAL OF ABANDONED VEHICLES, TRASH OR DUMPED ITEMS**

Any and all abandoned vehicles, boats or other means of transportation and all appliances and discards of every description found within 5-feet of the actual work limits during the duration of this contract shall be promptly and totally removed from the site. The cost shall be considered incidental to the various Contract items.

The CONTRACTOR is solely responsible for taking precautions to prevent unauthorized access during working and non-working hours to eliminate illegal dumping within these areas during the entire duration of the project. Refer to DHHL Construction General Conditions 4.9.1.2, 7.30 and 7.34.

**SC-53 CONNECTION TO EXISTING WATER MAIN**

The CONTRACTOR shall coordinate and meet with DHHL and the Department of Water Supply (DWS), County of Maui (when affecting the County water supply) to schedule and minimize water system shut down(s). The CONTRACTOR shall coordinate all scheduling of shut downs with the DHHL. Shut down times shall be limited to a maximum of 6-hour durations; however, this duration may be reduced by DHHL subject to water service continuity requirements and if so the CONTRACTOR shall comply at no additional cost to the State.

The CONTRACTOR shall notify all users affected by the disruption in water service in writing a minimum of two (2) weeks prior to any shut down and provide copies of the notification(s) to the Project Manager.

Payment for all work required to comply with the above items will not be paid for separately but shall be considered incidental to the various contract items for water system construction.

DAVID Y. IGE  
GOVERNOR OF HAWAII



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

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

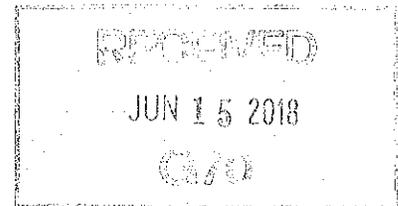
In reply, please refer to:  
File:

R10F559.FNL.18

June 12, 2018

The Honorable Jobie Masagatani  
Chairman  
Department of Hawaiian Home Lands  
P.O. Box 1879  
Honolulu, Hawaii 96805

Attention: Mr. James Richardson  
Project Manager



Dear Ms. Masagatani:

**Subject: NOTICE OF GENERAL PERMIT COVERAGE (NGPC)  
National Pollutant Discharge Elimination System (NPDES)  
Hoolehua Water System Improvements Site No. 2  
Kalamaula, Island of Molokai, State of Hawaii  
File No. HI R10F559**

This letter is to notify you that the **DEPARTMENT OF HAWAIIAN HOME LANDS** (hereinafter **PERMITTEE**) is now covered under the NPDES General Permit authorizing discharges of storm water associated with construction activities. Coverage under this general permit authorizes you to discharge only storm water to the receiving State waters discharge point(s) from the project location(s) identified in the revised Notice of Intent (NOI), dated May 28, 2018, **provided that you comply with Hawaii Administrative Rules (HAR) 11-54; HAR 11-55; HAR 11-55, Appendix A; HAR 11-55, Appendix C; and the information submitted in the Notice of Intent (NOI).** Discharges of non-storm water, toxics, and other water pollutants to State waters are not authorized by this NPDES General Permit. HAR 11-54 and 11-55 are available on the Department of Health (DOH), Clean Water Branch (CWB) website at: <http://health.hawaii.gov/cwb/>.

**This NGPC will take effect on the date of this notice. This NGPC will expire at midnight, December 5, 2018, or when amendments to HAR, Chapter 11-55, Appendix C, are adopted, whichever occurs first. Failure to comply with HAR 11-54; HAR 11-55; HAR 11-55, Appendix A; HAR 11-55, Appendix C; and information provided in the NOI is an enforceable violation and your NGPC may be terminated. If you violate Hawaii Revised Statutes (HRS), Chapter 342D, you may be subject to penalties of up to \$25,000 per violation per day and up to two (2) years in jail.**

**Falsification of information, including providing information in the NOI that does not match what is actually occurring at the project site/facility and failure to prepare the Storm Water Pollution Prevention Plan (SWPPP) prior to NOI submission, may result in criminal penalties for the Permittee and their authorized representative as provided in Clean Water Act, Section 309 and HRS, Section 342D-35.**

As a reminder, this general permit requires the Permittee to:

1. Notify DOH of the construction start date within seven (7) calendar days before the start of construction activities.
2. Complete and submit the Solid Waste Disclosure Form for Construction Sites to the DOH, Solid and Hazardous Waste Branch, Solid Waste Section, as specified on the form at least 30 calendar days before the start of the construction activities. The form can be downloaded at:  
<https://health.hawaii.gov/shwb/files/2018/04/swdiscformapr2018.pdf>.
3. Implement the SWPPP in accordance with HAR 11-55, Appendix C. The Director of Health reserves the right to require the Permittee to modify the SWPPP.
4. Submit a new NOI with filing fee and obtain a new NGPC for any revisions to the information submitted in the NOI (with the exception of changes to contact person information for non-transfer of ownerships and changes to the SWPPP). This NGPC cannot be modified.
5. Complete and submit the Notice of Cessation (NOC) within seven (7) calendar days after the end of the month that the subject project was completed.

All NGPC compliance submittals, including the NOC shall be submitted on the CWB Compliance Submittal Form for Individual NPDES Permits and NGPCs. This form shall be completed on the e-Permitting Portal located at:

<https://eha-cloud.doh.hawaii.gov/epermit>.

**The Permittee is responsible for obtaining other Federal, State, or local authorizations as required by law.**

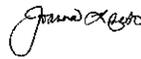
Please complete the DOH Customer Satisfaction Survey regarding your request for General Permit coverage. This brief survey is available on the e-Permitting Portal located at: <https://eha-cloud.doh.hawaii.gov/epermit>. Please use the Application Finder button and search for the "Customer Satisfaction Survey."

The Honorable Jobie Masagatani  
June 12, 2018  
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R10F559.FNL.18

If you have any questions, please contact the Enforcement Section or Mr. Darryl Lum of the Engineering Section, CWB, at (808) 586-4309.

Sincerely,



for

BRUCE S. ANDERSON, Ph.D.  
Director of Health

- c: Mr. James Richardson, DHHL [via e-mail [james.c.richardson@hawaii.gov](mailto:james.c.richardson@hawaii.gov) only]
- Mr. E. Halealoha Ayau, DHHL [via e-mail [e.halealoha.ayau@hawaii.gov](mailto:e.halealoha.ayau@hawaii.gov) only]
- Mr. Aaron Couch, G70  
[via e-mail [aaronc@g70.design](mailto:aaronc@g70.design) only]  
(w/Receipt No. 51947 for \$500 Filing Fee only)
- CWB, Maui District Health Office [via e-mail only]



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Suite 170  
Honolulu, HI 96813  
808.523.5866  
www.g70.design

# PRE-BID CONFERENCE REPORT

<b>TO:</b>	Jim Richardson, DHHL		
<b>FROM:</b>	G70		
<b>PROJECT(S):</b>	DHHL Molokai USDA-Funded Hoolehua Water System (PWS No. 230) Improvements		
<b>G70 PROJECT NOS.:</b>	216065-01	<b>DATE:</b>	July 7, 2018
<b>SUBJECT:</b>	Meeting Minutes (June 18, 2018)		
<b>LOCATION:</b>	DHHL Molokai District Office	<b>NO. OF PAGES:</b>	2
<b>THOSE PRESENT:</b>	See Sign-In Sheet		

*See: Pre-Bid Conference Agenda for IFB-18-HHL-008 and IFB-18-HHL-009*

1. Meeting commenced at 8:10 a.m. led by G70 (DHHL Personnel were delayed at the rental car company)
2. Proceed with Agenda items:
  - I. Introductions – Design Team (G70, Okahara & Ronald Ho), DHHL and Construction Manager (SSFM)
  - II. Schedule
  - III. Invitation for Bid (IFB) Overview
    - Project Funded by USDA and DHHL Trust Funds; No NAHASDA funding
    - Two Bid Packages
  - IV. Scope of Work
    - **Bid Package 1 – Ho’olehua**
    - Site 1 – Kauluwai Well Site
    - Site 3 – Kauluwai 1.0 MG Tank
    - Site 4 – Hoolehua 2x3.5 MG Tanks
    - Site 5 – Puu Kapele Avenue
    - Site 6 – Pressure Breaker Tank
    - Site 7 – Hoolehua Maintenance Yard
    - G70 provides summary of SOW for each site (as shown in Agenda)
    - Allowance for Archaeological Monitoring for each Site
    - NPDES Permit obtained for both Bid Packages

- Archaeological Monitoring Plan (AMP) and Historic Preservation Plan (HPP) both not approved, but currently under review at State Historic Preservation Division (SHPD)
  - State DOT Highways approval obtained for both Bid Packages
  - Site 3 – replacement of existing transite (asbestos-cement) pipe; any pipe disturbance may require removal of pipe; when new pipe is connected to the system, water may need to be shut off, so other users of the tank will need to be notified of the service interruption
  - Field office is budgeted, but Contractor not required to provide at every site
  - Site 3 – New Line will be within DHHL easement; Existing line is not within DHHL property
  - Site 4 – Also has separate emergency work package that is funded by DHHL (State CIP funds) and will added as part of the Addendum
  - Site 4 – significant vegetation removal required for access road construction; tree clearing of a certain truck diameter requires observations; bids should account for this
  - Site 7 – PRV Replacements along Farrington Avenue and Lihi Pali Avenue – replacement must be one-at-a-time.
  - Site 7 – Contractor is responsible for design and permitting of new maintenance facility
  - Site 7 – Electrical Engineer will clarify if service can come off the existing building or if an upgrade to the existing pole mounted transformer is required
  - **Bid Package 2 - Kalama'ula**
  - Site 2 – PRV Replacement will require temporary system shutdown
  - Site 2 – Access to tank site is via dirt road for which there are numerous rock obstructions which must be removed.
  - Site 2 – Steeper portions of new access roadway will be concrete pavement instead of asphalt concrete pavement
  - Site 2 – Contractor will evaluate existing condition of fire hydrant and gate valve; if evidence of corrosion is observed, gate valve, fire hydrant and riser shall be replaced.
- V. Procurement Requirements
- The Federal Wage Rate Schedule (Davis-Bacon) had the wrong date shown (01/27/2018). The Current WRS (04/27/18) is included in the IFB.
  - The State Wage Rate Schedule will be updated in Addendum No. 1
- VI. Contract Notice to Proceed, Time of Performance, Liquidated Damages and Change Orders
- DHHL has asked USDA to expedite review of Change Orders especially since USDA Engineer is based in Colorado
- VII. Requests for Information
- All requests shall be made in writing
- VIII. Information for Prospective Bidders
- IX. Special Conditions
- Some of the work will result in a reduction of the available water pressure, Contractor must coordinate with DHHL and Moloka'i Fire Department
  - USDA is requesting that pictures detailing progress be provided with all Contractor's Daily Report
- X. Summary of Bid Deadlines and Contract Award
- XI. Questions Received Prior to Pre-Bid Conference
- XII. Site Visit Schedule following Pre-Bid Conference
- Time of Bid Opening is 2:00 p.m. not 2:00 a.m.
- XIII. Additional Questions/Comments:
- Q1: Site 2 – What is the length of the 12-ft wide access road?

- A1: Approximately 5,200 linear feet
- Q2: When do you expect to issue NTP?
- A2: Approximately 1-1/2 to 2 months following Bid Open/Award; Time for USDA approval and execution of Contract
- Bid Open is at DHHL Offices on O'ahu not Moloka'i
- There are separate Bid Packages, make sure correct Notice of Intent to Bid is submitted.
- Reconvene at 9:30 a.m. to head out to Site visits.

3. Meeting adjourned

**IFB-18-HHL-009**  
HOOLEHUA WATER SYSTEM IMPROVEMENTS (PWS 230)  
BID PACKAGE 2 - KALAMAULA

ITEM	DATE	NAME	COMPANY	PROSPECTIVE BIDDER		QUESTION	RESPONSE		
				BID PACKAGE			DATE	BY	DETAIL
1	06/11/18	John N. Fermiza	ConstructConnect	Both		Is there a pre-bid meeting scheduled prior? Mandatory/Non-Mandatory?	06/14/18	DHHL	Non-mandatory Pre-Bid Conf. on 6/18/18.
2	06/11/18	John N. Fermiza	ConstructConnect	Both		How much is the estimate value of this project?	06/14/18	DHHL	Total value of planning, design, construction and inspection is \$22.3M.
3	06/11/18	John N. Fermiza	ConstructConnect	Both		Is there an addendum issued?	06/14/18	DHHL	Not yet, but addendum date listed in bid documents.
4	06/11/18	John N. Fermiza	ConstructConnect	Both		Can I request a copy of the plan holders list?	06/14/18	DHHL	Not available, potential bidders just go to our DHHL website and download the bid docs.
5	06/11/18	John N. Fermiza	ConstructConnect	Both		May I know the exact site location or address?	06/14/18	DHHL	See bid documents at our Department of Hawaiian Home Lands website and the plans shows where the sites are located on Molokai. These are water facilities in the mountains and therefore have no formal addresses.
6	06/11/18	John N. Fermiza	ConstructConnect	Both		Do you require union for all of your projects?	06/14/18	DHHL	No union workers are required in order to bid for these projects. However, the contractor needs to follow the State and Federal prevailing wage rates and (verify) that certain workers have their license in their respective fields, i.e. electrical, plumbing, etc.
7	06/22/18	Rod Ueunten	Keiwit Infrastructure West Co.	2		Technical Specification Section 02202 - Structural Excavation, Backfill and Compaction, paragraph 1.03 states that "A copy of the complete soils report is available on the DHHL website or the bid compact disc." However, the soils report was not included with the rest of bid documents. Please make provide a copy of the soils report to the bidders.	07/10/18	G70 / DHHL	No Geotechnical studies were done for Site 2
8	06/28/18	Paul Scott	Engineered Systems	2		Substitution Request: Pressure Reducing and Sustaining Valve; CAL-VAL to Singer; Pinned cover, Non-magnetic 316 SS Stem	07/10/18	G70 / DHHL	Substitution denied.
9	07/02/18	Keil Kamaile Alcon	Hi Built, LLC	2		I have a question on the Prebid Conference Report from G70 on the additional questions their was a question on package 2 how long is the 12' access road and the answer was 52,000 lineal feet is this correct?	07/10/18	G70 / DHHL	Value is incorrect, it should be 5,200 LF
10	07/02/18	Rod Ueunten	Keiwit Infrastructure West Co.	Both		Please provide Engineer's Estimate for this Project	07/10/18	G70 / DHHL	Bid Package 1 - \$ 13.7 M Bid Package 2 - \$ 2.6 M

SECTION 02640 – VALVES AND COCKS

PART 1 - GENERAL

- 1.01 GENERAL CONDITIONS: The General Conditions and Special Conditions preceding these specifications shall govern this section of the work.
- 1.02 REFERENCED DOCUMENTS: Work shall be governed by The Water System Standards, 2002, The Approved Material List and Standard Details for Water System Construction, 2002 and Water System Exterior Corrosion Control Standard, 1991, for the Department of Water Supply (DWS), County of Maui and all subsequent amendments, hereinafter referred to as the DWS Standards, and the Uniform Plumbing Code.

RELATED WORK IN OTHER SECTIONS:

Pipe and Fittings..... Section 02610  
Potable Water System.....Section 02713

- 1.03 DESCRIPTION OF WORK: This Section includes the furnishing and installation of a pressure reducing valve station which consists of a combination pressure reducing and pressure sustaining valve, pressure reducing valve, pressure relief valve, gate valves, ball valves, necessary piping, fittings and appurtenances as shown on the plans.

The equipment package shall include, but not limited to the following:

A. Pressure Reducing Valve:

- 1. Number and size required: 2 – 6 inches  
2 – 2 inches
- 2. Main valve trim: Bronze
- 3. End detail: S.E.
- 4. Pressure rating: 400 psi
- 5. Temperature range: 180° F
- 6. Rubber material: Buna-N
- 7. Coating: Fusion bonded epoxy
- 8. Desired Options: A: Flow Clean Strainer  
B: Pilot System Isolation cocks  
S: Opening Speed Control

D. Pilot Control System for Pressure Reducing Valve:

- 1. Pressure rating: 300 psi
- 2. Trim: Monel, Stainless Steel
- 3. Rubber material: Buna-N
- 4. Tubing and Fittings: Brass, Bronze, Copper

- 5. Operating Fluids: Water
- 6. Pressure reducing adjustment range: CRD: 15-75 psi

#### 1.04 SUBMITTALS

- A. Shop Drawings and Catalog Cuts: six (6) copies of dimensioned shop drawings of the valves and piping layout of the pressure reducing station.
- B. Manufacturer's Installation, Operation and Maintenance Manual including spare parts list and ordering instructions.

### PART 2 - PRODUCTS

#### 2.01 PRESSURE REDUCING VALVE

- A. This valve shall maintain a constant downstream pressure regardless of changing flow rate and/or inlet pressure.
- B. The valve shall be hydraulically operated, single diaphragm-actuated and globe pattern. The valve shall consist of three major components: the body with seat installed, the cover with bearings installed and the diaphragm assembly. The diaphragm assembly shall be the only moving part and shall form a sealed chamber in the upper portion of the valve, separating operating pressure from line pressure. Packing glands and/or stuffing boxes are not permitted and there shall be no pistons operating the main valve or pilot controls.
- C. No separate chambers shall be allowed between the main valve cover and body. Valve body and cover shall be of cast material. No fabrication or welding shall be used in the manufacturing process.
- D. The valve shall contain a resilient, synthetic rubber disc, with a rectangular cross-section contained on three and one-half sides by a disc retainer, forming a tight seal against a single removable seat insert. No O-ring type disc (circular, square or quad type) shall be permitted as the seating surface.

The disc guide shall be of the contoured type to permit smooth transition of flow and shall hold the disc firmly in place. The disc retainer shall be of a sturdy one-piece design capable of withstanding opening and closing shocks.

It must have straight edge sides and a radius at the top edge to prevent excessive diaphragm wear as the diaphragm flexes across this surface. No hourglass-shaped disc retainers shall be permitted and no V-type or slotted type disc guides shall be used.

- E. The diaphragm assembly containing a non-magnetic 303 stainless steel stem of sufficient diameter to withstand high hydraulic pressures, shall be fully guided at both ends by a bearing in the valve cover and an integral bearing in the valve seat. No center guides shall be permitted. The stem shall be drilled and tapped in the cover end to receive and affix such accessories as may be deemed necessary. The diaphragm assembly shall be the only moving part

and shall form a sealed chamber in the upper portion of the valve separating operating pressure from line pressure.

F. The diaphragm shall consist of nylon fabric bonded with synthetic rubber compatible with the operating fluid. The center hole for the main valve stem must be sealed by the vulcanized process or a rubber grommet sealing the center stem hole from the operating pressure. The diaphragm must withstand a Mullins Burst Test of a minimum of 600 psi per layer of nylon fabric and shall be cycle tested 100,000 times to insure longevity. The diaphragm shall not be used as the seating surface. The diaphragm shall be fully supported in the valve body and cover by machined surfaces which support no less than one-half of the total surface area of the diaphragm in either the fully open or fully closed position.

G. The main valve seat and the stem bearing in the valve cover shall be removable. The cover bearing and seat shall be threaded into the cover and body. The lower bearing of the valve stem shall be contained concentrically within the seat and shall be exposed to the flow on all sides to avoid deposits.

To insure proper alignment of the valve stem, the valve body and cover shall be machined with a locating lip. No "pinned" covers to the valve body shall be permitted.

Cover bearing, disc retainer and seat shall be made of the same material. All necessary repairs and/or modifications other than replacement of the main valve body shall be possible without removing the valve from the pipeline. Packing glands and/or stuffing boxes shall not be permitted and components including cast material shall be of North American manufacture.

H. The valve manufacturer shall be able to supply a complete line of equipment from 1 1/4" through 24" sizes and a complete selection of complementary equipment. The valve manufacturer shall also provide a computerized cavitation chart which shows flow rate, differential pressure, percentage of valve opening, Cv factor, system velocity and if there will be cavitation damage.

I. The valve shall be a Cla-Val Model No. 90-01 ABS KCX X101 Pressure Reducing Valve as manufactured by Cla-Val Co. or approved equal.

#### 2.04 PILOT CONTROL SYSTEM

A. The pressure reducing pilot control shall be a direct-acting, adjustable, spring-loaded, normally open, diaphragm valve designed to permit flow when controlled pressure is less than the spring setting. The pilot control is held open by the force of the compression on the spring above the diaphragm and it closes when the delivery pressure acting on the underside of the diaphragm exceeds the spring setting. The pilot control system shall include a fixed orifice. No variable orifices shall be permitted. The pilot system shall include an opening speed control.

B. The pilot control shall have a second downstream sensing port which can be utilized to install a pressure gauge.

- C. A full range of spring settings shall be available in ranges of 0 to 450 psi.
- D. A direct factory representative shall be made available for start-up service, inspection and necessary adjustments.

PART 3 - EXECUTION

- 3.01 Construction and installations shall conform to the applicable sections of the Water System Standards, Department of Water Supply, County of Maui, State of Hawaii, 2002, as amended.

END OF SECTION



**GENERAL NOTES**

- LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE BASED ON AVAILABLE "AS-BUILT" OF RECORD CONSTRUCTION PLANS AND ARE APPROXIMATE ONLY AND THEIR ACCURACY IS NOT GUARANTEED.
- EXISTING CONTOURS AND FEATURES ARE BASED ON "TOPOGRAPHIC SURVEY MAP MOLOKAI DHHL WATERLINE IMPROVEMENTS" PREPARED BY CONTROL POINT SURVEYING INC. DATED APRIL 12, 2017, AS AMENDED
- ELEVATIONS SHOWN WERE ESTABLISHED ONSITE USING GPS OBSERVATIONS AND ARE BASED HORIZONTAL DATUM: NAD 83 HI ZONE 2 STATE PLANE COORDINATES, U.S. FEET.
- EXISTING GRADES SHALL BE VERIFIED BY THE CONTRACTOR BEFORE PROCEEDING WITH GRADING WORK. SHOULD ANY DISCREPANCIES BE DISCOVERED IN THE EXISTING GRADES OR DIMENSIONS GIVEN ON THE PLANS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER BEFORE PROCEEDING ANY FURTHER WITH THE WORK, OTHERWISE THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR ANY COST INVOLVED IN THE CORRECTION OF CONSTRUCTION PLACED DUE TO SUCH DISCREPANCIES.
- THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF EXISTING UTILITIES WITHIN PROJECT LIMITS BEFORE COMMENCING WORK, AND WILL TO BE FULLY RESPONSIBLE FOR DAMAGES DUE TO THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ALL UNDERGROUND UTILITIES.
- THE CONTRACTOR SHALL REPORT ANY INCONSISTENCIES WITH THE PROPOSED PLAN TO THE OWNER'S REPRESENTATIVE AND SHALL DEMOLISH, REMOVE, OR RELOCATE ALL EXISTING UTILITIES, IMPROVEMENTS, ETC., INCONSISTENT WITH THE PROPOSED PLAN AS DIRECTED BY THE OWNER'S REPRESENTATIVE AND AT THE CONTRACTOR'S EXPENSE.
- THE LATEST REVISIONS OF THE "STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION," SEPTEMBER 1984 AND THE "HAWAII STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" AND ITS SPECIAL PROVISIONS 2005 SHALL BE INCLUDED AS PART OF THESE CONSTRUCTION PLANS. THE CONTRACTOR SHALL OBTAIN THE LATEST REVISIONS BEFORE COMMENCING CONSTRUCTION.
- SHOULD HISTORIC SITES SUCH AS WALLS, PLATFORMS, PAVEMENTS AND MOUNDS, OR REMAINS SUCH AS ARTIFACTS, BURIALS, CONCENTRATION OF CHARCOAL OR SHELLS BE ENCOUNTERED DURING CONSTRUCTION WORK, WORK SHALL CEASE IN THE IMMEDIATE VICINITY OF THE FIND AND THE FIND SHALL BE PROTECTED FROM FURTHER DAMAGE. THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE STATE HISTORIC PRESERVATION DIVISION (PH: 243-1285 OR 243-4640), WHICH WILL ASSESS THE SIGNIFICANCE OF THE FIND AND RECOMMEND MITIGATION MEASURES, IF NECESSARY.
- PURSUANT TO CHAPTER 6E OF THE HAWAII REVISED STATUTES, ALL CONTRACTORS SHALL ENSURE THAT IN THE EVENT THAT ANY HUMAN SKELETAL REMAINS ARE INADVERTENTLY DISCOVERED DURING CONSTRUCTION, THE REMAINS SHALL NOT BE MOVED AND ANY ACTIVITY IN THE IMMEDIATE AREA THAT COULD DAMAGE THE REMAINS OR THE POTENTIAL HISTORIC SITE SHALL CEASE AND THE DEPARTMENT OF LAND AND NATURAL RESOURCES' HISTORIC PRESERVATION DIVISION (PH: 243-1285 OR 243-4640), THE APPROPRIATE MEDICAL EXAMINER OR CORONER, AND THE POLICE DEPARTMENT (TELEPHONE: 244-6400), SHALL BE CONTACTED. ALL LESSEES USING EXISTING DIRT ROADS TO ACCESS THEIR PROPERTY SHALL CONTINUE TO BE PROVIDED ACCESS TO THEIR PROPERTY AT ALL TIMES DURING CONSTRUCTION ACTIVITIES BY THE CONTRACTOR.

**CONSTRUCTION NOTES WITHIN COUNTY RIGHT-OF-WAY**

- CONTRACTOR SHALL OBTAIN A PERMIT TO PERFORM WORK ON COUNTY HIGHWAYS FROM THE DEVELOPMENT SERVICES ADMINISTRATION TWO WEEKS PRIOR TO THE COMMENCEMENT OF WORK.
- STANDARD DETAIL DRAWINGS AND STANDARD SPECIFICATIONS OF THE DEPARTMENT OF PUBLIC WORKS SHALL BE INCLUDED AS PART OF THE CONSTRUCTION PLANS.
- ALL CONSTRUCTION WORK SHALL STRICTLY CONFORM TO THE LATEST VERSION OF THE "HAWAII STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION," AND ITS SPECIAL PROVISIONS, 2005 AND THE SEPTEMBER 1984 "STANDARD DETAILS" FOR PUBLIC WORKS CONSTRUCTION OF THE DEPARTMENT OF PUBLIC WORKS, AS AMENDED, OR THE REQUIREMENTS FOR WORK WITHIN STATE RIGHT-OF-WAY AS COVERED IN THE CONTRACT DOCUMENTS AS APPROVED BY THE DIRECTOR OF PUBLIC WORKS.
- IF EXISTING UTILITIES, WHETHER OR NOT SHOWN ON PLANS, ARE DAMAGED DURING CONSTRUCTION, THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, BE REQUIRED TO REPAIR SUCH UTILITIES.
- CONTRACTOR SHALL PROVIDE, INSTALL AND MAINTAIN ALL NECESSARY SIGNS, LIGHTS, FLARES, BARRICADES, AND OTHER PROTECTIVE DEVICES FOR THE PROTECTION, SAFETY AND CONVENIENCE OF THE PUBLIC, ACCORDING TO THE LATEST VERSION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICE FOR STREETS AND HIGHWAYS", AND TO THE RULES AND REGULATIONS GOVERNING THE USE OF TRAFFIC CONTROL DEVICES AT WORKSITES AND/OR ADJACENT TO PUBLIC STREETS AND HIGHWAYS ADOPTED BY THE HIGHWAY SAFETY COORDINATOR AND THE U.S. FEDERAL HIGHWAY ADMINISTRATION "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR HIGHWAY CONSTRUCTION AND MAINTENANCE OPERATIONS".
- THE DIRECTOR OF PUBLIC WORKS AND/OR THE DIRECTOR OF THE DEPARTMENT OF WATER SUPPLY HAS THE RIGHT TO STOP CONSTRUCTION SHOULD ANY WORK BE FOUND CONTRARY TO THE APPROVED CONSTRUCTION PLAN OR DETRIMENTAL TO THE PUBLIC'S INTEREST.
- THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE COUNTY DEVELOPMENT SERVICES ADMINISTRATION FIVE (5) DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, KEEP THE PROJECT AREA AND SURROUNDING AREA FREE FROM DUST NUISANCE. THE WORK SHALL BE IN CONFORMANCE WITH AIR POLLUTION CONTROL STANDARDS AND REGULATIONS OF THE STATE DEPARTMENT OF HEALTH AND COUNTY GRADING ORDINANCE.
- THE CONTRACTOR SHALL REMOVE ALL SILT AND DEBRIS RESULTING FROM HIS WORK AND DEPOSITED IN DRAINAGE FACILITIES, ROADWAYS AND OTHER AREAS. THE COSTS INCURRED FOR ANY NECESSARY REMEDIAL ACTION ORDERED BY THE DIRECTOR OF PUBLIC WORKS SHALL BE PAID BY THE CONTRACTOR.
- CONSTRUCTION DEBRIS AND WASTES SHALL BE DEPOSITED AT AN APPROPRIATE WORK SITE. THE CONTRACTOR SHALL INFORM THE DIRECTOR OF PUBLIC WORKS OF THE LOCATION OF THE DISPOSAL SITES. THE DISPOSAL SITE MUST FULFILL THE REQUIREMENTS OF THE GRADING ORDINANCE.

**CONSTRUCTION NOTES WITHIN COUNTY RIGHT-OF-WAY CONT'D.**

- CONSTRUCTION DEBRIS AND WASTES SHALL BE DEPOSITED AT AN APPROPRIATE WORK SITE. THE CONTRACTOR SHALL INFORM THE DIRECTOR OF PUBLIC WORKS OF THE LOCATION OF THE DISPOSAL SITES. THE DISPOSAL SITE MUST FULFILL THE REQUIREMENTS OF THE GRADING ORDINANCE.
- IF THE CLEARANCE BETWEEN A WASTEWATER LINE AND A NEW OR EXISTING WATERLINE IS EIGHTEEN INCHES (18") OR LESS, THE WASTEWATER LINE SHALL BE CONCRETE-JACKETED IN ACCORDANCE WITH THE STANDARD DETAILS OF PUBLIC WORKS CONSTRUCTION DATED SEPTEMBER 1984, AS AMENDED.
- SHOULD HISTORIC SITES SUCH AS WALLS, PLATFORMS, PAVEMENTS OR MOUNDS, OR REMAINS SUCH AS ARTIFACTS, BURIALS, CONCENTRATION OF SHELL OR CHARCOAL BE ENCOUNTERED DURING CONSTRUCTION ACTIVITIES, WORK SHALL CEASE IMMEDIATELY IN THE IMMEDIATE VICINITY OF THE FIND AND THE FIND SHALL BE PROTECTED FROM FURTHER DAMAGE. THE CONTRACTOR AND/OR LANDOWNER SHALL IMMEDIATELY CONTACT THE STATE HISTORIC PRESERVATION DIVISION (PH: 243-1285 OR 243-4640), WHICH WILL ASSESS THE SIGNIFICANCE OF THE FIND AND RECOMMEND AN APPROPRIATE MITIGATION MEASURE, IF NECESSARY.
- PURSUANT TO MAUI COUNTY CODE SECTION 3.44.015(C), THE COUNTY OF MAUI IS NOT RESPONSIBLE FOR ANY PARK, ROADWAY, EASEMENT (INCLUDING BUT NOT LIMITED TO DRAINAGE, SEWER, ACCESS, RECLAIMED WATER, OR AVIGATION EASEMENT), OR ANY OTHER INTEREST IN REAL PROPERTY SHOWN ON THIS MAP OR SHOWN ON THESE PLANS, UNLESS THE MAUI COUNTY COUNCIL HAS ACCEPTED ITS DEDICATION BY A RESOLUTION APPROVED BY A MAJORITY OF A COUNCIL'S MEMBERS AT A REGULAR OR SPECIAL MEETING OF THE MAUI COUNTY COUNCIL.
- STEEL PLATE WARNING SIGNS ARE REQUIRED FOR ALL STEEL PLATES IN THE COUNTY RIGHT-OF-WAY.
- WHEELCHAIR RAMP INSPECTION/CERTIFICATION FORMS SHALL BE REQUIRED FOR ALL NEWLY CONSTRUCTED RAMPS.
- ALL STRIPING AND PAVEMENT MARKINGS SHALL BE OF THERMOPLASTIC MATERIAL.
- COMPACTION REQUIREMENTS
  - TESTING OF MATERIALS SHALL BE CONDUCTED BY AN APPROVED INDEPENDENT TESTING AGENCY IN ACCORDANCE WITH ASTM STANDARD METHODS OR AS SPECIFIED BY THE DEPARTMENT OF PUBLIC WORKS, ENGINEERING DIVISION, AS FOLLOWS:
    - EMBANKMENT/SELECT BORROW AND SUBGRADE MATERIALS: ONE (1) COMPACTION TEST PER 600 SQUARE YARDS PER LIFT;
    - AGGREGATE SUBBASE COURSE: ONE (1) COMPACTION TEST PER 400 SQUARE YARDS; ONE (1) GRADATION AND SAND EQUIVALENT TEST PER LIFT PER PROJECT;
    - AGGREGATE BASE COURSE: ONE (1) COMPACTION TEST PER 300 SQUARE YARDS PER LIFT OF MATERIAL; ONE (1) GRADATION AND SAND EQUIVALENT TEST PER PROJECT;
    - ASPHALT CONCRETE PAVEMENT OR ASPHALT TREATED BASE COURSE; THREE (3) A.C. CORES FOR THICKNESS AND DENSITY TESTS PER PROJECT;
    - TRENCH BACKFILL MATERIAL: ONE (1) TEST FOR EACH 300 LINEAL FEET OF TRENCH PER LIFT OF MATERIAL.
  - CONTRACTOR SHALL SUBMIT ALL TESTING REPORTS INCLUDING RESULTS TO THE COUNTY'S INSPECTION AGENCY FOR REVIEW AND APPROVAL PRIOR TO COUNTY'S ACCEPTANCE OF WORK.
  - THE CONTRACTOR SHALL BE REQUIRED TO NOTIFY THE COUNTY OF ANY TESTING FAILURES AND CORRECT EACH FAILURE PRIOR TO PROCEEDING TO THE NEXT PHASE OF CONSTRUCTION.

**DEPARTMENT OF PUBLIC WORKS NOTES**

- THE CONTRACTOR SHALL ALLOW FOUR WEEKS TO OBTAIN A GRADING PERMIT FROM THE COUNTY DEVELOPMENT SERVICES ADMINISTRATION PRIOR TO COMMENCEMENT OF ANY CLEARING AND GRUBBING. A SATISFACTORY DRAINAGE AND EROSION CONTROL PLAN SHALL BE SUBMITTED IN THE EVENT THE GRUBBING AREA EXCEEDS ONE ACRE OR THE PROPOSED CUT OR FILL IS GREATER THAN 15 FEET IN HEIGHT. THE CONTRACTOR SHALL PROVIDE, INSTALL AND MAINTAIN ALL BEST MANAGEMENT PRACTICE MEASURES.
- THE CONTRACTOR SHALL PROVIDE, INSTALL AND MAINTAIN ALL NECESSARY SIGNS, LIGHTS, FLARES, BARRICADES, AND OTHER PROTECTIVE DEVICES FOR THE PROTECTION, SAFETY AND CONVENIENCE OF THE PUBLIC, ACCORDING TO THE LATEST VERSION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICE FOR STREETS AND HIGHWAYS", AND TO THE RULES AND REGULATIONS GOVERNING THE USE OF TRAFFIC CONTROL DEVICES AT WORKSITES AND/OR ADJACENT TO PUBLIC STREETS AND HIGHWAYS ADOPTED BY THE HIGHWAY SAFETY COORDINATOR AND THE U.S. FEDERAL HIGHWAY ADMINISTRATION "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR HIGHWAY CONSTRUCTION AND MAINTENANCE OPERATIONS."
- STANDARD DETAIL DRAWINGS OF THE DEPARTMENT OF PUBLIC WORKS AND THE "HAWAII STANDARD SPECIFICATIONS FOR ROAD, AND BRIDGE CONSTRUCTION" AND ITS SPECIAL PROVISIONS 2006 SHALL BE INCLUDED AS PART OF THE CONSTRUCTION PLANS.
- ALL CONSTRUCTION WORK SHALL STRICTLY CONFORM TO THE APPLICABLE SECTIONS OF THE 2005 HAWAII STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, AND THE SEPTEMBER 1984 "STANDARD DETAILS" FOR PUBLIC WORKS CONSTRUCTION OF THE DEPARTMENT OF PUBLIC WORKS, AS AMENDED.
- THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, KEEP THE PROJECT AREA AND SURROUNDING AREA FREE FROM DUST NUISANCE. THE WORK SHALL BE IN CONFORMANCE WITH AIR POLLUTION CONTROL STANDARDS AND REGULATIONS OF THE STATE DEPARTMENT OF HEALTH AND COUNTY GRADING ORDINANCE.
- THE CONTRACTOR SHALL REMOVE ALL SILT AND DEBRIS RESULTING FROM HIS WORK AND DEPOSITED IN DRAINAGE FACILITIES, ROADWAYS AND OTHER AREAS. THE COSTS INCURRED FOR ANY NECESSARY REMEDIAL ACTION ORDERED BY THE DIRECTOR OF PUBLIC WORKS SHALL BE PAID BY THE CONTRACTOR.

**PUBLIC HEALTH, SAFETY AND CONVENIENCE NOTES**

- THE CONTRACTOR SHALL OBSERVE AND COMPLY WITH ALL FEDERAL, STATE AND COUNTY LAWS REQUIRED FOR THE PROTECTION OF PUBLIC HEALTH AND SAFETY AND ENVIRONMENTAL QUALITY.
- THE CONTRACTOR, AT HIS OWN EXPENSE, SHALL KEEP THE PROJECT AND ITS SURROUNDING AREAS FREE FROM DUST NUISANCE. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR POLLUTION CONTROL STANDARDS AND REGULATIONS OF THE STATE DEPARTMENT OF HEALTH. THE COUNTY MAY REQUIRE SUPPLEMENTARY MEASURES AS NECESSARY.
- 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.

**GRADING NOTES**

- FINISH SPOT ELEVATIONS AND FINISH CONTOURS, AS SHOWN ON PLAN REPRESENTS FINISH GRADING. THE SITE WORK CONTRACTOR SHALL COORDINATE WITH THE LANDSCAPE CONTRACTOR FOR THE LOCATION AND DEPTH OF TOPSOIL. THE FINISH SUBGRADE SHALL REFLECT THE FINISH GRADE LESS SPECIFIED TOPSOIL DEPTH.
- THE CONTRACTOR SHALL IMPLEMENT AND MAINTAIN THE MEASURES OF THE BEST MANAGEMENT PRACTICE (BMP) PLAN. ALL GRADING OPERATIONS SHALL BE PERFORMED IN CONFORMANCE WITH THE APPLICABLE PROVISIONS OF THE WATER POLLUTION CONTROL AND WATER QUALITY STANDARDS CONTAINED IN THE PUBLIC HEALTH REGULATIONS, STATE DEPARTMENT OF HEALTH, ON WATER POLLUTION CONTROL AND WATER QUALITY STANDARDS.
- THE CONTRACTOR SHALL REMOVE ALL SILT AND DEBRIS RESULTING FROM HIS WORK AND DEPOSITED IN DRAINAGE FACILITIES, ROADWAYS, AND OTHER AREAS. THE COSTS INCURRED FOR ANY NECESSARY REMEDIAL ACTION BY THE STATE DEPARTMENT OF HEALTH SHALL BE PAYABLE BY THE CONTRACTOR.
- THE CONTRACTOR, AT HIS EXPENSE, SHALL KEEP THE PROJECT AREA AND SURROUNDING AREA FREE OF DUST NUISANCE. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR POLLUTION CONTROL STANDARDS AND REGULATIONS OF THE STATE DEPARTMENT OF HEALTH.
- CONSTRUCTION DEBRIS AND WASTES SHALL BE DEPOSITED AT AN APPROPRIATE SITE. THE CONTRACTOR SHALL INFORM THE ENGINEER OF THE LOCATION OF DISPOSAL SITES. THE DISPOSAL SITE MUST ALSO FULFILL REQUIREMENTS OF THE GRADING ORDINANCES.
- THE CONTRACTOR SHALL NOT DEMOLISH OR CLEAR ANY STRUCTURE, SITE OR VACANT LOT WITHOUT FIRST ASCERTAINING THE PRESENCE OR ABSENCE OF RODENTS WHICH MAY ENDANGER THE PUBLIC HEALTH BY DISPERSAL FROM SUCH PREMISES. SHOULD SUCH INSPECTION REVEAL THE PRESENCE OF SUCH RODENTS, THE CONTRACTOR SHALL ERADICATE SUCH RODENTS BEFORE DEMOLISHING OR CLEARING SAID STRUCTURE, SITE OR VACANT LOT.
- THE FOLLOWING MEASURES SHALL BE TAKEN TO CONTROL DUST AND EROSION DURING THE SITE DEVELOPMENT PERIOD:
  - MINIMIZE TIME OF CONSTRUCTION.
  - RETAIN EXISTING GROUND COVER UNTIL THE LATEST DATE TO COMPLETE CONSTRUCTION.
  - CONSTRUCT REMAINING PERMANENT EROSION AND DRAINAGE CONTROL FEATURES AS EARLY AS POSSIBLE.
  - USE TEMPORARY AREA SPRINKLERS IN NON-ACTIVE CONSTRUCTION AREAS WHEN GROUND COVER IS REMOVED.
  - STATION WATER TRUCK ON-SITE DURING CONSTRUCTION PERIOD TO PROVIDE FOR IMMEDIATE SPRINKLING, AS NEEDED, IN ACTIVE CONSTRUCTION AREAS (WEEKENDS AND HOLIDAYS INCLUDED).
  - USE TEMPORARY BERMS AND CUT-OFF DITCHES, WHERE NEEDED, FOR CONTROL OF EROSION. IMPLEMENT AND MAINTAIN THE MEASURES OF THE BMP PLAN.
  - GRADED AREAS SHALL BE THOROUGHLY WATERED AFTER CONSTRUCTION ACTIVITY HAS CEASED FOR THE DAY AND ON WEEKENDS.
  - ALL CUT AND FILL SLOPES SHALL BE SODED OR PLANTED IMMEDIATELY AFTER GRADING WORK HAS BEEN COMPLETED.

- EMBANKMENT/SELECT BORROW AND SUBGRADE MATERIALS: ONE (1) COMPACTION TEST PER 600 SQUARE YARDS PER LIFT;
- AGGREGATE SUBBASE COURSE: ONE (1) COMPACTION TEST PER 400 SQUARE YARDS; ONE (1) GRADATION AND SAND EQUIVALENT TEST PER LIFT PER PROJECT;
- AGGREGATE BASE COURSE: ONE (1) COMPACTION TEST PER 300 SQUARE YARDS PER LIFT OF MATERIAL; ONE (1) GRADATION AND SAND EQUIVALENT TEST PER PROJECT;
- ASPHALT CONCRETE PAVEMENT OR ASPHALT TREATED BASE COURSE; THREE (3) A.C. CORES FOR THICKNESS AND DENSITY TESTS PER PROJECT;
- TRENCH BACKFILL MATERIAL: ONE (1) TEST FOR EACH 300 LINEAL FEET OF TRENCH PER LIFT OF MATERIAL.

**COMPACTION REQUIREMENTS**

- TESTING OF MATERIALS SHALL BE CONDUCTED BY AN APPROVED INDEPENDENT TESTING AGENCY IN ACCORDANCE WITH ASTM STANDARD METHODS OR AS SPECIFIED BY THE DEPARTMENT OF PUBLIC WORKS, ENGINEERING DIVISION, AS FOLLOWS:
  - EMBANKMENT/SELECT BORROW AND SUBGRADE MATERIALS: ONE (1) COMPACTION TEST PER 600 SQUARE YARDS PER LIFT;
  - AGGREGATE SUBBASE COURSE: ONE (1) COMPACTION TEST PER 400 SQUARE YARDS; ONE (1) GRADATION AND SAND EQUIVALENT TEST PER LIFT PER PROJECT;
  - AGGREGATE BASE COURSE: ONE (1) COMPACTION TEST PER 300 SQUARE YARDS PER LIFT OF MATERIAL; ONE (1) GRADATION AND SAND EQUIVALENT TEST PER PROJECT;
  - ASPHALT CONCRETE PAVEMENT OR ASPHALT TREATED BASE COURSE; THREE (3) A.C. CORES FOR THICKNESS AND DENSITY TESTS PER PROJECT;
  - TRENCH BACKFILL MATERIAL: ONE (1) TEST FOR EACH 300 LINEAL FEET OF TRENCH PER LIFT OF MATERIAL.
- CONTRACTOR SHALL SUBMIT ALL TESTING REPORTS INCLUDING RESULTS TO THE COUNTY'S INSPECTION AGENCY FOR REVIEW AND APPROVAL PRIOR TO COUNTY'S ACCEPTANCE OF WORK.
- THE CONTRACTOR SHALL BE REQUIRED TO NOTIFY THE COUNTY OF ANY TESTING FAILURES AND CORRECT EACH FAILURE PRIOR TO PROCEEDING TO THE NEXT PHASE OF CONSTRUCTION.

**ARCHAEOLOGICAL NOTE**

IN THE EVENT THAT ANY HISTORICAL RESOURCES, INCLUDING HUMAN SKELETAL REMAINS, STRUCTURAL REMAINS, CULTURAL DEPOSITS, OR LAVA TUBES ARE IDENTIFIED DURING CONSTRUCTION ACTIVITIES, CEASE WORK IN THE IMMEDIATE VICINITY OF THE FIND, PROTECT THE FIND FROM DISTURBANCE, AND CONTACT THE STATE HISTORIC PRESERVATION DIVISION AT (808) 243-1285.

**EROSION CONTROL NOTES**

- DURING CONSTRUCTION, PREVENTIVE MEASURES SHALL BE USED TO CONTROL FORESEEABLE DUST, EROSION OR SEDIMENTATION PROBLEMS WHICH MAY ARISE AS WORK PROGRESSES.
- FUGITIVE DUST AND SOLID WASTE DISPOSAL DURING GRUBBING AND GRADING ACTIVITIES SHALL MEET THE REQUIREMENTS OF STATE OF HAWAII ADMINISTRATIVE RULES, TITLE 11, CHAPTER 60, AIR POLLUTION CONTROL AND CHAPTER 56, SOLID WASTE MANAGEMENT CONTROL.
- ALL AREAS WHICH ARE AT FINAL GRADE SHALL BE IMMEDIATELY HYDROMULCHED AND SEEDED WITH NATIVE AKIAKI GRASS AT A RATE OF 5 POUNDS PER 1000 SQUARE FEET OR PERMANENTLY LANDSCAPED.
- REGRASS ALL EXPOSED AREAS.

EFFECTIVE AUGUST 10, 1998, THE MAUI COUNTY CODE GRADING ORDINANCE HAS BEEN REVISED. ALL GROUND DISTURBING ACTIVITIES IN MAUI COUNTY WILL NOW BE MORE CLOSELY MONITORED. ALL GRADING, GRUBBING, STOCKPILING, EXCAVATIONS ETC., SHALL PROVIDE MEASURES TO THE MAXIMUM EXTENT POSSIBLE TO PREVENT DAMAGE TO THE ENVIRONMENT BY CONTAINING POLLUTANTS, INCLUDING SEDIMENT, DUST, AND OTHER CONTAMINANTS FROM DISCHARGING OFF A CONSTRUCTION SITE.

THEREFORE, CONTRACTOR SHALL CONTROL DUST AND OTHER SEDIMENT FROM THE PROJECT SITE, EVEN WHEN A GRADING PERMIT IS NOT REQUIRED.

A GRADING PERMIT WILL BE REQUIRED IF ANY OF THE FOLLOWING APPLY TO THE PROPOSED CONSTRUCTION:

- THE GENERAL DRAINAGE PATTERNS ARE TO BE ALTERED.
- THE EXCAVATION, FILL OR STOCKPILING IS MORE THAN 100 CY OF MATERIAL (50 CY IN SPECIAL MANAGEMENT AREA).
- THE EXISTING GROUND ELEVATION IS TO BE CHANGED BY MORE THAN 4 FEET AT ANY LOCATION (2 FEET IN SPECIAL MANAGEMENT AREAS).
- AN AREA LARGER THAN 1 ACRE IS TO BE GRUBBED (CLEARED).

A GRADING PERMIT WILL NOT BE REQUIRED FOR EXCAVATION AND BACKFILL FOR STRUCTURES THAT HAVE BEEN ISSUED A BUILDING PERMIT OR FOR CESSPOOLS AND SEPTIC TANKS AUTHORIZED BY THE STATE DEPARTMENT OF HEALTH.

FOR MORE DETAILED INFORMATION, REFER TO THE MAUI COUNTY CODE CHAPTER 20.08, "SOIL EROSION AND SEDIMENT CONTROL".

**MINIMUM BEST MANAGEMENT PRACTICES**

- DRAINAGE**  
HANDLE DRAINAGE TO CONTROL EROSION, PREVENT DAMAGE TO DOWNSTREAM PROPERTIES AND RETURN WATERS TO THE NATURAL DRAINAGE COURSE IN A MANNER WHICH MINIMIZES SEDIMENTATION OR OTHER POLLUTION TO THE MAXIMUM EXTENT PRACTICABLE.
- DUST CONTROL**  
CONTROL DUST EMISSIONS TO THE MAXIMUM EXTENT PRACTICABLE THROUGH BMPs SUCH AS WATER SPRINKLING, DUST FENCES, LIMITING AREA OF DISTURBANCE AND TIMELY GRASSING OF FINISHED AREAS.
- VEGETATION**  
RETAIN NATURAL VEGETATION, ESPECIALLY GRASSES, WHENEVER FEASIBLE. AVOID STORAGE OF GRUBBED MATERIAL NEAR WATER COURSES.
- EROSION CONTROL**  
STABILIZE ALL DISTURBED AREAS WITH EROSION CONTROL MEASURES SUCH AS VEGETATION, RUNOFF DIVERSION, CHECK DAMS, MULCHING, BLANKETS, BONDED FIBER MATRICES AND VEHICLE WHEEL WASH FACILITIES.
- SEDIMENT CONTROL**  
CAPTURE SEDIMENT TRANSPORTED IN RUNOFF TO MINIMIZE THE SEDIMENT FROM LEAVING THE SITE WITH METHODS SUCH AS SEDIMENT BASINS, SEDIMENT TRAPS, SILT FENCES, SAND BAGS, AND VEGETATED FILTER STRIPS.
- MATERIAL AND WASTE MANAGEMENT**  
PROPERLY STORE TOXIC MATERIALS AND PREVENT THE DISCHARGE OF POLLUTANTS ASSOCIATED WITH CONSTRUCTION MATERIALS.
- TIMING OF CONTROL MEASURE IMPLEMENTATION**  
TIMING OF CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE APPROVED EROSION CONTROL PLAN. DISTURBED AREAS OF CONSTRUCTION SITES THAT WILL NOT BE RE-DISTURBED FOR TWENTY-ONE (21) DAYS OR MORE WILL BE STABILIZED (GRASSSED OR GRAVELED) BY NO LATER THAN THE FOURTEENTH (14TH) DAY AFTER THE LAST DISTURBANCE.

**ABBREVIATIONS**

Z	ANGLE	MAX	MAXIMUM
A	AREA	MECH	MECHANICAL
AC	ASPHALT CONCRETE OR ACRE	MEP	MECHANICAL, ELECTRICAL AND PLUMBING
ACS	ACRES	MB	MAILBOX OR METER BOX
A/C	AIR CONDITIONING	MH	MANHOLE
APPROX	APPROXIMATE	MIN	MINIMUM
ARCH	ARCHITECTURAL	MON	MONUMENT
ARV	AIR RELEASE VALVE	M/N	METER NUMBER
ATT	AT&T CABLE	NO.	NUMBER
AVE	AVENUE	NON-POT	NON-POTABLE
Ø	BASELINE	O.C.	ON CENTER
BC	BOTTOM OF CURB	OH, O/H	OVERHEAD
BFP	BACK FLOW PREVENTER ASSEMBLY	PAVT	PAVEMENT
BLDG	BUILDING	PC	POINT OF CURVATURE
BOT	BOTTOM	PCC	POINT OF COMPOUND CURVE
BW	BOTTOM OF WALL	PERF	PERFORATED
C&C	CITY AND COUNTY	PI	POINT OF INTERSECTION
Ø	CENTERLINE	PVC	POINT OF INTERSECTION ON VERTICAL CURVE
C	CHORD	PL, P	PROPERTY LINE
CATV	CABLE TELEVISION	PM	PARKING METER
CB	CATCH BASIN	POC	POINT ON CURVE
CHWS	CHILL WATER SERVICE	POT	POTABLE
CHWR	CHILL WATER RETURN	PP	POWER POLE
CF	CURB FACE	PRC	POINT OF REVERSE CURVE
A.L.	CHAIN LINK	PRV	PRESSURE REDUCING VALVE
CMU	CONCRETE MASONRY UNIT	PSL	PEDESTRIAN SIGNAL LIGHT
COL	CLEAN OUT	PT	POINT OF TANGENCY
CO	COLUMN	PVC	POLYVINYL CHLORIDE OR POINT OF VERTICAL CURVE
COMM	COMMUNICATION	PVI	POINT OF VERTICAL INTERSECTION
CONC	CONCRETE	PVT	POINT OF VERTICAL TANGENCY
CONN	CONNECTION	R	RADIUS
CRM	CONCRETE RUBBLE MASONRY	REF, REFL	REFLECTOR
CW	COLD WATER	ROW, R/W	RIGHT-OF-WAY
COTG	CLEAN OUT TO GRADE	S	SEWER, SLOPE OR SPREAD
D	DIAMETER, DEPTH OR DRAIN	SC	SIGNAL CORPS
DI	DRAIN INLET	SCH 40	SCHEDULE 40
Ø	DIAMETER	SCH 80	SCHEDULE 80
Ø	DIAMETER	SCMH	SIGNAL CORPS MANHOLE
DCV	DETECTOR CHECK VALVE	SDMH	STORM DRAIN MANHOLE
DEFL	DEFLECTION	SF	SQUARE FOOT, SQUARE FEET
DET	DETAIL	SL	STREET LIGHT
DMH	DRAIN MANHOLE	SLB	STREET LIGHT BOX
D.P.P	DEPT OF PLANNING AND PERMITTING	SMH	SEWER MANHOLE
DS	DOWNSPOUT	SPR	SPRINKLER
DSP	DRY STAND PIPE	ST	STREET
DHHL	DEPARTMENT OF HAWAIIAN HOME LANDS	STA	STANDARD
DWWS	DRAWINGS	STRUCT	STRUCTURAL
DWS	DEPARTMENT OF WATER SUPPLY	SW, S/W	SIDEWALK
DWY	DRIVEWAY	TC	TOP OF CURB
E, ELEC	ELECTRIC	TDC	TOP OF DROP/CURB
ELEV, EL	ELEVATION	T	TANGENT OR TELEPHONE
EG	EXISTING GROUND	TEL	TELEPHONE
EOP	EDGE OF PAVEMENT	TG	TOP OF GRATE
EP	ELECTRICAL POLE	THRU	THROUGH
EX, EXIST, (E)	EXISTING	TMK	TAX MAP KEY
FA	FIRE ALARM	TP	TOP OF PIPE
FDC	FIRE DEPT CONNECTION	TRC	TOP OF ROLLED CURB
FG	FINISH GRADE	TS	TOP OF STEM
FH	FIRE HYDRANT	TSL	TRAFFIC SIGNAL LIGHT
FL	FLOW LINE	TSLB	TRAFFIC SIGNAL LIGHT BOX
FM	FORCE MAIN	TV	TOP OF VALVE
FS	FINISH SURFACE	TW	TOP OF WALL
FT	FEET	TYP	TYPICAL
G	GAS	UP	UTILITY POLE
GB	GRADE BREAK	UP/SL	UTILITY POLE WITH STREET LIGHT
GI	GRADED INLET	VAR	VARIES OR VARIABLE
GMH	GAS MANHOLE	VB	VALVE BOX
GND	GROUND	W	WATER
GP	GUARD POST/GUY POLE/GATE POST	WL	WATER LINE
GV	GATE VALVE	WM	WATER METER
GW	GUY WIRE	WMB	WATER METER BOX
H, HT	HEIGHT	WMH	WATER MANHOLE
HD	HOSE BIBB	WSE	WATER SERVICE ELEVATION
HECO	HAWAIIAN ELECTRIC COMPANY	WV	WATER VALVE
HDPE	HIGH DENSITY POLYETHYLENE	X-WALK	CROSSWALK
HP	HIGH POINT		
HW	HOT WATER		
ICV	IRRIGATION CONTROL VALVE		
INV	INVERT		
IRR	IRRIGATION		
JRS	JOINT TRUNKING SYSTEM		
JKT	JACKET		
L	LENGTH OR LENGTH OF CURVE		
LID	LOW IMPACT DEVELOPMENT		
LP	LAMP OR LIGHT POLE		
LPT	LOW POINT		

REVISION	DATE	BRIEF	MADE BY	APPROVED

**DEPARTMENT OF HAWAIIAN HOME LANDS**  
STATE OF HAWAII  
**USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NO. 2 - KALAMAILA IMPROVEMENTS JOB NO.**

**NOTES 1**

DESIGNED BY: PLM      CHECKED BY: RMKC      DRAWN BY: CKM  
111 S. KING STREET, SUITE 170  
HONOLULU, HAWAII 96813  
808.523.5868  
WWW.G7O.DESIGN      JUNE 2018

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

SIGNATURE  
LICENSE EXP. DATE: APRIL 30, 2020

DWG. NO.  
**C001**  
SHEET 2 OF 25

FILE	POCKET	FOLDER	NO.

## WATER SYSTEM

- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF WATER SUPPLY (DWS), IN WRITING, ONE (1) WEEK PRIOR TO COMMENCEMENT OF WORK.
- ALL MATERIALS USED AND METHOD OF CONSTRUCTION OF WATER SYSTEM FACILITIES SHALL BE IN ACCORDANCE WITH THE LATEST REVISIONS OF DWS STANDARDS. CONTRACTOR SHALL OBTAIN THE LATEST REVISIONS OF THE DWS STANDARD DETAILS BEFORE COMMENCING CONSTRUCTION.
- ALL WATER SYSTEM WORK SHALL BE PERFORMED BY CONTRACTORS POSSESSING VALID STATE OF HAWAII CONTRACTOR'S LICENSES, REGARDLESS OF THE VALUE OF THE WORK.
- THE EXACT DEPTH AND LOCATION OF EXISTING WATERLINES, SERVICE LATERALS AND OTHER UTILITIES ARE NOT KNOWN. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE SAME PRIOR TO TRENCHING FOR THE NEW WATERLINE. THE COST OF LOWERING, RELOCATING OR ADJUSTING EXISTING WATERLINES, SERVICE LATERALS AND OTHER UTILITIES SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE NEW WATERLINE, UNLESS NOTED OTHERWISE, AND WILL NOT BE PAID FOR SEPARATELY.
- CONCRETE FOR REACTION BLOCKS AND ANCHOR BLOCKS SHALL BE DWS CLASS 2500.
- THE MAXIMUM DISTANCE BETWEEN VALVE NUT AND TOP OF VALVE MANHOLE COVER SHALL BE THREE (3) FEET.
- THE CONTRACTOR SHALL SUBMIT A MATERIALS LIST TO DWS FOR APPROVAL PRIOR TO CONSTRUCTION.
- CONNECTION TO DWS SYSTEM:
  - THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING ALL NECESSARY FITTINGS AND OTHER MATERIALS AND EQUIPMENT REQUIRED FOR THE HOOK-UP. HE SHALL VERIFY THE EXACT LOCATION, DEPTH, TYPE, AND CONDITION OF THE EXISTING LINE BEFORE ORDERING MATERIALS FOR THE HOOK-UP. HE SHALL, HOWEVER, CHECK WITH DWS BEFORE EXCAVATING FOR VERIFICATION PURPOSES.
  - WHENEVER FEASIBLE, MECHANICAL JOINT FITTINGS SHALL BE USED FOR BURIED APPLICATIONS, AND FLANGED JOINT FITTINGS SHALL BE USED FOR EXPOSED APPLICATIONS.
  - AUTHORIZED DWS PERSONNEL MAY BE REQUIRED TO MAKE THE FINAL CONNECTION TO THE EXISTING LINE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS INCURRED BY DWS FOR SAID WORK, INCLUDING THE COST OF PRESSURE TESTING AND DISINFECTION.
  - IF THE DWS PROVIDES ONLY INSPECTION AND SUPERVISING OPERATIONS, AND DOES NOT PROVIDE PERSONNEL FOR THE ACTUAL CONNECTION, THE CONTRACTOR SHALL PROVIDE ALL PIPEFITTERS AND LABORS TO MAKE THE CONNECTION.
  - THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING ALL MATERIAL, EQUIPMENT AND LABOR FOR TRENCH EXCAVATION, BACKFILLING, CLEANING AND CHLORINATION, PAVING, AND OTHER WORK NECESSARY TO COMPLETE THE HOOK-UP, AS DIRECTED BY AND TO THE SATISFACTION OF DWS.
- MINIMUM COVER OVER WATER MAIN, 6" DIAMETER OR LARGER, SHALL BE 3'-0". MINIMUM COVER FOR 4" DIAMETER SHALL BE 2'-6". MINIMUM COVER FOR DIAMETERS LESS THAN 4" SHALL BE 1'-6".
- BOLTS FOR EXPOSED FLANGED DUCTILE IRON PIPE JOINTS SHALL BE EITHER SILICON BRONZE BOLTS AND NUTS OR 316 STAINLESS STEEL BOLTING WITH THE HEAVY DUTY STAINLESS STEEL NUTS (ONLY) FURNISHED WITH TRIPAC 2000 BLUE COATING SYSTEM. ANTI-SIZE SHALL NOT BE USED. T-BOLTS FOR DUCTILE IRON MECHANICAL JOINT (MJ) PIPE AND FITTING CONNECTIONS IN UNDERGROUND SITUATIONS SHALL BE ONE OF THE FOLLOWING SYSTEMS:
  - 316 STAINLESS STEEL T-BOLTS WITH THE HEAVY DUTY STAINLESS STEEL NUTS (ONLY) FURNISHED WITH TRIPAC 2000 BLUE COATING SYSTEM. ANTI-SIZE SHALL NOT BE USED.
  - COR-TEN T-BOLTS AND NUTS WITH HIGH GRADE ZINC SACRIFICIAL ANODES, EQUIVALENT TO "DURATRON" SACRIFICIAL "SAC-NUT" MODULES, INSTALLED ON THE NUTS FOR ALL STANDARD COR-TEN T-BOLTS.
  - COR-TEN T-BOLTS AND NUTS BOTH FACTORY COATED WITH TRIPAC 2000 BLUE COATING SYSTEM BY "TRIPAC FASTENERS".
- ALL BURIED METALS SHALL BE WRAPPED WITH POLY-WRAP. FOR ALL BURIED INSTALLATIONS OF DUCTILE IRON PIPE AND FITTINGS, POLY-WRAP IS REQUIRED EXCEPT WITHIN CONCRETE JACKETS.
- LUBRICATE HYDRANT NOZZLE THREADS WITH NON-TOXIC GREASE.
- THE CONTRACTOR SHALL PAINT AND NUMBER THE FIRE HYDRANT. NUMBERING TO BE FURNISHED BY DWS.
- WATER MAINS AND APPURTENANCES SHALL BE SUBJECT TO HYDROSTATIC TESTING IN ACCORDANCE WITH THE LATEST REVISION OF AWWA C600, UNDER THE "HYDROSTATIC TESTING" SECTION, TO A PRESSURE OF AT LEAST 1.5 TIMES THE WORKING PRESSURE. UNLESS OTHERWISE STATED IN THE CONSTRUCTION DOCUMENTS OR LIMITED BY THE PRESSURE RATING OF EQUIPMENT, THE PRESSURE TEST AND LEAKAGE TEST SHALL BE PERFORMED AT 225 POUNDS PER SQUARE INCH PRESSURE.
- THE DEVELOPER SHALL SUBMIT A COST LIST ALONG WITH AN AFFIDAVIT FOR THE WATER SYSTEM PRIOR TO ACCEPTANCE.
- THE CONTRACTOR SHALL SUBMIT TWO SETS OF RECORD DRAWINGS VIA A CONSULTANT PRIOR TO ACCEPTANCE OF THE WATER SYSTEM. AN ELECTRONIC IMAGE FILE IN TIFX FORMAT SHALL BE PROVIDED TO THE DWS FOR ALL PROJECTS.

## ADDITIONAL WATER SYSTEM NOTES

### WATER SERVICE LATERAL CONNECTIONS:

- THE CONTRACTOR SHALL FURNISH ALL MATERIAL, EQUIPMENT, AND LABOR FOR RE-CONNECTION OF CONSUMER'S PIPE TO NEW SERVICE LATERAL WITH COPPER PIPING AT THE CONTRACTOR'S EXPENSE. THE SIZE OF COPPER PIPE AND FITTINGS SHALL BE DETERMINED BY DWS OR AS SPECIFIED ON PLANS. THE USE OF PLASTIC MATERIALS IS PROHIBITED.
  - ALL WATER METER INSTALLATIONS/RELOCATIONS SHALL BE COORDINATED WITH DWS PERSONNEL. ONLY DWS PERSONNEL IS AUTHORIZED TO REMOVE AND RELOCATE WATER METER.
  - IF CONSUMER'S PIPE IS COPPER OR PVC, USE BRONZE PACK JOINT COUPLING. IF CONSUMER'S PIPE IS ANY OTHER MATERIAL, USE APPROPRIATE DI-ELECTRIC COUPLING.
  - THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING WATER SERVICE TO CONSUMERS AT ALL TIMES. IF WATER SERVICE DISRUPTION IS NECESSARY, THE CONTRACTOR SHALL COORDINATE ALL DISRUPTIONS OF SERVICE WITH CONSUMERS.
- THE CONTRACTOR SHALL FURNISH AND INSTALL DUCTILE IRON NIPPLES WHETHER OR NOT SPECIFIED ON THE CONSTRUCTION PLANS FOR COMPLETE INSTALLATION OF THE WATERLINE AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR SHALL FURNISH TEMPORARY CLEANOUTS WHEN NECESSARY TO TEST, FLUSH, AND CHLORINATE THE WATERLINE AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR SHALL CONCRETE PLUG ALL OPEN ENDS OF ABANDONED WATERLINES AT THE CONTRACTOR'S EXPENSE, WHETHER OR NOT SHOWN ON THE CONSTRUCTION PLANS.
- THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL PORTIONS OF ABANDONED WATERLINES THAT ARE EXPOSED OR WITHIN 12-INCHES OF THE GROUND SURFACE AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR SHALL ADJUST TO FINISHED PAVEMENT GRADES, ALL EXISTING VALVE BOXES AND MANHOLES, INCLUDING FRAME AND COVERS FOR ALL UTILITIES (I.E., WATER, SEWER, DRAIN, ETC.) AFFECTED BY PAVEMENT RESTORATION AT THE CONTRACTOR'S EXPENSE, WHETHER SHOWN OR NOT SHOWN ON THE CONSTRUCTION PLANS.
- THE CONTRACTOR SHALL RESTORE ALL ROAD IMPROVEMENTS, DISTURBED OR DAMAGED DURING CONSTRUCTION IN ACCORDANCE WITH THE "HAWAII STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" AND ITS SPECIAL PROVISIONS 2005 AS AMENDED, TO THE SATISFACTION OF THE DEPARTMENT OF PUBLIC WORKS AND WASTE MANAGEMENT. ROAD IMPROVEMENTS INCLUDE, BUT ARE NOT LIMITED TO, PAVEMENT, PAVEMENT MARKERS, STRIPING, SPEED HUMPS.
- THE CONTRACTOR SHALL MAINTAIN FOUR FEET OF CLEARANCE WHEN TRENCHING OR EXCAVATING NEAR ANY UTILITY POLES. CONSTRUCTION EQUIPMENT SHALL MAINTAIN A TEN FOOT RADIAL CLEARANCE AROUND ANY OVERHEAD CONDUCTOR.
- THE CONTRACTOR SHALL ADEQUATELY BRACE UTILITY POLES DURING TRENCHING AND BACKFILLING OPERATIONS. AFFECTED UTILITY COMPANIES SHALL BE NOTIFIED 72 HOURS IN ADVANCE OF WORK NEAR UTILITY POLES.

## NOTES FOR CONSTRUCTION WITHIN STATE RIGHT-OF-WAY CONT'D

- CONTRACTOR SHALL EXERCISE CARE WHEN PERFORMING WORK IN OR ADJACENT TO THE STATE HIGHWAY RIGHT-OF-WAY. DAMAGES TO EXISTING FACILITIES SHALL BE IMMEDIATELY REPORTED TO THE RESPECTIVE UTILITY COMPANIES, AND/OR COUNTY OR STATE AGENCIES. THE REPAIR WORK SHALL BE DONE AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR SHALL NOTIFY THE STATE HIGHWAYS' HIGHWAY LIGHTING AND TRAFFIC SIGNAL SUPERVISOR (PH: 873-3535), THREE (3) WORKING DAYS PRIOR TO COMMENCING WORK.
- TRAFFIC SIGNALS SHALL BE KEPT OPERATIONAL DURING CONSTRUCTION, AND IF DEEMED NECESSARY BY THE DISTRICT ENGINEER OR HIS REPRESENTATIVE, A TEMPORARY VEHICLE DETECTION DEVICE SHALL BE INSTALLED. ALL WORK SHALL BE DONE IN ACCORDANCE TO THE REQUIREMENTS OF THE DEPARTMENT OF TRANSPORTATION AND PAID FOR BY THE CONTRACTOR.
- THE PERMIT TO PERFORM WORK UPON STATE HIGHWAYS MAY BE REVOKED BECAUSE OF DEFAULT IN ANY OF THE FOLLOWING, BUT NOT LIMITED TO, CONDITIONS:
  - WORK PERFORMED BEFORE OR AFTER PERMITTED HOURS.
  - FAILURE TO MAINTAIN ROADWAY SURFACES IN A SMOOTH AND SAFE CONDITION.
  - FAILURE TO CLEAN UP CONSTRUCTION DEBRIS GENERATED FROM PROJECT WORK.
  - FAILURE TO PROVIDE PROPER TRAFFIC CONTROL.
  - FAILURE TO REPLACE DAMAGED PAVEMENT MARKINGS AND SIGNS.

## CHLORINATION OF WATER SYSTEMS

- WATER MAINS SHALL BE DISINFECTED IN ACCORDANCE WITH AWWA STANDARD FOR DISINFECTING WATER MAINS, ANSI/AWWA C651-99, SECTION 4.4.3, CONTINUOUS FEED METHOD.
- THE STORAGE TANK SHALL BE DISINFECTED IN ACCORDANCE WITH AWWA STANDARD FOR DISINFECTING WATER STORAGE FACILITIES, ANSI/AWWA C652-92, SECTION 4.1, CHLORINATION METHOD 1.
- LIQUID CHLORINE OR CALCIUM HYPOCHLORITE THAT HAS BEEN TESTED AND CERTIFIED AS MEETING THE SPECIFICATIONS OF ANSI/NSF STANDARD 60, DRINKING WATER TREATMENT CHEMICALS-HEALTH EFFECTS, SHALL BE USED FOR THE CHLORINATION OF THE WATER MAINS AND STORAGE TANK.
- PRIOR TO CHLORINATION, THE WATER MAINS AND STORAGE TANK SHALL BE THOROUGHLY FLUSHED.
- THE INTERIOR SURFACES OF THE WATER MAINS AND STORAGE TANK SHALL BE EXPOSED TO THE CHLORINATING SOLUTION, BY COMPLETELY FILLING THE MAIN TO REMOVE ALL AIR POCKETS, FOR A MINIMUM OF 24 HOURS AND THE FREE CHLORINE RESIDUAL SHALL NOT BE LESS THAN 10 PPM AFTER SUCH TIME.
- SHOULD CALCIUM HYPOCHLORITE BE USED, NO SOLID AND/OR UNDISSOLVED PORTION OF THE COMPOUND SHALL BE INTRODUCED INTO ANY SECTION OF THE WATER MAINS AND STORAGE TANK TO BE CHLORINATED.
- AT THE END OF THE 24 HOUR DISINFECTION PERIOD, REPRESENTATIVE SAMPLES SHALL BE TAKEN AND ANALYZED TO ASSURE A FREE CHLORINE RESIDUAL OF AT LEAST 10 PPM.
- SHOULD THE FREE CHLORINE RESIDUAL RESULTS INDICATE ADEQUATE CHLORINATION, THE WATER MAINS AND STORAGE TANK SHALL BE THOROUGHLY FLUSHED AND FILLED WITH WATER FROM THE EXISTING SYSTEM AND AGAIN TESTED FOR FREE CHLORINE RESIDUAL. THE FLUSHING SHALL BE CONSIDERED ADEQUATE IF THE FREE CHLORINE RESIDUAL TEST RESULTS INDICATE THAT THE WATER IN THE WATER MAINS AND STORAGE TANK HAS A COMPARABLE CHLORINE RESIDUAL AS THE WATER IN THE EXISTING SYSTEM.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER DISPOSAL OF CHLORINATED WATER TO SAFEGUARD PUBLIC HEALTH AND ENVIRONMENT IN ACCORDANCE WITH APPLICABLE STATE DEPARTMENT OF HEALTH REQUIREMENTS. A NEUTRALIZING CHEMICAL SHALL BE APPLIED TO THE WATER TO BE WASTED TO THOROUGHLY NEUTRALIZE THE CHLORINE RESIDUAL REMAINING IN THE WATER IN ACCORDANCE WITH AWWA C651-99, SECTION 4.5.2, AND APPENDIX C.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FROM THE DEPARTMENT OF HEALTH, CLEAN WATER BRANCH, PRIOR TO THE START OF CONSTRUCTION FOR THE DISPOSAL OF WATER USED FOR HYDROTESTING AND CHLORINATION.
- FOLLOWING THE ACCEPTABLE FLUSHING OF THE WATER MAINS AND STORAGE TANK, TWO CONSECUTIVE SETS OF ACCEPTABLE SAMPLES, TAKEN AT LEAST 24 HOURS APART FROM REPRESENTATIVE POINTS, SHALL BE SUBJECT TO MICROBIOLOGICAL TESTS (TOTAL AND FECAL COLIFORM). FOR WATERLINES, AT LEAST ONE SET OF SAMPLES SHALL BE COLLECTED FROM EVERY 1,200 FEET OF THE NEW WATER MAIN, PLUS ONE FROM THE END OF THE LINE AND AT LEAST ONE SET FROM EACH BRANCH. FOR THE STORAGE TANK, THE SAMPLE SHALL BE COLLECTED FROM THE TANK'S EFFLUENT LINE SAMPLE TAP. POSITIVE OR INVALID TEST RESULTS WILL NOT BE ACCEPTABLE AND THE PROCESS WILL BE REPEATED.
- ALL MEASUREMENTS FOR CHLORINE RESIDUAL SHALL BE ANALYZED USING E.P.A. APPROVED METHODS FOR DRINKING WATER.
- ALL MICROBIOLOGICAL TEST SHALL BE PERFORMED BY A LABORATORY APPROVED BY THE DEPARTMENT OF HEALTH, STATE OF HAWAII.
- THE DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH ALL OF THE FOREGOING.
- SEE ANSI/AWWA C651-99, SECTION 4.3.6 FOR SWABBING CHLORINATION PROCEDURES.

### NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEMS (NPDES) AND OTHER AUTHORIZATIONS

THE GENERAL CONTRACTOR/DEVELOPER/OWNER OF THE PROJECT SHALL OBTAIN NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT COVERAGE(S) FOR THE FOLLOWING:

- STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES THAT DISTURB ONE (1) ACRE OR MORE, AND
- DISCHARGES OF HYDROTESTING EFFLUENT, DEWATERING EFFLUENT, AND WELL DRILLING EFFLUENT TO STATE WATERS.

IN ACCORDANCE WITH STATE LAW, ALL DISCHARGES RELATED TO PROJECT CONSTRUCTION OR OPERATION ARE REQUIRED TO COMPLY WITH STATE WATER QUALITY STANDARDS (HAWAII ADMINISTRATIVE RULES, CHAPTER 11- 54). BEST MANAGEMENT PRACTICES SHALL BE USED TO MINIMIZE OR PREVENT THE DISCHARGE OF SEDIMENT, DEBRIS, AND OTHER POLLUTANTS TO STATE WATERS. PERMIT COVERAGE IS AVAILABLE FROM THE DEPARTMENT OF HEALTH, CLEAN WATER BRANCH AT: <http://health.hawaii.gov/cwb/>

THE GENERAL CONTRACTOR/DEVELOPER/OWNER IS RESPONSIBLE FOR OBTAINING OTHER FEDERAL, STATE, OR LOCAL AUTHORIZATIONS AS REQUIRED BY LAW.

### OTHER

- ALL MATERIALS (PIPE, PIPE LUBRICANTS, PAINTS, SEALANTS, FORM OIL, CONCRETE ADMIXTURES, ETC.) IN DIRECT CONTACT WITH THE POTABLE WATER SHALL HAVE NATIONAL SANITATION FOUNDATIONS (NSF) APPROVALS. THE CONTRACTOR SHALL SUBMIT THESE APPROVALS TO THE OWNER/ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ITS APPLICATION.

## NOTES FOR CONSTRUCTION WITHIN STATE RIGHT-OF-WAY

- THE CONTRACTOR SHALL OBTAIN A PERMIT TO PERFORM WORK UPON STATE HIGHWAYS FROM THE STATE HIGHWAYS' DISTRICT ENGINEER, AT 650 PALAPALA DRIVE, KAHULULU, MAUI, PRIOR TO COMMENCEMENT OF WORK WITHIN THE STATE'S HIGHWAY RIGHT-OF-WAY.
- CONSTRUCTION AND RESTORATION OF ALL EXISTING HIGHWAY FACILITIES WITHIN THE STATE'S RIGHT-OF-WAY SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE SECTIONS OF THE CURRENT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, AND THE SPECIFICATIONS FOR INSTALLATION OF MISCELLANEOUS IMPROVEMENTS WITHIN STATE HIGHWAYS, OF THE STATE HIGHWAYS DIVISION.
- WORK MAY BE PERFORMED ONLY BETWEEN THE HOURS OF 8:30 A.M. AND 3:00 P.M., MONDAY THROUGH FRIDAY, EXCEPT HOLIDAYS, UNLESS OTHERWISE PERMITTED BY THE DISTRICT ENGINEER.

DURING WORK HOURS, ONLY ONE LANE OF TRAFFIC SHALL BE CLOSED, UNLESS OTHERWISE APPROVED IN WRITING BY THE DISTRICT ENGINEER. ALL LANE CLOSURES MUST BE APPROVED BY HDOT FIFTEEN (15) WORKING DAYS IN ADVANCE. ALL LANE CLOSURES AND DETOURS SHALL REQUIRE ADVISORY SIGNS AND AN ADVERTISEMENT PER SECTION 645.03 OF THE STANDARD SPECIFICATIONS.

AT CERTAIN LOCATIONS, "NO LANE CLOSURE" WILL BE ALLOWED DURING THE "BACK TO SCHOOL JAM", THANKSGIVING WEEKEND, CHRISTMAS / NEW YEAR PERIOD AND AT OTHER TIMES AS DIRECTED BY THE HIGHWAYS DIVISION.

- 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 PUBLIC TRAFFIC. ALL SUCH PROTECTIVE FACILITIES AND PRECAUTIONS TO BE TAKEN SHALL CONFORM WITH THE "ADMINISTRATIVE RULES OF HAWAII GOVERNING THE USE OF TRAFFIC CONTROL DEVICES AT WORKSITES ON OR ADJACENT TO PUBLIC STREETS AND HIGHWAYS", ADOPTED BY THE DIRECTOR OF TRANSPORTATION, AND THE CURRENT U.S. FEDERAL HIGHWAYS ADMINISTRATION "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, PART VI- STANDARDS AND GUIDES FOR TRAFFIC CONTROLS FOR STREET AND HIGHWAY CONSTRUCTION, MAINTENANCE, UTILITY AND INCIDENT MANAGEMENT OPERATIONS". IF LANE CLOSURES ARE REQUIRED DURING CONSTRUCTION, A TRAFFIC CONTROL PLAN SHALL BE INCORPORATED INTO THE CONSTRUCTION PLANS AND MUST BE APPROVED BY THE DIVISION PRIOR TO THE ISSUANCE OF THE PERMIT.

- THE MINIMUM PAVEMENT STRUCTURE SHALL CONSIST OF:

### A. RESIDENTIAL DRIVEWAYS, ON MINOR HIGHWAYS:

- 2-1/2" HOT MIX ASPHALT (HMA) PAVEMENT (MIX IV), 8" AGGREGATE BASE COURSE OR 2-1/2" HMA PAVEMENT AND 8" HMA BASE COURSE OR HMA PAVEMENT.

- 4" CLASS "A" CONCRETE REINFORCED WITH 6" x 6" - W2.9 x W2.9 WIRE MESH ON 12" AGGREGATE SUBBASE, IF DEEMED NECESSARY BY THE ENGINEER.

### B. COMMERCIAL DRIVEWAYS, SIDE ROADS, AND UTILITY INSTALLATIONS ON MINOR HIGHWAYS

- 4" HMA PAVEMENT (MIX IV), 8" AGGREGATE BASE COURSE AND 12" SUBBASE, OR 4" HMA PAVEMENT (MIX IV) AND 8" HMA BASE COURSE OR HMA PAVEMENT.

- 6" OF CLASS "A" CONCRETE REINFORCED WITH 6" x 6" - W2.9 x W2.9 WIRE MESH ON 12" AGGREGATE SUBBASE, IF DEEMED NECESSARY BY THE ENGINEER.

### C. CHANNELIZED INTERSECTIONS AND UTILITY INSTALLATIONS ON MAJOR HIGHWAYS

- 4" HMA PAVEMENT (MIX IV), 8" HMA PAVEMENT BASE COURSE AND 12" AGGREGATE SUBBASE, OR 4" ASPHALT CONCRETE (MIX IV) AND 12" ASPHALT CONCRETE BASE COURSE OR ASPHALT CONCRETE, OR MATCH EXISTING PAVEMENT STRUCTURE, WHICHEVER IS GREATER.

- NO MATERIAL AND/OR EQUIPMENT SHALL BE STOCKPILED OR OTHERWISE STORED WITHIN HIGHWAY RIGHT-OF-WAY EXCEPT AT LOCATIONS DESIGNATED IN WRITING AND APPROVED BY THE DISTRICT ENGINEER.

- COMPACTION TESTS SHALL BE TAKEN IN ACCORDANCE WITH THE SPECIFICATIONS FOR INSTALLATION OF MISCELLANEOUS IMPROVEMENTS WITHIN STATE HIGHWAYS, AS FOLLOWS:

- SUBBASE: ONE (1) COMPACTION TEST PER LIFT PER 200 LINEAL FEET OF ROADWAY.

- BASE COURSE: ONE (1) COMPACTION TEST PER LIFT PER 200 LINEAL FEET PF ROADWAY.

- ONE (1) COMPACTION TEST PER LIFT PER 300 LINEAL FEET OF TRENCH.

- A COPY OF THE TEST RESULTS SHALL BE SUBMITTED TO THE DISTRICT ENGINEER.

- PRIOR TO COMMENCING TRENCH EXCAVATION WORK, THE CONTRACTOR SHALL TAKE A PROFILE ALONG THE CENTERLINE OF PROPOSED UTILITY TRENCH. THIS INFORMATION SHALL BE USED IN THE VERIFICATION OF RESTORING THE ROADWAY TO ITS ORIGINAL CONDITION. A COPY OF THE THE PROFILE SHALL BE SUBMITTED TO THE DISTRICT ENGINEER.

- THE CONTRACTOR SHALL PROVIDE ADEQUATE AND SAFE NON-SKID BRIDGING MATERIAL, INCLUDING SHORING, OVER TRENCHES IN PAVEMENT AREAS. THE BRIDGING SHALL BE ABLE TO SUPPORT ALL TYPES OF VEHICULAR TRAFFIC. BRIDGING MATERIALS SHALL NOT BE USED ON HIGH SPEED ROADWAYS, WHICH ARE ROADS WITH A DESIGN SPEED OF 50 MPH OR HIGHER. SMOOTH RIDING CONNECTION BETWEEN ROADWAY SURFACES AND BRIDGING MATERIAL SHALL BE PROVIDED. SHOULD COMPLAINTS BE RECEIVED DUE TO NOISE GENERATING FRO THIS WORK, THE CONTRACTOR SHALL IMMEDIATELY ADDRESS THOSE COMPLAINTS.

- THE CONTRACTOR SHALL MAKE EVERY EFFORT TO MINIMIZE THE USE AND DURATION OF USE OF STEEL PLATES. THE STATE MAY REQUIRE THE BACKFILLING AND PATCHES OF TRENCHES DUE TO THE EXCESSIVE USAGE OF STEEL PLATES.

- UNLESS OTHERWISE NOTED, NO TRENCH SHALL BE OPENED MORE THAN 300 FEET IN ADVANCE OF INSTALLED AND TESTED PIPELINE AND/OR DUCTLINE.

- EXISTING DRAINAGE SYSTEMS SHALL BE FUNCTIONAL AT ALL TIMES.

- THE CONTRACTOR SHALL EXERCISE CARE TO MINIMIZE DAMAGES TO EXISTING HIGHWAY IMPROVEMENTS. ALL DAMAGES SHALL BE REPAIRED BY THE CONTRACTOR, AT HIS EXPENSE, TO THE SATISFACTION OF THE DISTRICT ENGINEER.

- APPROVAL OF PERMIT CONSTRUCTION PLANS SHALL BE VALID FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF NOTIFICATION OF APPROVAL TO THE APPLICANT. IN THE EVENT CONSTRUCTION DOES NOT COMMENCE WITHIN THIS ONE-YEAR PERIOD, THE APPLICANT WILL BE REQUIRED TO RESUBMIT THE CONSTRUCTION PLANS FOR DIVISION'S REVIEW AND REAPPROVAL.

- ALL REGULATORY, GUIDE, AND CONSTRUCTION SIGNS AND BARRICADES SHALL HAVE A HIGH-INTENSITY REFLECTIVE BACKGROUND.

- THE CONTRACTOR SHALL INFORM THE STATE HIGHWAYS' PERMIT OFFICE (PH: 873-3535) AT LEAST TWO (2) DAYS PRIOR TO CLOSING ANY LANES.

- DRIVEWAYS SHALL BE KEPT OPEN UNLESS THE OWNERS OF THE PROPERTIES USING THESE RIGHTS-OF-WAY ARE OTHERWISE PROVIDED FOR SATISFACTORILY.

- WHERE PEDESTRIAN WALKWAYS EXIST, THEY SHALL BE MAINTAINED IN A SAFE AND PASSABLE CONDITION, OR OTHER FACILITIES FOR PEDESTRIANS SHALL BE PROVIDED. PASSAGES BETWEEN WALKWAYS AT INTERSECTIONS SHALL LIKEWISE BE PROVIDED.

- THE CONTRACTOR SHALL REFERENCE TO THE SATISFACTION OF THE DISTRICT ENGINEER, ALL EXISTING TRAFFIC SIGNS, POSTS, AND PAVEMENT MARKINGS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. THE CONTRACTOR SHALL REPLACE OR REPAIR ALL TRAFFIC SIGNS, POSTS, AND PAVEMENT MARKINGS DISTURBED BY HIS ACTIVITIES, AT HIS EXPENSE, UNLESS DIRECTED OTHERWISE BY THE DISTRICT ENGINEER OR HIS REPRESENTATIVE.

- THE PERMIT TO PERFORM WORK UPON STATE HIGHWAY MAY BE REVOKED BECAUSE OF DEFAULT IN ANY OF THE FOLLOWING, BUT NOT LIMITED TO, CONDITIONS:
  - WORK PERFORMED BEFORE OR AFTER PERMITTED HOURS.
  - FAILURE TO MAINTAIN ROADWAY SURFACES IN A SMOOTH AND SAFE CONDITION.
  - FAILURE TO CLEAN UP CONSTRUCTION DEBRIS GENERATED FROM PROJECT WORK.
  - FAILURE TO PROVIDE PROPER TRAFFIC CONTROL.
  - FAILURE TO REPLACE DAMAGED PAVEMENT MARKINGS AND SIGNS.
  - FAILURE TO MAINTAIN HIGHWAY LIGHTS AND TRAFFIC SIGNAL SYSTEMS.
  - FAILURE TO ADDRESS PUBLIC COMPLAINTS TO THE SATISFACTION OF THE DISTRICT ENGINEER.

- THE CONTRACTOR SHALL NOTIFY THE STATE HIGHWAYS PERMIT OFFICE (873-3535) AT LEAST TWO WORKING DAYS PRIOR TO PERFORMING ANY TRENCH RESTORATION WORK. THIS WORK SHALL INCLUDE ANY BACKFILLING AND COMPACTING OF TRENCH MATERIAL; ANY PAVING AND COMPACTING OF BASE COURSE MATERIAL; AND ANY PAVING OPERATIONS. ANY TRENCH RESTORATION WORK PERFORMED BY THE CONTRACTOR THAT IS NOT WITNESSED BY A STATE REPRESENTATIVE WILL BE REQUIRED TO BE REMOVED AND RESTORED WITH A STATE REPRESENTATIVE PRESENT. ALL RESTORATION WORK WILL BE AT THE CONTRACTOR'S EXPENSE.

- TEMPORARY COLD MIX TRENCH PATCHES WILL BE PERMITTED IN ANY GIVEN AREA FOR A MAXIMUM DURATION OF TWO WEEKS, AND SHALL BE A MINIMUM OF 2 INCHES THICK. ALL TEMPORARY PATCHES SHALL BE PLACED OVER PROPERLY PLACED AND COMPACTED BACKFILL AND BASE COURSE LAYERS. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL TEMPORARY PATCHES AND TO MAKE REPAIRS TO UNSATISFACTORY PATCHES WITHIN 24 HOURS.

- THE CONTRACTOR WILL MAKE EVERY EFFORT TO MINIMIZE THE USE AND THE DURATION OF USE OF STEEL PLATES. THE STATE MAY REQUIRE THE BACKFILLING AND PATCHES OF TRENCHES DUE TO THE EXCESSIVE USAGE OF STEEL PLATES.

- PLASTIC MARKING TAPE. PROVIDE PLASTIC MARKING TAPE THAT IS ACID AND ALKALI RESISTANT POLYETHYLENE FILM 6 INCHES WIDE WITH MINIMUM THICKNESS OF 0.004 INCH. PROVIDE APE WITH MINIMUM STRENGTH OF 1750 PSI LENGTHWISE AND 1500 PSI CROSSWISE. MANUFACTURE TAPE WITH INTEGRAL WIRES, FOIL BACKING OR OTHER MEANS TO ENABLE DETECTION BY METAL DETECTOR WHEN THE TAPE IS BURIED UP TO 3 FEET DEEP. MANUFACTURE TAPE SPECIFICALLY FOR MARKING AND LOCATING UNDERGROUND UTILITIES. PROVIDE THE METALLIC CORE OF THE TAPE ENCASED IN A PROTECTIVE JACKET OR PROVIDED WITH OTHER MEANS TO PROTECT IT FROM CORROSION. CONFIRM TO THE FOLLOWING TAPE COLOR AND BEAR A CONTINUOUS PRINTED INSCRIPTION DESCRIBING THE SPECIFIC UTILITY.

RED: ELECTRIC  
YELLOW: GAS, OIL, DANGEROUS MATERIALS  
ORANGE: TELEPHONE, TELEGRAPH, TELEVISION, POLICE, AND FIRE COMMUNICATIONS  
BLUE: WATER SYSTEMS  
GREEN: SEWER SYSTEM

- THE CONTRACTOR SHALL PROVIDE THE DISTRICT ENGINEER WITH AS-BUILT PLANS UPON COMPLETION OF THE WORK DONE IN THE STATE RIGHT-OF-WAY. THIS SHALL BE DONE PRIOR TO THE DEPARTMENT'S RELEASE OF THE PERFORMANCE BOND.

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REVISION	DATE	BRIEF	MADE BY	APPROVED
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**DEPARTMENT OF HAWAIIAN HOME LANDS**  
STATE OF HAWAII

**USDA/RUS FUNDED MOLOKAI  
HOOLEHUA WATER SYSTEM IMPROVEMENTS  
SITE NO. 2 - KALAMAILA IMPROVEMENTS  
JOB NO.**

## NOTES 2

DESIGNED BY: PLM	CHECKED BY: RMKC	DRAWN BY: CKM
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**G7O**

111 S. KING STREET, SUITE 170  
HONOLULU, HAWAII 96813  
808.523.5866  
WWW.G7O.DESIGN

JUNE 2018

FILE	POCKET	FOLDER	NO.
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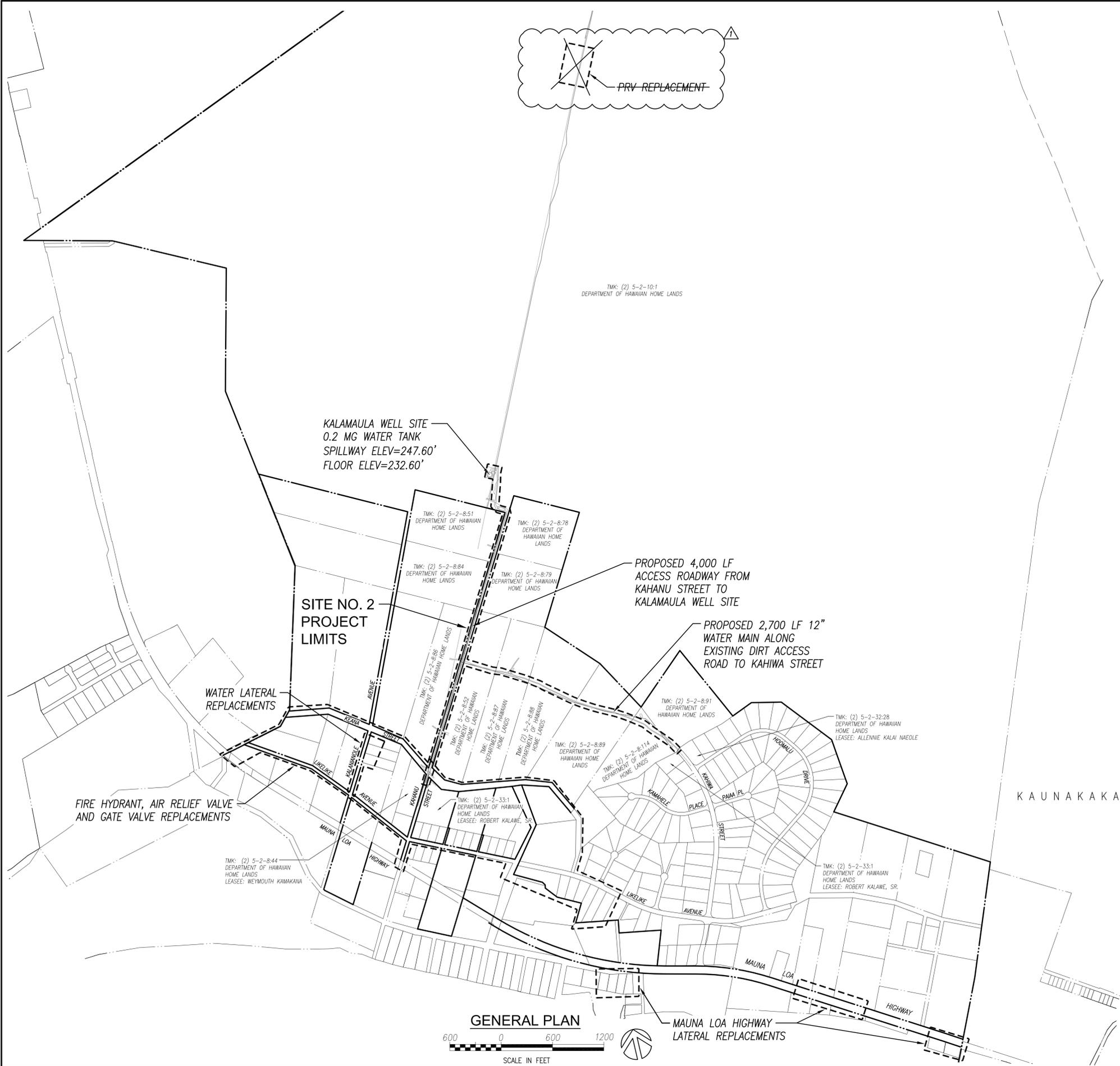
**PAUL T. MATSUO**  
LICENSED PROFESSIONAL ENGINEER  
No. 10901-C  
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

SIGNATURE  
LICENSE EXP. DATE: APRIL 30, 2020

DWG. NO.  
**C002**  
SHEET 3 OF 25





**LEGEND**

— — — — —	PROPERTY LINE	⊠	NEW FIRE HYDRANT
— — — — —	LOT LINE	— — — — —	NEW CONCRETE BEAM
— — — — —	EASEMENT	●	CLOSED GATE VALVE
— — — — —	LIMITS OF GRADING	○	OPEN GATE VALVE
— 0/H —	EXISTING OVERHEAD ELECTRIC LINE	— GND —	BACKFLOW PREVENTER ASSEMBLY
— W8 —	EXISTING WATER LINE	I	1/32 BEND
— D18 —	EXISTING DRAINLINE	I	1/16 BEND
— S6 —	EXISTING SEWER LINE	I	1/8 BEND
— W8 —	NEW WATER LINE	I	1/4 BEND
— D18 —	NEW DRAIN LINE	⊥	TEE
— 90 —	EXISTING CONTOUR	△	REDUCER
— 100 —	PROPOSED CONTOUR	⊕	FIRE HYDRANT
[Pattern]	CONCRETE PAVEMENT	⊗	PRESSURE REDUCING VALVE
[Pattern]	GRAVEL	○	CLEANOUT
— x — x — x — x —	CHAIN LINK/WIRE FENCE	○	AIR RELIEF VALVE
		▽	CONCRETE BLOCK
		— — — — —	SLEEVE
		/ /	CUT AND PLUG
		— x — x — x — x —	CHAIN LINK/WIRE FENCE
		⊕	CATTLE GATE

KALAMAU LA WELL SITE  
0.2 MG WATER TANK  
SPILLWAY ELEV=247.60'  
FLOOR ELEV=232.60'

SITE NO. 2  
PROJECT  
LIMITS

PROPOSED 4,000 LF  
ACCESS ROADWAY FROM  
KAHANU STREET TO  
KALAMAU LA WELL SITE

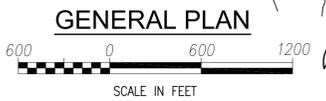
PROPOSED 2,700 LF 12"  
WATER MAIN ALONG  
EXISTING DIRT ACCESS  
ROAD TO KAHIIWA STREET

WATER LATERAL  
REPLACEMENTS

FIRE HYDRANT, AIR RELIEF VALVE  
AND GATE VALVE REPLACEMENTS

**SITE 2 EARTHWORK SUMMARY**

* AREA OF DISTURBANCE	79,723 SQ FT (1.83 ACRES)
GRADED AREA	79,723 SQ FT (1.83 ACRES)
* INCLUDING, BUT NOT LIMITED TO, EXCAVATION, GRADING, EQUIPMENT STAGING AND STORAGE AREAS, AS DEFINED BY THE STATE OF HAWAII, DEPARTMENT OF HEALTH CLEAN WATER BRANCH GUIDELINES FOR NOTICE OF INTENT, FORM G.	
EXCAVATION	= 690 CY
EMBANKMENT	= 775 CY



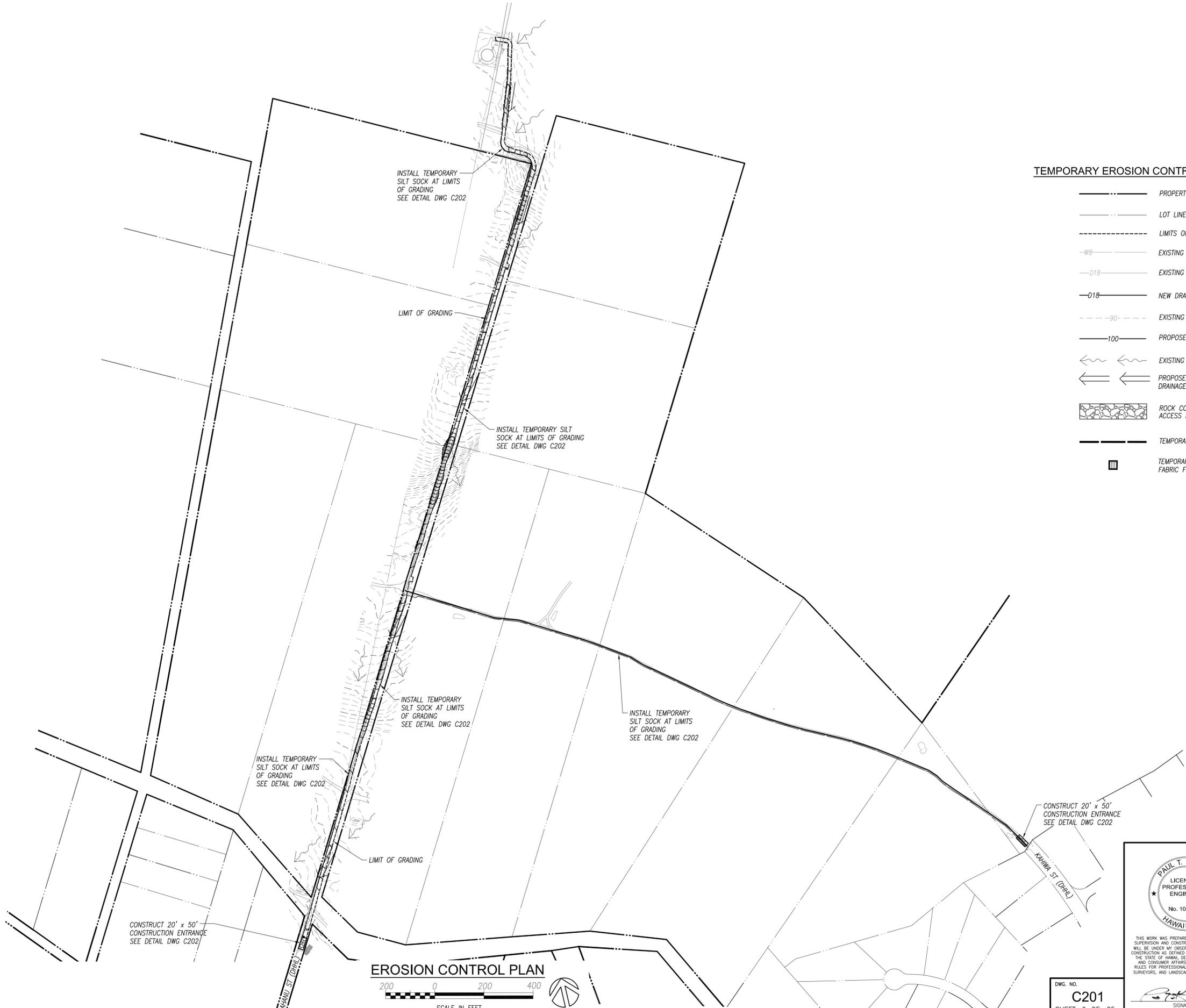
**PAUL T. MATSUDA**  
LICENSED PROFESSIONAL ENGINEER  
No. 10901-C  
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

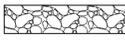
SIGNATURE  
LICENSE EXP. DATE: APRIL 30, 2020

7/6/18	REMOVED PRV REPLACEMENT	G70
REVISION	DATE	MADE BY
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII		
USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NO. 2 - KALAMAU LA IMPROVEMENTS JOB NO.		
GENERAL PLAN		
DESIGNED BY: PLM	CHECKED BY: RMKC	DRAWN BY: CKM
111 S. KING STREET, SUITE 170 HONOLULU, HAWAII 96813 808.523.5866 WWW.G7O.DESIGN		
G7O		JUNE 2018
FILE	POCKET	FOLDER

DWG. NO.  
**C200**  
SHEET 5 OF 25



**TEMPORARY EROSION CONTROL LEGEND**

- — — — — PROPERTY LINE
- — — — — LOT LINE
- - - - - LIMITS OF GRADING
- WB- EXISTING WATER LINE
- D18- EXISTING DRAINLINE
- D18- NEW DRAIN LINE
- - - - -90- EXISTING CONTOUR
- - - - -100- PROPOSED CONTOUR
- ← ← ← ← ← EXISTING DRAINAGE FLOW
- ← ← ← ← ← PROPOSED TEMPORARY DRAINAGE FLOW
-  ROCK CONSTRUCTION ACCESS FOR INGRESS/EGRESS
- — — — — TEMPORARY SILT SOCKS
-  TEMPORARY MIRAFI GEOTECHNICAL FABRIC FOR GRATED INLETS

**EROSION CONTROL PLAN**



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

SIGNATURE  
 LICENSE EXP. DATE: APRIL 30, 2020

DWG. NO.  
**C201**  
 SHEET 6 OF 25

REVISION	DATE	BRIEF	MADE BY	APPROVED

**DEPARTMENT OF HAWAIIAN HOME LANDS**  
 STATE OF HAWAII  
 USDA/RUS FUNDED MOLOKAI  
 HOOLEHUA WATER SYSTEM IMPROVEMENTS  
 SITE NO. 2 - KALAMAULA IMPROVEMENTS  
 JOB NO.

**EROSION CONTROL PLAN**

DESIGNED BY: PLM    CHECKED BY: RMKC    DRAWN BY: CKM  
 111 S. KING STREET, SUITE 170  
 HONOLULU, HAWAII 96813  
 808.523.5866  
**G7O**    WWW.G7O.DESIGN    JUNE 2018

FILE	POCKET	FOLDER	NO.

**NATIONAL POLLUTANT DISCHARGE ELIMINATION AND BEST MANAGEMENT PRACTICE (BMP) NOTES:**

- PERIMETER RUNOFF CONTROL
  - 12"  $\phi$  FILTER SOCKS: CONTRACTOR TO INSTALL PERPENDICULAR TO THE DIRECTION OF FLOW AND ALONG THE DOWNHILL SIDE OF THE OPEN GRADING AREAS. LOCATION SHALL BE ADJUSTED DURING THE GRADING OPERATIONS. TEMPORARY SILT FENCE MAY BE USED IN LIEU OF FILTER SOCK AT CONTRACTOR'S DISCRETION.
- STABILIZATION CONTROL
  - TEMPORARY - ALL SLOPES AND EXPOSED AREAS SHALL BE IMMEDIATELY MULCHED OR PLANTED WHEN FINAL GRADES ARE ESTABLISHED OR WHEN GRADING WORK WILL BE DELAYED FOR MORE THAN TWO WEEKS AND BEFORE THE REMOVAL OF THE PROJECT'S TEMPORARY BMP.
  - PERMANENT - ALL SLOPES AND EXPOSED AREAS SHALL BE LANDSCAPED WHEN FINAL GRADES ARE ESTABLISHED.
- STABILIZED CONSTRUCTION ENTRANCE FOR INGRESS/EGRESS WITH AMOCO SERIES 2000 GEOTEXTILE FABRIC OR APPROVED EQUAL, 20' x 50' x 8" THICK, 1" TO 3" COARSE AGGREGATE OR LARGER (7" MAX.)
- 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 RUNOFF IS CONTAINED AND DOES NOT ENTER THE STORM DRAIN SYSTEM OR ONTO THE PUBLIC RIGHT-OF-WAY.
- TEMPORARY EROSION CONTROLS SHALL BE IN PLACE PRIOR TO ANY GRADING OR GRUBBING WORK.
- MAINTAIN EROSION AND SEDIMENT CONTROL MEASURES AS REQUIRED THROUGHOUT DURATION OF PROJECT.
- BMP PROVIDED HEREIN ARE MINIMUM REQUIREMENTS. CONTRACTOR SHALL USE DISCRETION WHETHER ADDITIONAL BMP MEASURES ARE NECESSARY FOR CONTROLLING SEDIMENT RUNOFF FROM THE PROJECT SITE.
- EROSION CONTROL MEASURES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.
- FILTER SOCKS, SILT FENCES, AND TEMPORARY CONSTRUCTION ENTRANCES WILL REMAIN IN-PLACE UNTIL PERMANENT BMP ARE INSTALLED. CONTRACTOR SHALL MAINTAIN ALL EXISTING BMP MEASURES AND ENSURE THAT IT REMAINS OPERABLE AT ALL TIMES.
- THE FINAL LIFT OF EACH DAYS WORK SHALL BE COMPACTED TO PREVENT EROSION OF FILL MATERIAL.
- THE CONTRACTOR SHALL HAVE A COPY OF CURRENT NPDES AND GRADING PERMIT(S) ON SITE AT ALL TIMES. THE CONTRACTOR SHALL ALSO PROVIDE A COMPLETED BMP CHECKLIST AT TIME OF OBTAINING THE GRADING PERMIT AND MAINTAIN AN UPDATED RECORD OF SITE INSPECTIONS ON SITE THROUGH THE USE OF BMP CHECKLISTS.
- THE CONTRACTOR SHALL NOT PERFORM EARTHWORK DURING INCLEMENT WEATHER.
- THE EXISTING PAVED ROADWAYS INCLUDING SIDEWALKS AND GUTTERS SHALL BE CLEANED ON A DAILY BASIS TO BE FREE OF DEBRIS AND SEDIMENT RESULTING FROM THE GRADING OPERATIONS. FLUSHING INTO THE DRAIN STRUCTURES IS PROHIBITED.
- STOCKPILING CONSTRUCTION MATERIAL IN THE EXISTING ROAD RIGHT-OF-WAY AREA OR ADJACENT LOT(S) ARE PROHIBITED.
- IF ANY EXPOSED GRADED AREAS THAT ARE NOT BEING WORKED ON OR WHOSE FINAL GRADES HAVE BEEN ESTABLISHED FOR MORE THAN 14 DAYS, THE CONTRACTOR SHALL MULCH THE AREA.
- AT THE CONCLUSION OF GRADING OPERATIONS AND PRIOR TO PROJECT COMPLETION, ALL DRAINAGE STRUCTURES WITHIN LIMITS OF DISTURBED AREA SHALL BE INSPECTED AND CLEANED OF ACCUMULATED DEBRIS AND SEDIMENT. THE ACCUMULATED SEDIMENT AND DEBRIS SHALL BE REMOVED FROM THE CATCH BASINS (FLUSHING INTO DRAIN STRUCTURES IS PROHIBITED).
- WASH WATER SHALL NOT DRAIN INTO EXISTING CATCH BASINS.
- DURING CONSTRUCTION, INLET PROTECTION SHALL BE APPLIED TO ALL DRAIN INLET STRUCTURES IMMEDIATELY FOLLOWING INSTALLATION.
- THE CONTRACTOR SHALL ADHERE TO ALL OTHER REQUIREMENTS AS DETAILED IN THE STORMWATER POLLUTION PLAN (SWPPP).
- ALL OTHER REQUIREMENTS PER NPDES FILE NO. HI R10F358.FNL.17.

**BEST MANAGEMENT PRACTICES (BMP) NOTES:**

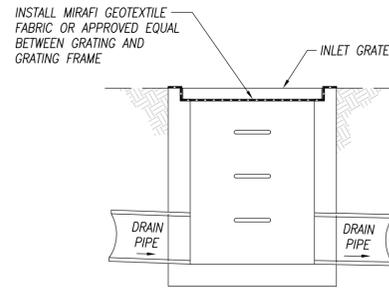
- REFER TO NPDES AND BMP NOTES AND EROSION CONTROL DETAILS ON THIS SHEET.
- THE BMP FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS AND SHALL BE UPGRADED DURING THE CONSTRUCTION PERIOD AS NEEDED FOR UNEXPECTED STORM EVENTS AND TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN RUNOFF DOES NOT LEAVE THE WORK SITE.
- ALL POINTS OF INGRESS AND EGRESS TO THE SITE SHALL BE PROTECTED WITH A STABILIZED CONSTRUCTION ENTRANCE.
- PROVIDE INLET FILTER (TRUE DAM @ INLET PROTECTION OR APPROVED EQUAL) FOR ALL CATCH BASIN OPENINGS.
- DUST CONTROL SHOULD BE APPLIED TO REDUCE DUST EMISSIONS. THE CONTRACTOR, AT HIS OWN EXPENSE, SHALL KEEP THE PROJECT AREA AND SURROUNDING AREA FREE FROM DUST NUISANCE. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR POLLUTION CONTROL STANDARDS CONTAINED IN HAWAII ADMINISTRATIVE RULES: CHAPTER 11-60, "AIR POLLUTION CONTROL".
- SEDIMENT FENCES OR BARRIERS (FILTER SOCKS) SHALL BE USED DOWN SLOPE OF ALL DISTURBED AREAS AND ALONG THE PERIMETER OF THE PROJECT AREA.
- ALL STORM DRAIN INLETS ON SITE AND THOSE OFFSITE WHICH MAY RECEIVE RUNOFF FOR THE SITE SHALL USE AN INLET PROTECTION DEVICE.
- CONSTRUCTION VEHICLES AND/OR EQUIPMENT UTILIZED DURING THE GRADING WORK WILL BE KEPT ONSITE OR LOADED TO A TRAILER TO BE TRANSPORTED OFFSITE.

**DUST CONTROL NOTE:**

- THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE MEASURES IT WILL TAKE FOR THE CONTROL OF FUGITIVE DUST FROM THE WORK SITE. THE MEASURES MAY INCLUDE BUT NOT BE LIMITED TO THE INSTALLATION OF DUST SCREENS, WATERING OF THE SITE, FILL MATERIAL BEING PLACED, AND DELAYING WORK IN THE WEEK THAT PREVAILING WIND DIRECTION SHOULD SHIFT.

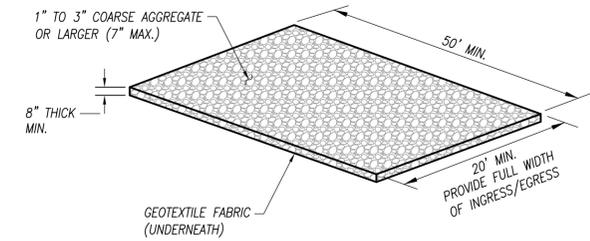
**MAINTENANCE NOTE:**

- EROSION CONTROL MEASURES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.



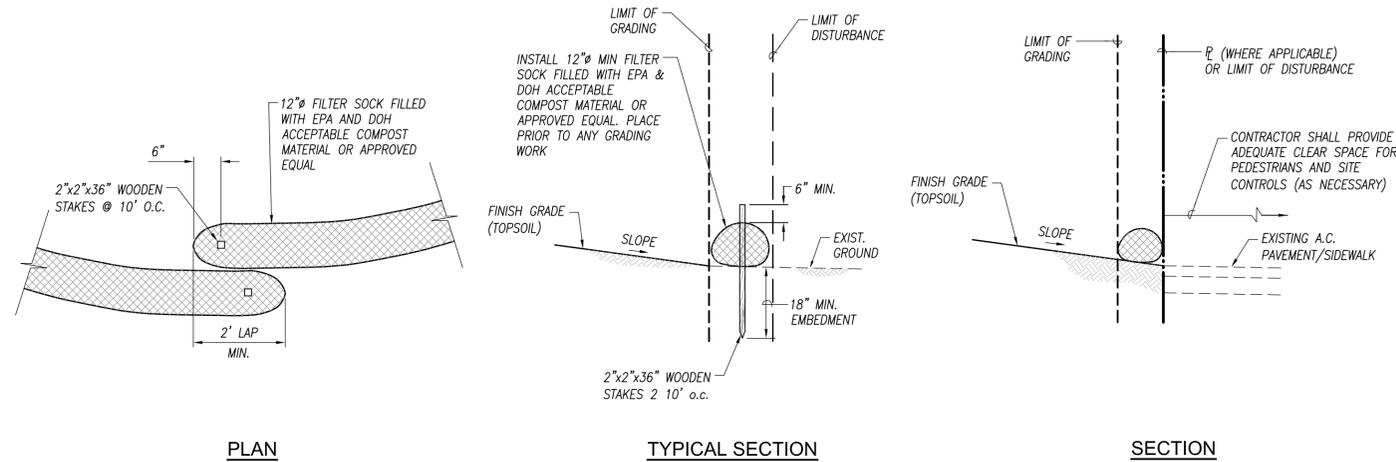
- NOTE:**
- MIRAFI GEOTEXTILE FABRIC SHALL BE INSTALLED UNDER ALL DRAIN INLET GRATES WITHIN THE IMMEDIATE VICINITY OF THE PROJECT SITE.

**SEDIMENT CONTROL FILTER AT PRIVATE DRAIN INTLET DETAIL**  
NOT TO SCALE



- NOTE:**
- ANY SEDIMENT CARRIED FROM THE SITE ONTO THE STREET SHALL BE CLEANED UP IMMEDIATELY.

**GRAVEL CONSTRUCTION ENTRANCE DETAIL**  
NOT TO SCALE



**PLAN**

**TYPICAL SECTION**

**SECTION**  
(ALONG EXISTING SIDEWALK/A.C. PAVEMENT)

**FILTER SOCK NOTES:**

- WHEN JOINING TWO SECTIONS OF FILTER SOCK, A MINIMUM OF 2 FEET SHOULD BE MADE SO THAT FILTER SOCK SIT SIDE BY SIDE.
- CONTRACTOR SHALL REMOVE ANY DEBRIS IN PATH OF FILTER SOCK TO ENSURE GOOD GROUND CONTACT.
- COMPOST SHALL NOT CONTAIN BIOSOLIDS AND SHOULD BE CONSISTENT WITH EPA GUIDELINES.
- SHOULD THE FILTER FABRIC DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE FILTER SOCK STILL BE NECESSARY, THE FILTER SOCK SHALL BE REPLACED PROMPTLY.
- CONTRACTOR SHALL USE 2"x2"x36 WOODEN STAKES WITH 18" MINIMUM EMBEDMENT AND 6" HEIGHT OVER TOP OF FILTER SOCK @ 10' O.C. WHEN INSTALLED ON DIRT OR EARTH. SANDBAGS TO SECURE SOCKS MAY BE USED IN LIEU OF STAKING WHEN INSTALLED ON PAVEMENT.
- CONTRACTOR TO PROVIDE 4' MINIMUM CLEARANCE AT ALL SIDEWALKS.

**FILTER SOCK/FILTRATION TUBE DETAIL**

NOT TO SCALE

REVISION	DATE	BRIEF	MADE BY	APPROVED
7/6/18	7/6/18	REVISED NOTE	G70	

PAUL T. MATSUDA  
LICENSED PROFESSIONAL ENGINEER  
No. 10901-C  
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

SIGNATURE  
LICENSE EXP. DATE: APRIL 30, 2020

DEPARTMENT OF HAWAIIAN HOME LANDS  
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI  
HOOLEHUA WATER SYSTEM IMPROVEMENTS  
SITE NO. 2 - KALAMAULA IMPROVEMENTS  
JOB NO.

EROSION CONTROL  
NOTES AND DETAILS

DESIGNED BY: PLM CHECKED BY: RMKC DRAWN BY: CKM

111 S. KING STREET, SUITE 170  
HONOLULU, HAWAII 96813  
808.523.5866  
WWW.G7O.DESIGN

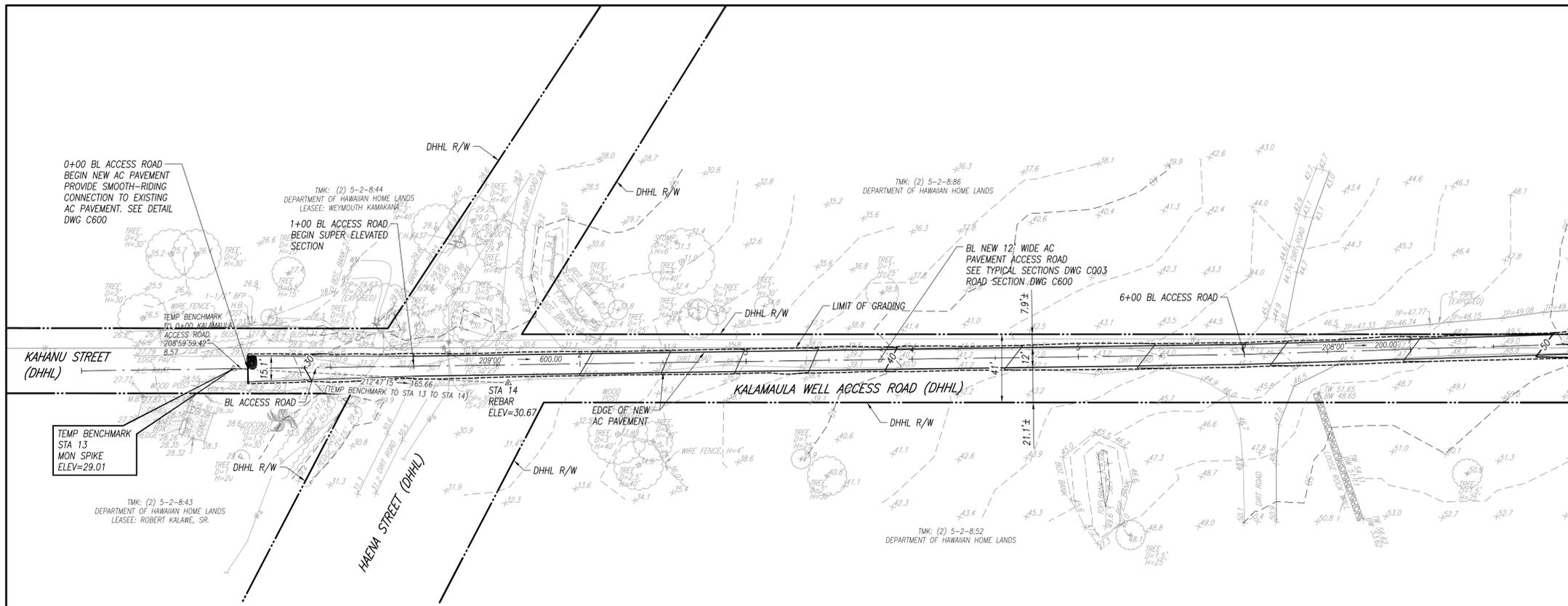
JUNE 2018

DWG. NO.  
**C202**  
SHEET 7 OF 25

FILE	POCKET	FOLDER	NO.
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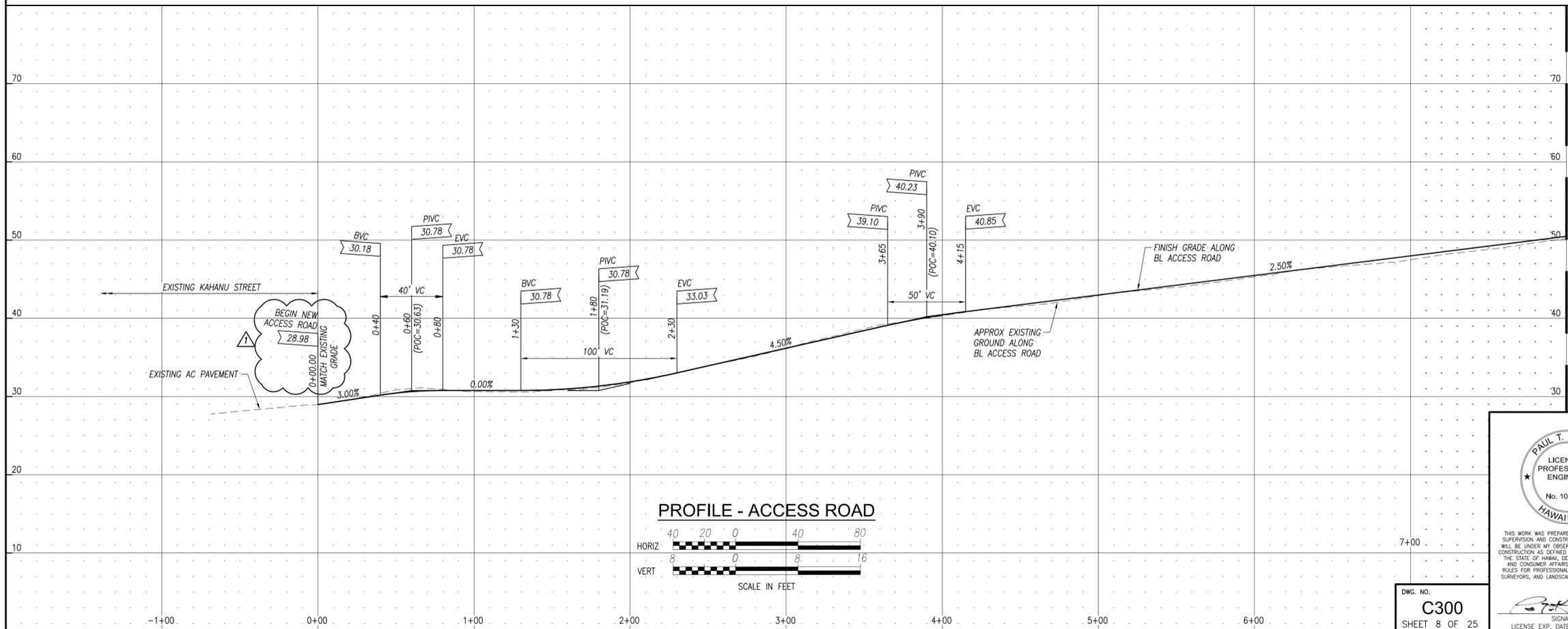
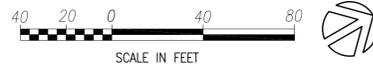
**NOTES:**

1. REMOVAL OF ROCK OBSTRUCTIONS SHALL BE INCIDENTAL TO THE COST OF THE VARIOUS CONTRACT ITEMS FOR THE ACCESS ROAD CONSTRUCTION.
2. SEE TYPICAL SECTIONS ON DWG C003

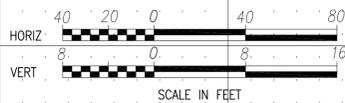


MATCH LINE ACCESS ROAD BL STA 8+00  
SEE DWG C301

**PLAN - ACCESS ROAD**



**PROFILE - ACCESS ROAD**



MATCH LINE ACCESS ROAD BL STA 8+00  
SEE DWG C301

REVISION	DATE	7/6/18	REVISED CALLOUT	G70
			BRIEF	MADE BY APPROVED

**PAUL T. MATSUDA**  
LICENSED PROFESSIONAL ENGINEER  
No. 10901-C  
HAWAII, U.S.A.

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SIGNATURE  
LICENSE EXP. DATE: APRIL 30, 2020

**DEPARTMENT OF HAWAIIAN HOME LANDS**  
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI  
HOOLEHUA WATER SYSTEM IMPROVEMENTS  
SITE NO. 2 - KALAMAULA IMPROVEMENTS  
JOB NO.

**PLAN AND PROFILE - ACCESS ROAD**  
BL STA 0+00 TO 8+00

DESIGNED BY: PLM/AC    CHECKED BY: RMKC    DRAWN BY: CM/AC

**G70**    111 S. KING STREET, SUITE 170  
HONOLULU, HAWAII 96813  
808.523.5866  
WWW.G70DESIGN

JUNE 2018

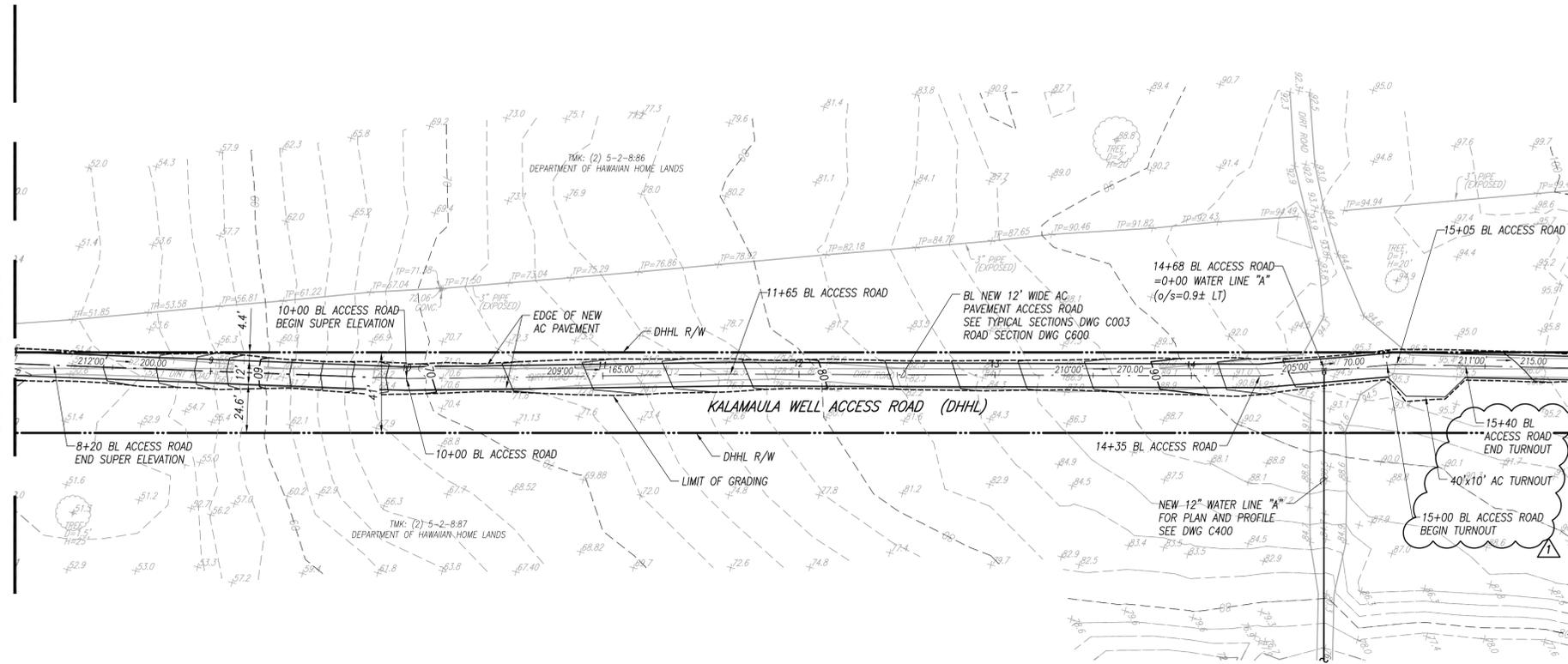
DWG. NO.  
**C300**  
SHEET 8 OF 25

FILE	POCKET	FOLDER	NO.
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**NOTES:**

- REMOVAL OF ROCK OBSTRUCTIONS SHALL BE INCIDENTAL TO THE COST OF THE VARIOUS CONTRACT ITEMS FOR THE ACCESS ROAD CONSTRUCTION.
- SEE TYPICAL SECTIONS ON DWG C003

MATCH LINE ACCESS ROAD BL STA 8+00  
SEE DWG C300

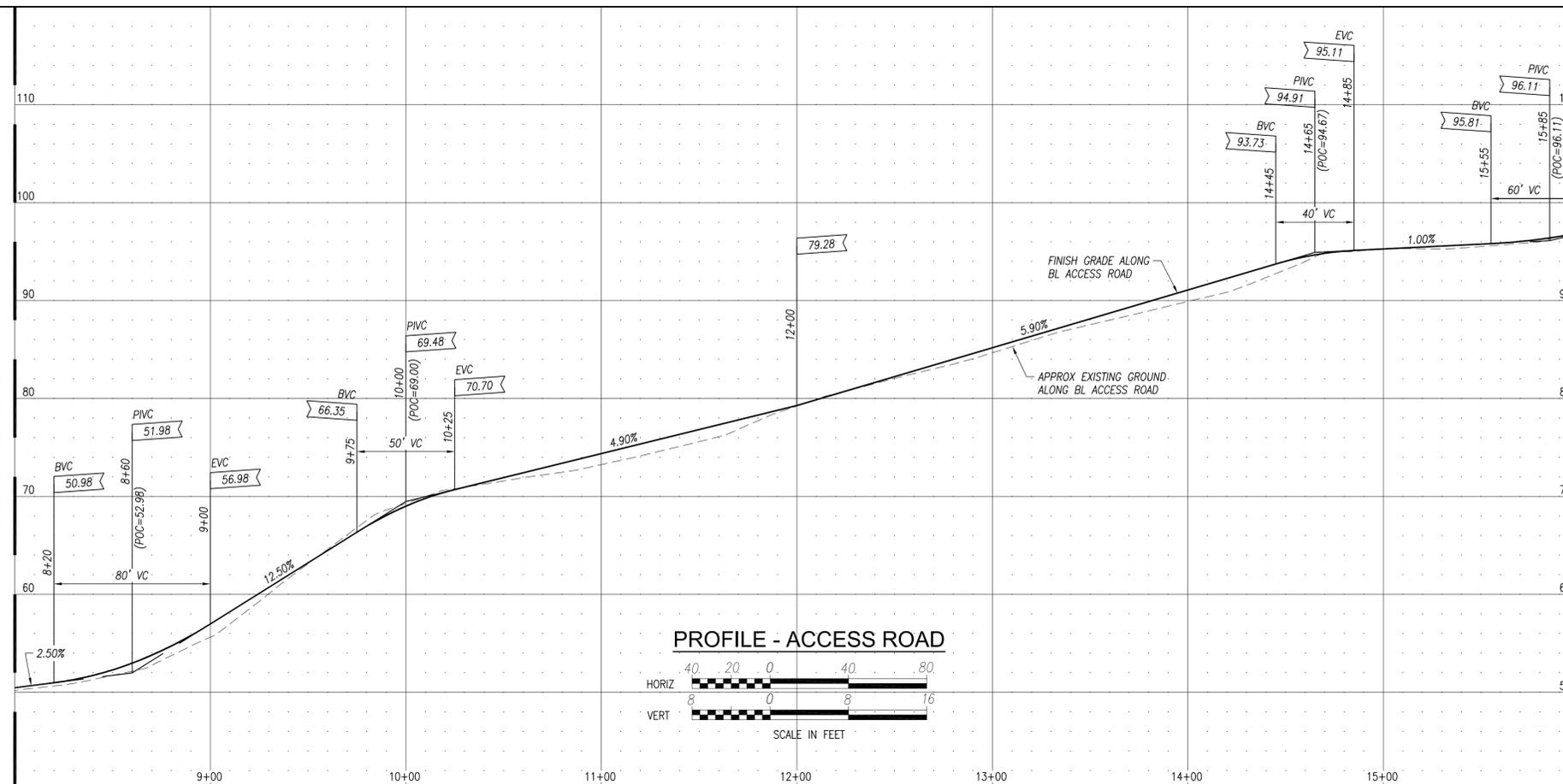


MATCH LINE ACCESS ROAD BL STA 16+00  
SEE DWG C302

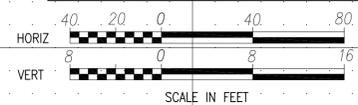
**PLAN - ACCESS ROAD**



MATCH LINE ACCESS ROAD BL STA 8+00  
SEE DWG C300



**PROFILE - ACCESS ROAD**



MATCH LINE ACCESS ROAD BL STA 16+00  
SEE DWG C302

DWG. NO.  
**C301**  
SHEET 9 OF 25

**PAUL T. MATSUDA**  
LICENSED PROFESSIONAL ENGINEER  
No. 10901-C  
HAWAII, U.S.A.

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SIGNATURE  
LICENSE EXP. DATE: APRIL 30, 2020

REVISION	DATE	BRIEF	MADE BY	APPROVED
7/6/18	REVISED CALLOUTS		G70	

DEPARTMENT OF HAWAIIAN HOME LANDS  
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI  
HOOLEHUA WATER SYSTEM IMPROVEMENTS  
SITE NO. 2 - KALAMAULA IMPROVEMENTS  
JOB NO.

**PLAN AND PROFILE - ACCESS ROAD**  
BL STA 8+00 TO 16+00

DESIGNED BY: PLM/AC CHECKED BY: RMKC DRAWN BY: CM/AC

111 S. KING STREET, SUITE 170  
HONOLULU, HAWAII 96813  
808.523.5866  
WWW.G7O.DESIGN

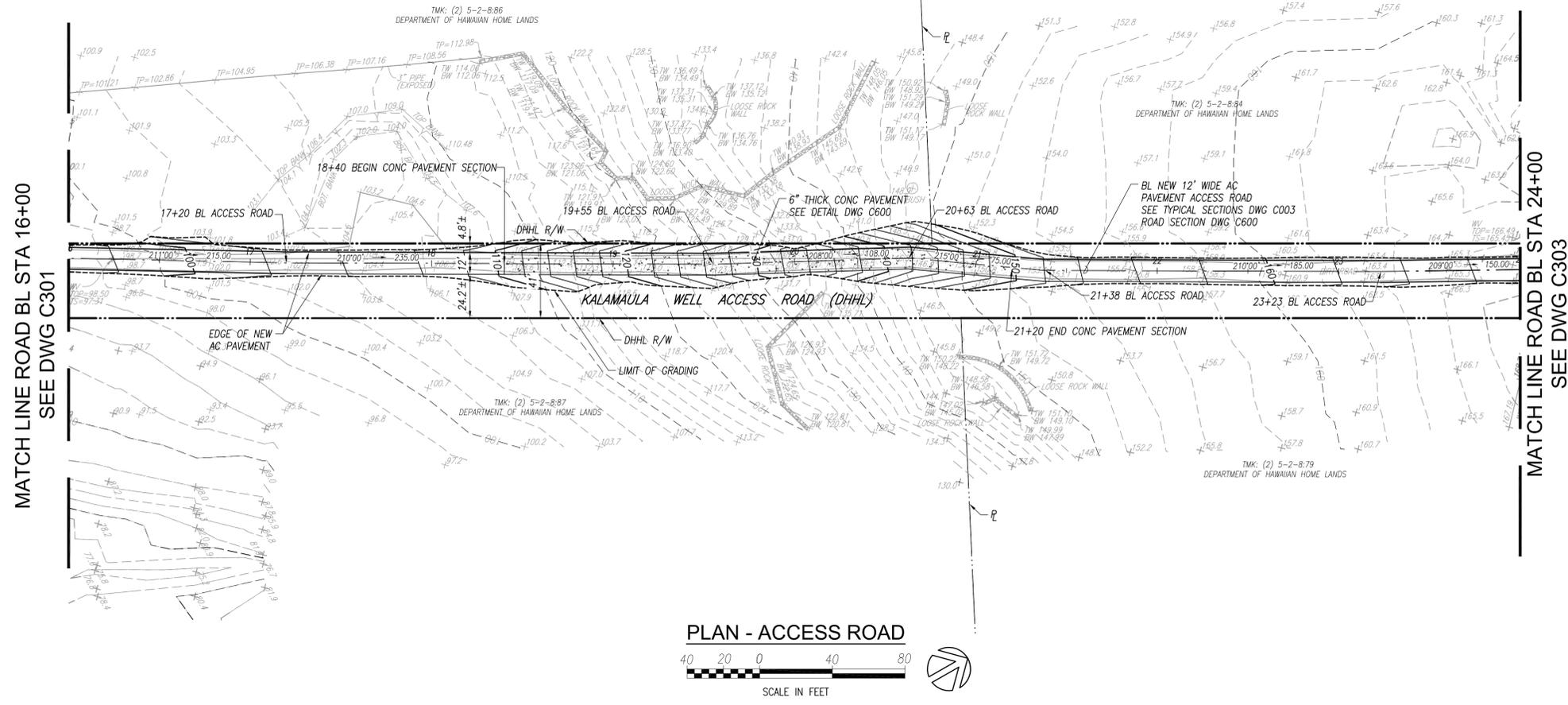
**G7O**

JUNE 2018

FILE	POCKET	FOLDER	NO.
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**NOTES:**

1. REMOVAL OF ROCK OBSTRUCTIONS SHALL BE INCIDENTAL TO THE COST OF THE VARIOUS CONTRACT ITEMS FOR THE ACCESS ROAD CONSTRUCTION.
2. SEE TYPICAL SECTIONS ON DWG C003



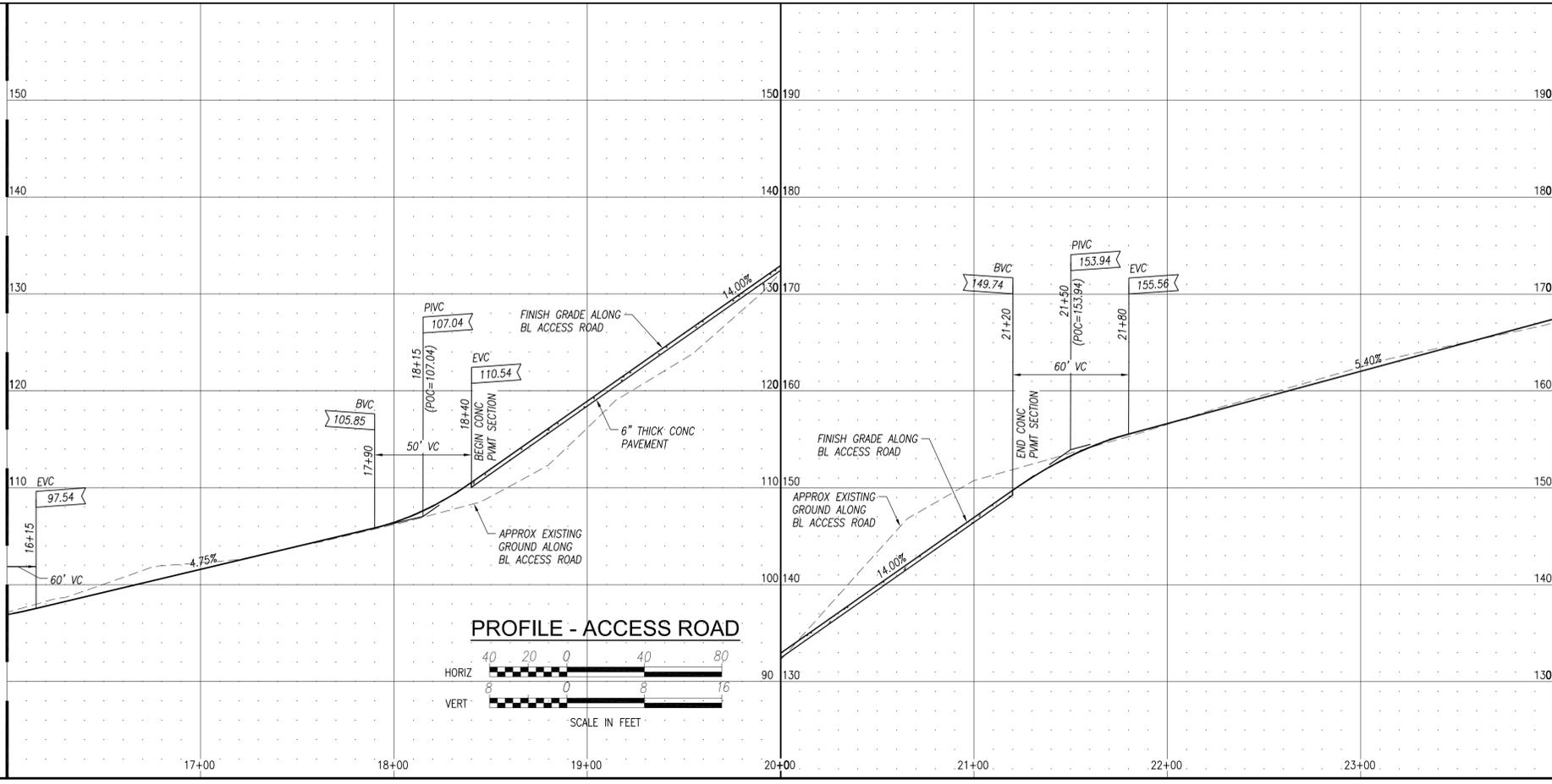
**PLAN - ACCESS ROAD**  
 SCALE IN FEET

MATCH LINE ROAD BL STA 16+00  
SEE DWG C301

MATCH LINE ROAD BL STA 24+00  
SEE DWG C303

MATCH LINE ROAD BL STA 16+00  
SEE DWG C301

MATCH LINE ROAD BL STA 24+00  
SEE DWG C303



**PROFILE - ACCESS ROAD**  
 SCALE IN FEET

REVISION	DATE	BRIEF	MADE BY	APPROVED

**PAUL T. MATSUDA**  
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 No. 10901-C  
 HAWAII, U.S.A.

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DESIGNED BY: PLM/AC    CHECKED BY: RMKC    DRAWN BY: CM/AC

**G70**  
 111 S. KING STREET, SUITE 170  
 HONOLULU, HAWAII 96813  
 808.523.5866  
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SIGNATURE: [Signature]  
 LICENSE EXP. DATE: APRIL 30, 2020

DEPARTMENT OF HAWAIIAN HOME LANDS  
 STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI  
 HOOLEHUA WATER SYSTEM IMPROVEMENTS  
 SITE NO. 2 - KALAMAULA IMPROVEMENTS  
 JOB NO.

**PLAN AND PROFILE - ACCESS ROAD**  
 BL STA 16+00 TO 24+00

DESIGNED BY: PLM/AC    CHECKED BY: RMKC    DRAWN BY: CM/AC

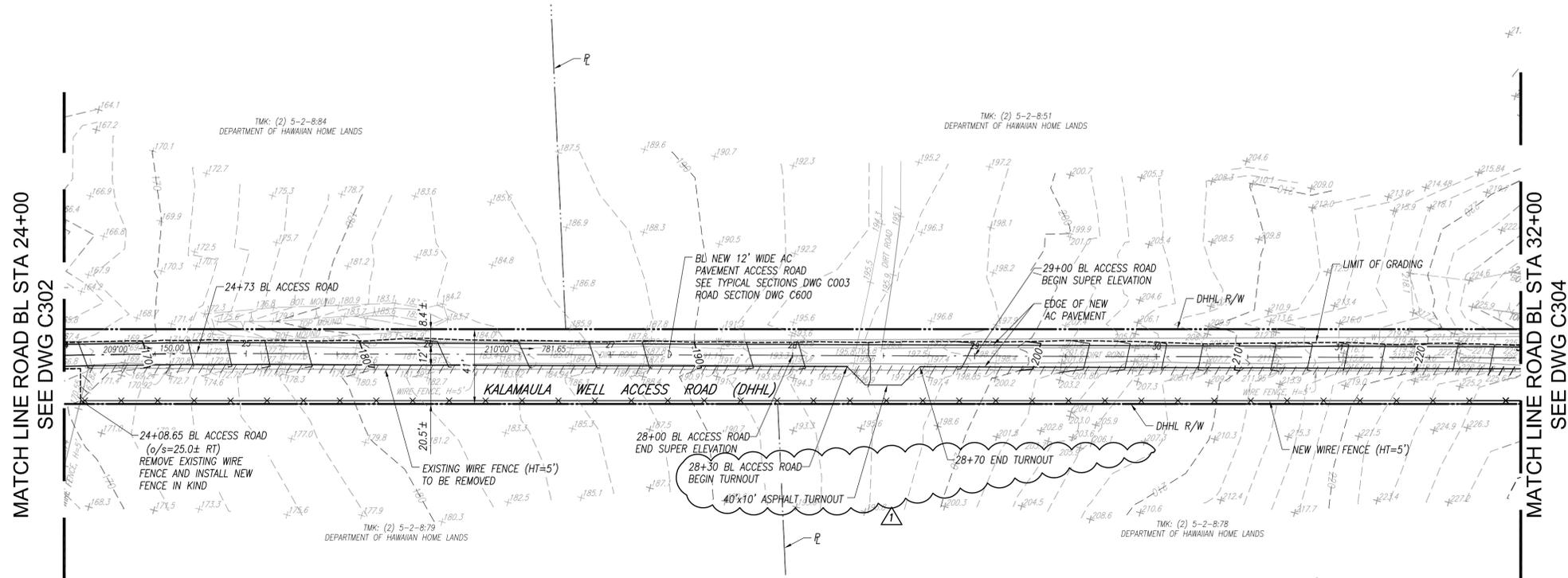
**G70**  
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JUNE 2018

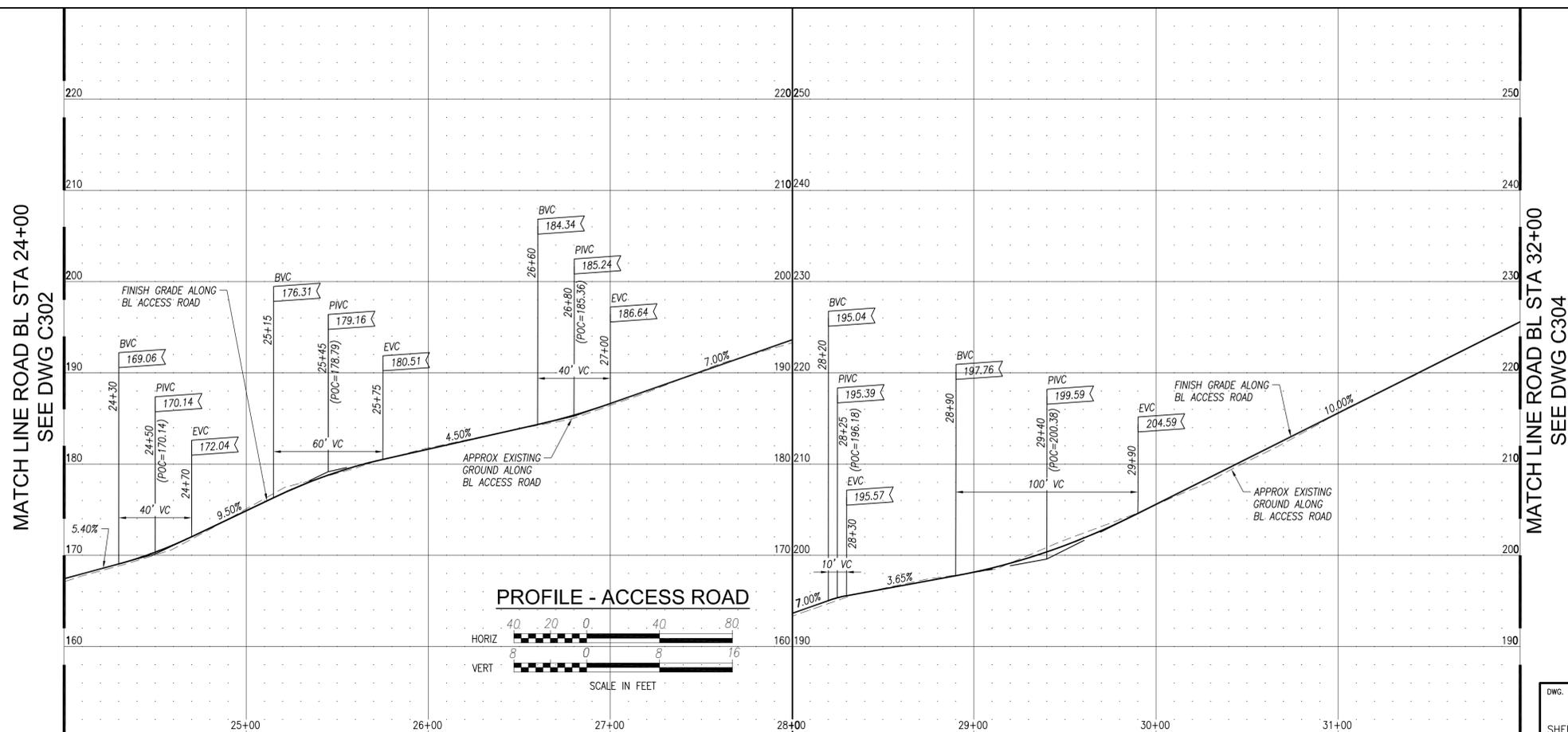
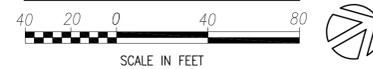
DWG. NO.  
**C302**  
 SHEET 10 OF 25

**NOTES:**

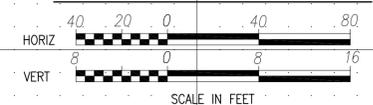
- REMOVAL OF ROCK OBSTRUCTIONS SHALL BE INCIDENTAL TO THE COST OF THE VARIOUS CONTRACT ITEMS FOR THE ACCESS ROAD CONSTRUCTION.
- SEE TYPICAL SECTIONS ON DWG C003



**PLAN - ACCESS ROAD**



**PROFILE - ACCESS ROAD**



MATCH LINE ROAD BL STA 24+00  
SEE DWG C302

MATCH LINE ROAD BL STA 32+00  
SEE DWG C304

DWG. NO.  
**C303**  
SHEET 11 OF 25

**PAUL T. MATSUDA**  
LICENSED PROFESSIONAL ENGINEER  
No. 10901-C  
HAWAII, U.S.A.

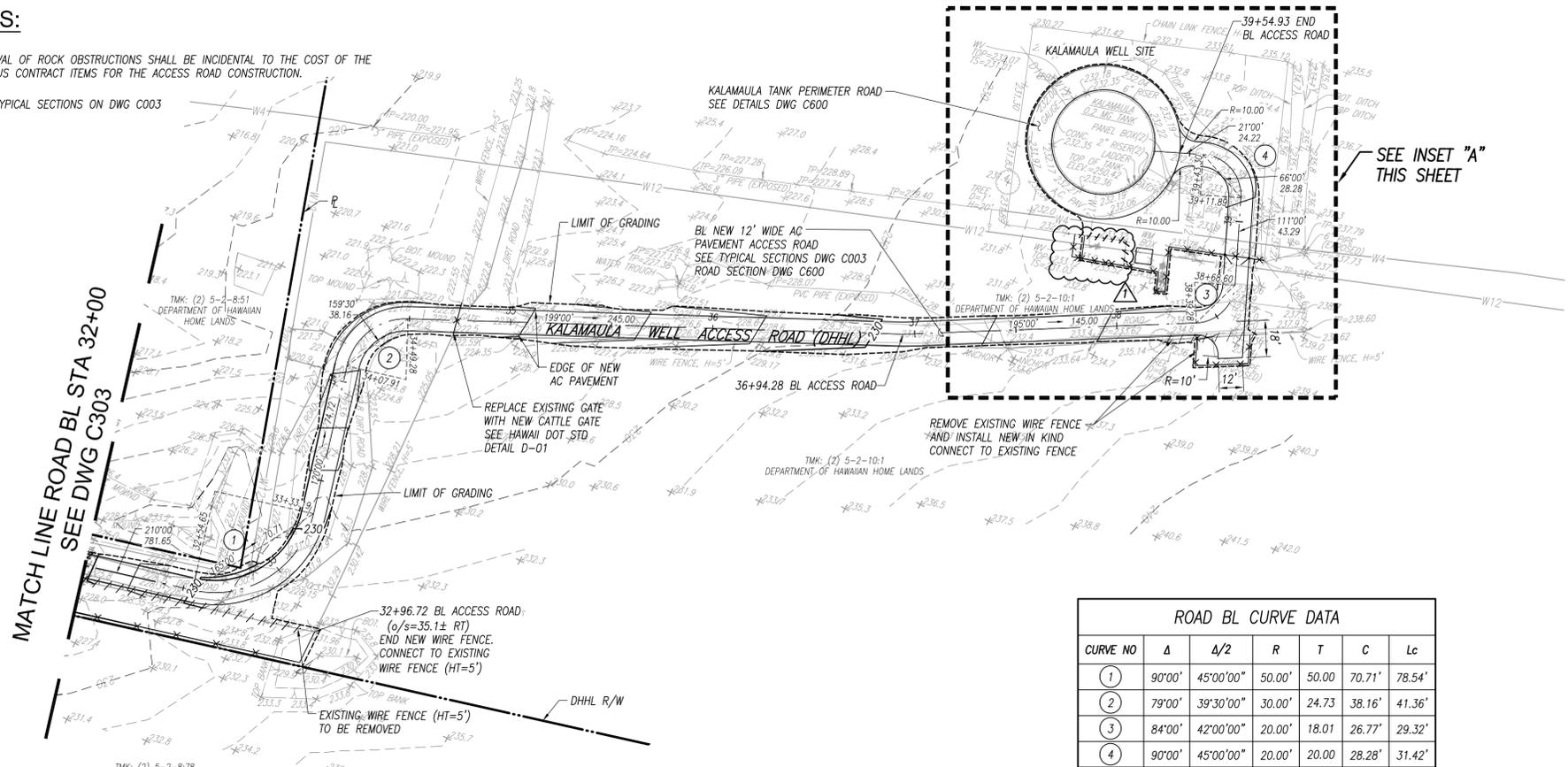
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SIGNATURE  
LICENSE EXP. DATE: APRIL 30, 2020

REVISION	DATE	REVISION	DATE	REVISION	DATE
	7/6/18	REVISED CALLOUTS		G70	
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII			MADE BY APPROVED		
USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NO. 2 - KALAMAULA IMPROVEMENTS JOB NO.					
PLAN AND PROFILE - ACCESS ROAD BL STA 24+00 TO 32+00					
DESIGNED BY:	PLM/AC	CHECKED BY:	RMKC	DRAWN BY:	CM/AC
G70		111 S. KING STREET, SUITE 170 HONOLULU, HAWAII 96813 808.523.5866		JUNE 2018	
WWW.G70DESIGN					

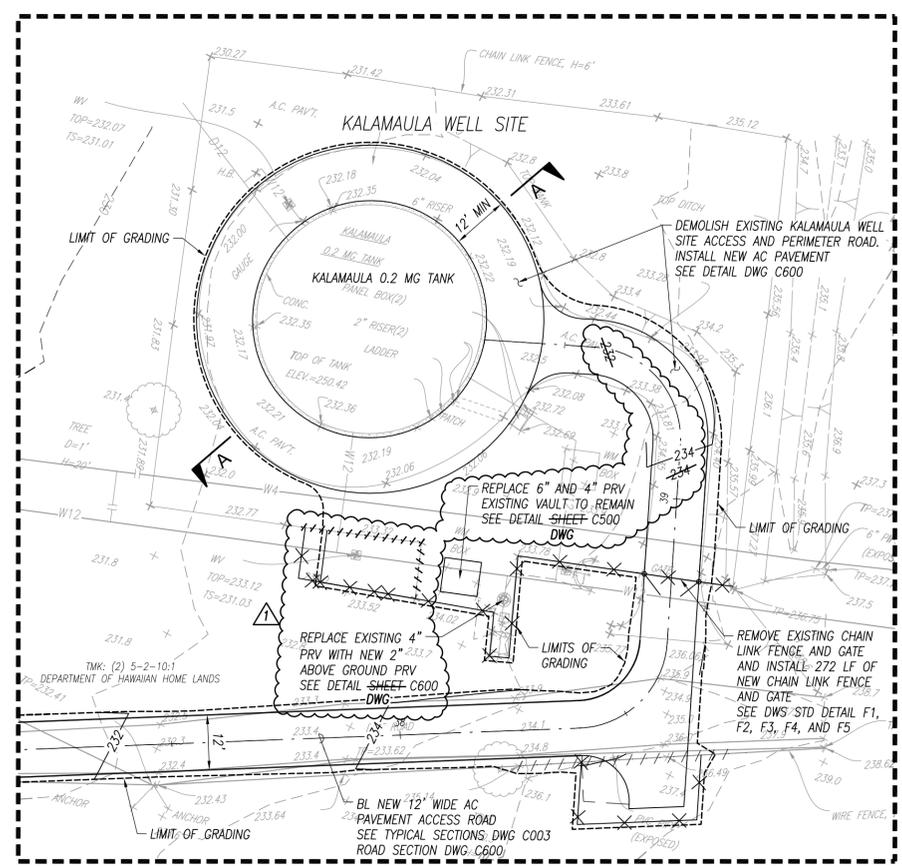
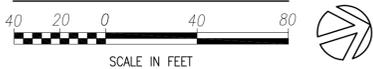
**NOTES:**

- REMOVAL OF ROCK OBSTRUCTIONS SHALL BE INCIDENTAL TO THE COST OF THE VARIOUS CONTRACT ITEMS FOR THE ACCESS ROAD CONSTRUCTION.
- SEE TYPICAL SECTIONS ON DWG C003

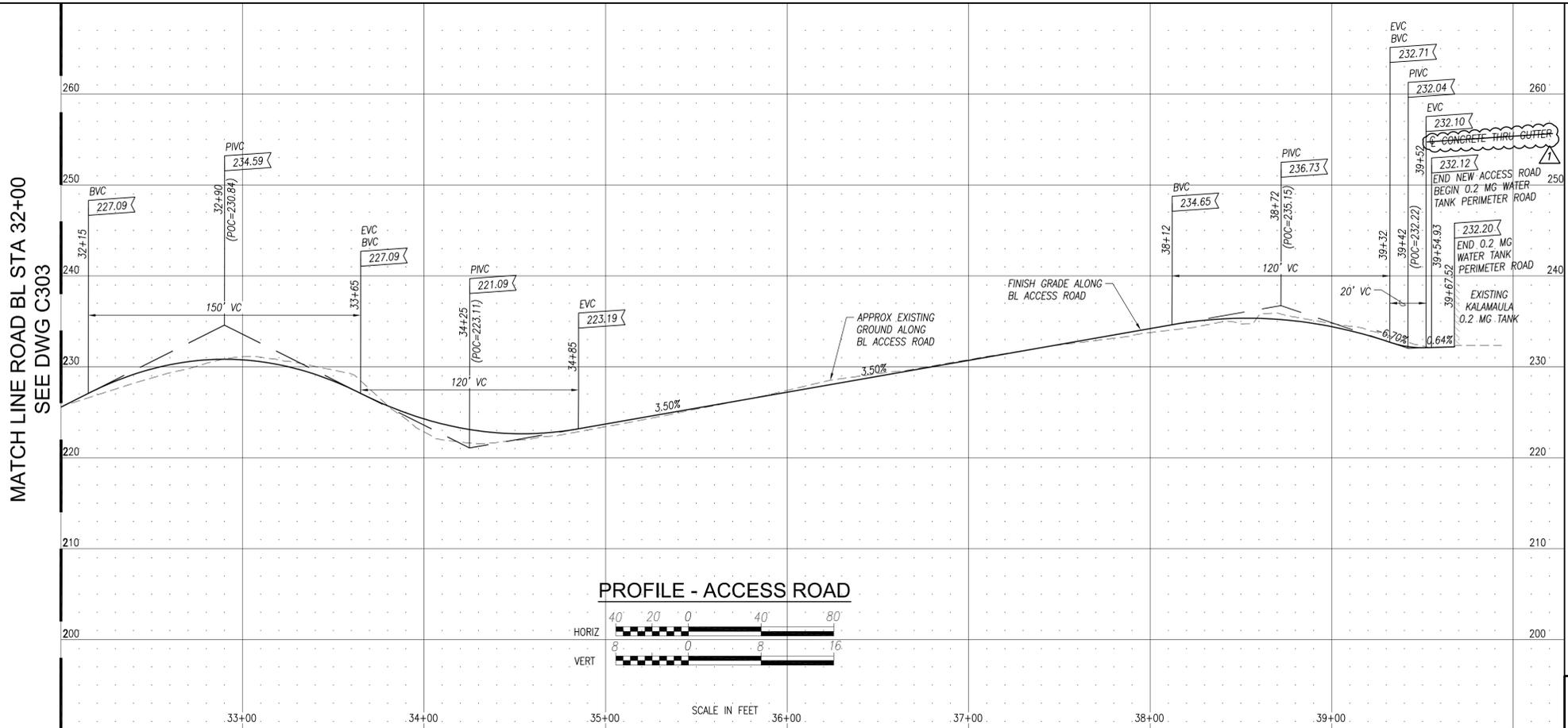


ROAD BL CURVE DATA						
CURVE NO	Δ	Δ/2	R	T	C	Lc
1	90°00'	45°00'00"	50.00'	50.00'	70.71'	78.54'
2	79°00'	39°30'00"	30.00'	24.73'	38.16'	41.36'
3	84°00'	42°00'00"	20.00'	18.01'	26.77'	29.32'
4	90°00'	45°00'00"	20.00'	20.00'	28.28'	31.42'

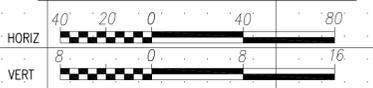
**PLAN - ACCESS ROAD**



**INSET "A" - KALAMAULA WELL SITE**



**PROFILE - ACCESS ROAD**



MATCH LINE ROAD BL STA 32+00  
SEE DWG C303

DWG. NO.  
**C304**  
SHEET 12 OF 25

**PAUL T. MATSUDA**  
LICENSED PROFESSIONAL ENGINEER  
No. 10901-C  
HAWAII, U.S.A.

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SIGNATURE  
LICENSE EXP. DATE: APRIL 30, 2020

REVISION	7/6/18	REVISED FENCE AND CALLOUTS	G70
DATE		BRIEF	MADE BY APPROVED

**DEPARTMENT OF HAWAIIAN HOME LANDS**  
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI  
HOOLEHUA WATER SYSTEM IMPROVEMENTS  
SITE NO. 2 - KALAMAULA IMPROVEMENTS  
JOB NO.

**PLAN AND PROFILE - ACCESS ROAD**  
BL STA 32+00 TO END

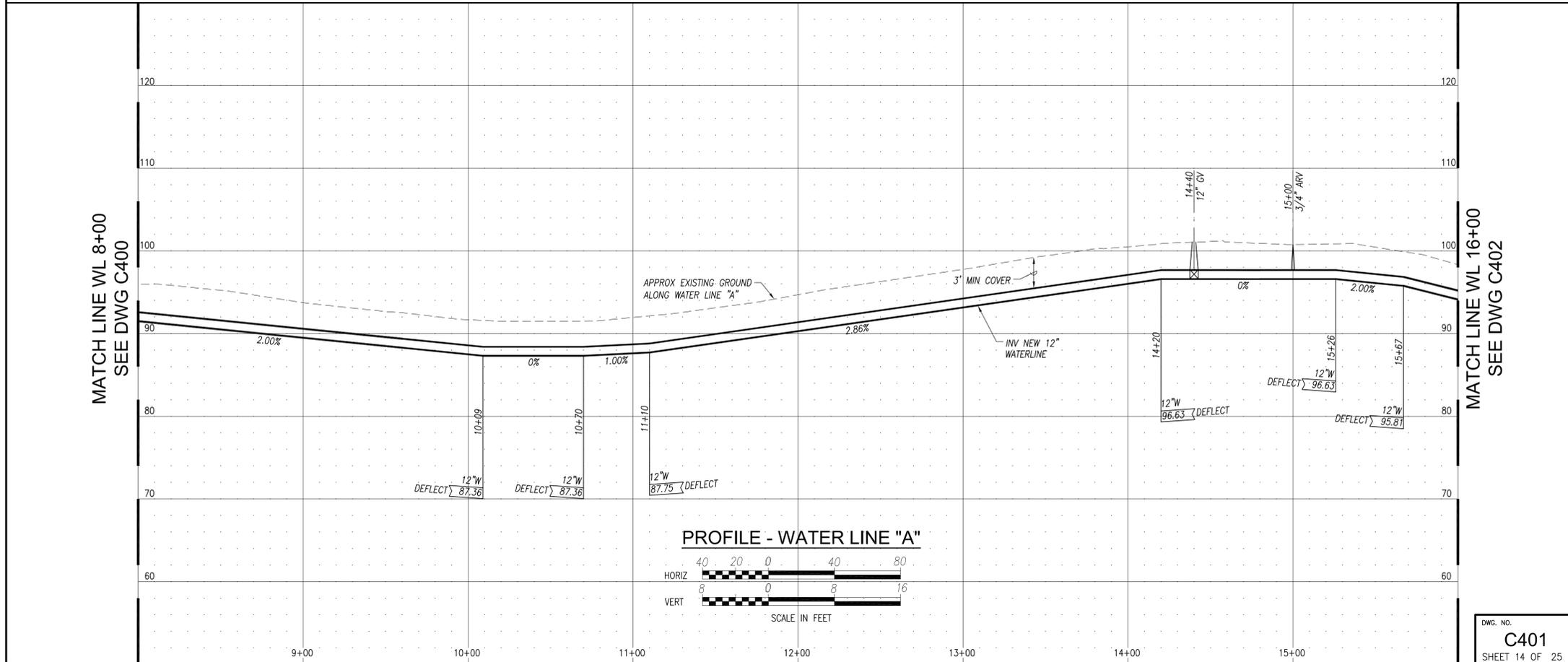
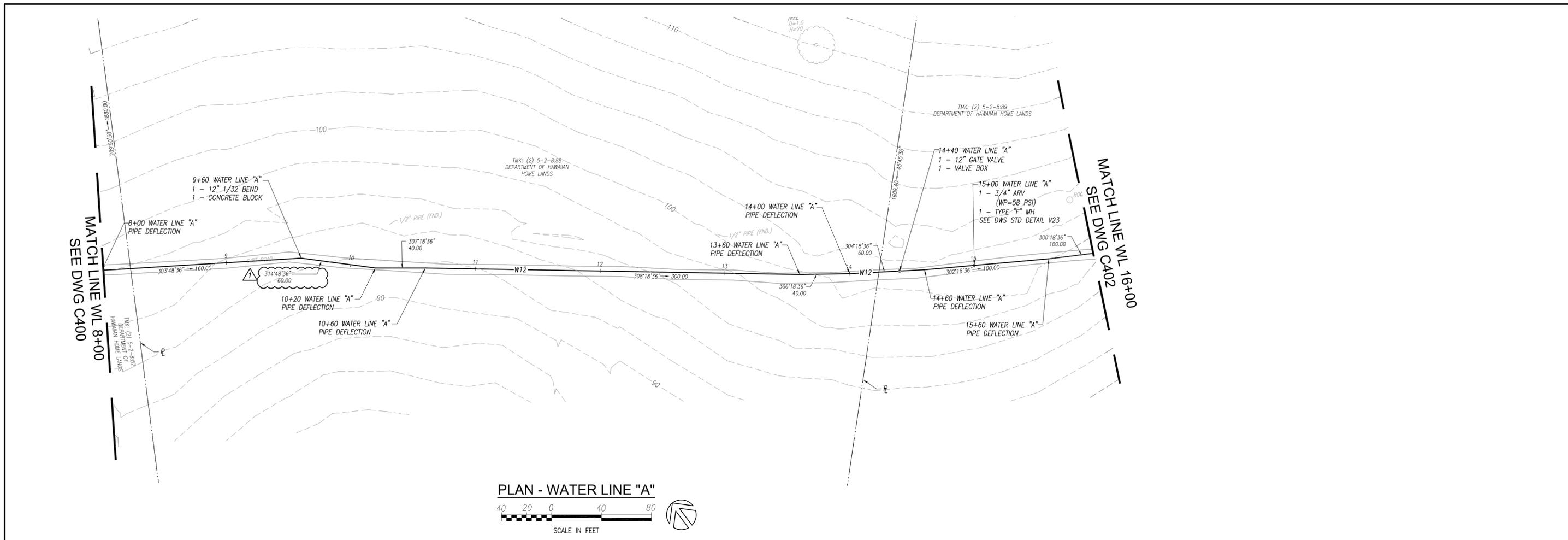
DESIGNED BY: PLM/AC CHECKED BY: RMKC DRAWN BY: CM/AC

111 S. KING STREET, SUITE 170  
HONOLULU, HAWAII 96813  
808.523.5866  
WWW.G7O.DESIGN

**G7O**

JUNE 2018





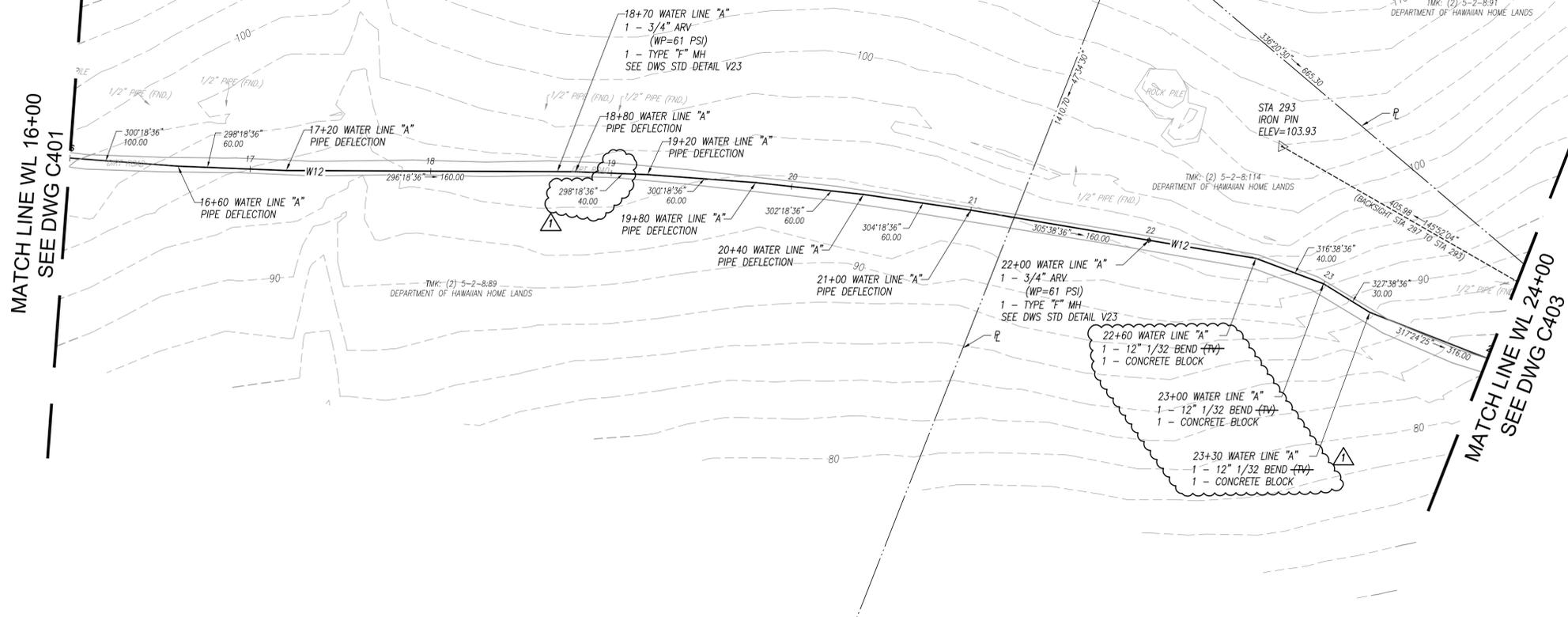
**PAUL T. MATSUDA**  
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 No. 10901-C  
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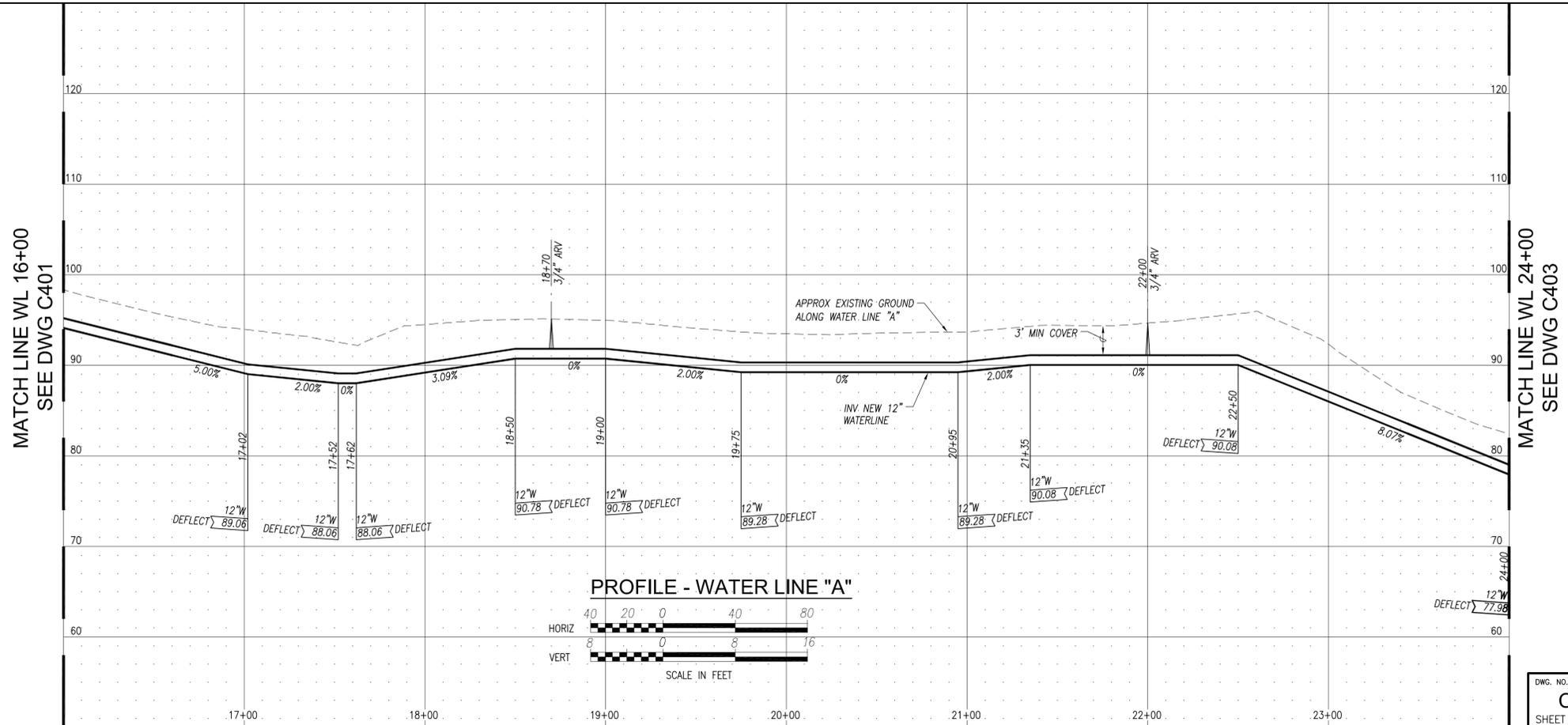
DESIGNED BY: PLM CHECKED BY: RMKC DRAWN BY: CKM  
 SIGNATURE  
 LICENSE EXP. DATE: APRIL 30, 2020

REVISION	DATE	BRIEF	MADE BY	APPROVED
7/6/18	REVISED CALLOUT			G70
<b>DEPARTMENT OF HAWAIIAN HOME LANDS</b> STATE OF HAWAII				
USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NO. 2 - KALAMAULA IMPROVEMENTS JOB NO.				
<b>PLAN AND PROFILE</b> <b>WATER LINE "A" 8+00 TO 16+00</b>				
111 S. KING STREET, SUITE 170 HONOLULU, HAWAII 96813 808.523.5866 WWW.G70DESIGN				
JUNE 2018				

DWG. NO. **C401**  
 SHEET 14 OF 25



**PLAN - WATER LINE "A"**  
 SCALE IN FEET



**PROFILE - WATER LINE "A"**  
 SCALE IN FEET

PAUL T. MATSUEDA  
 LICENSED PROFESSIONAL ENGINEER  
 No. 10901-C  
 HAWAII, U.S.A.

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DESIGNED BY: PLM CHECKED BY: RMKC DRAWN BY: CKM  
 SIGNATURE  
 LICENSE EXP. DATE: APRIL 30, 2020

REVISION	DATE	BRIEF	MADE BY	APPROVED
7/6/18	REVISED CALLOUTS		G70	

DEPARTMENT OF HAWAIIAN HOME LANDS  
 STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI  
 HOOLEHUA WATER SYSTEM IMPROVEMENTS  
 SITE NO. 2 - KALAMAULA IMPROVEMENTS  
 JOB NO.

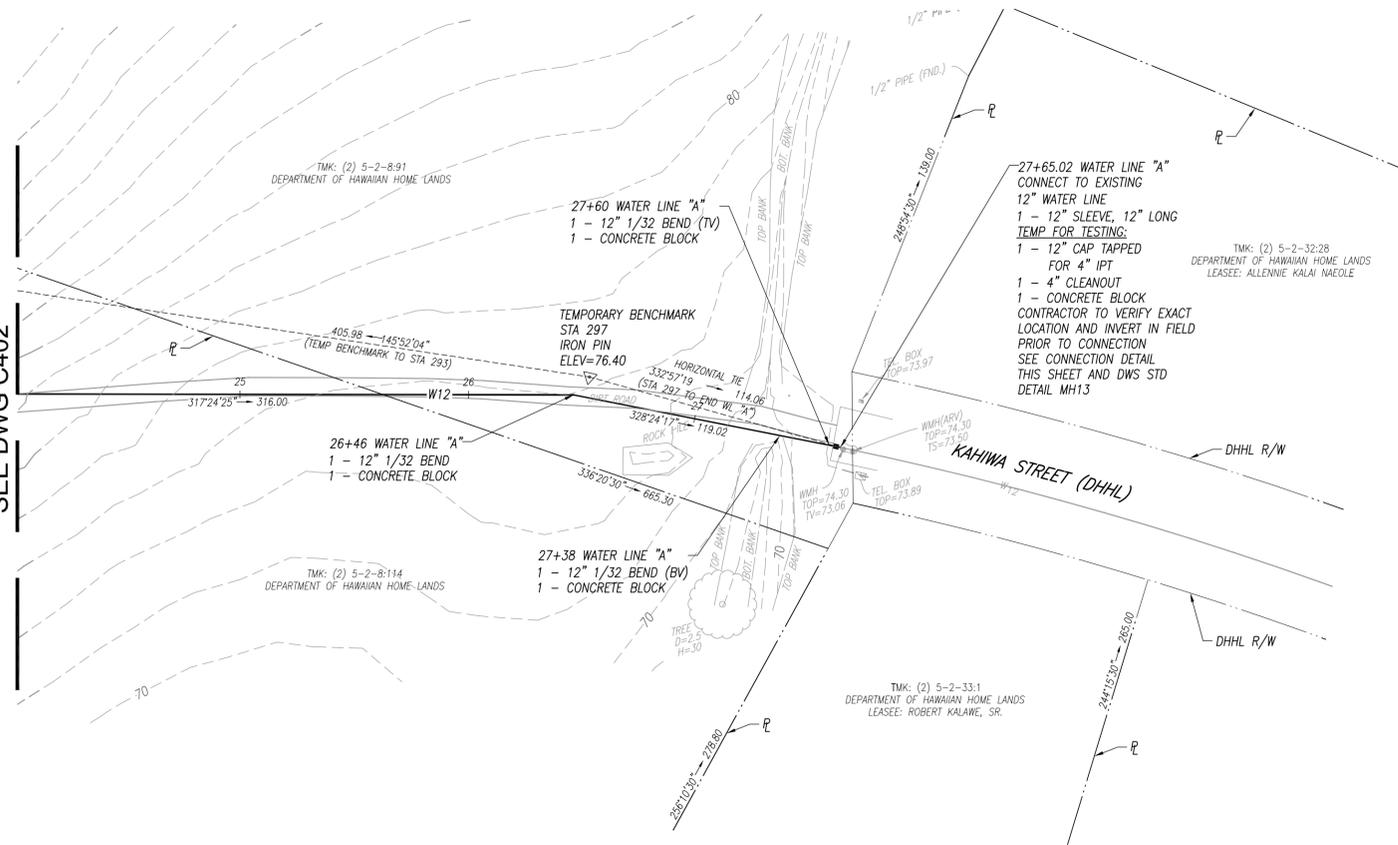
**PLAN AND PROFILE  
 WATER LINE "A" 16+00 TO 24+00**

DESIGNED BY: PLM CHECKED BY: RMKC DRAWN BY: CKM  
 111 S. KING STREET, SUITE 170  
 HONOLULU, HAWAII 96813  
 808.523.5866  
 WWW.G7O.DESIGN

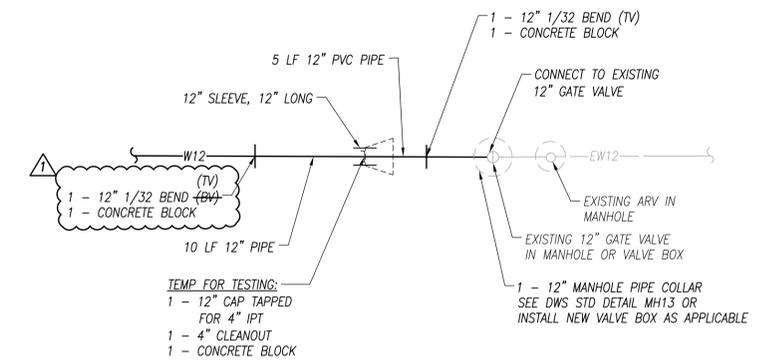
JUNE 2018

DWG. NO.  
**C402**  
 SHEET 15 OF 25

MATCH LINE WL 24+00  
SEE DWG C402

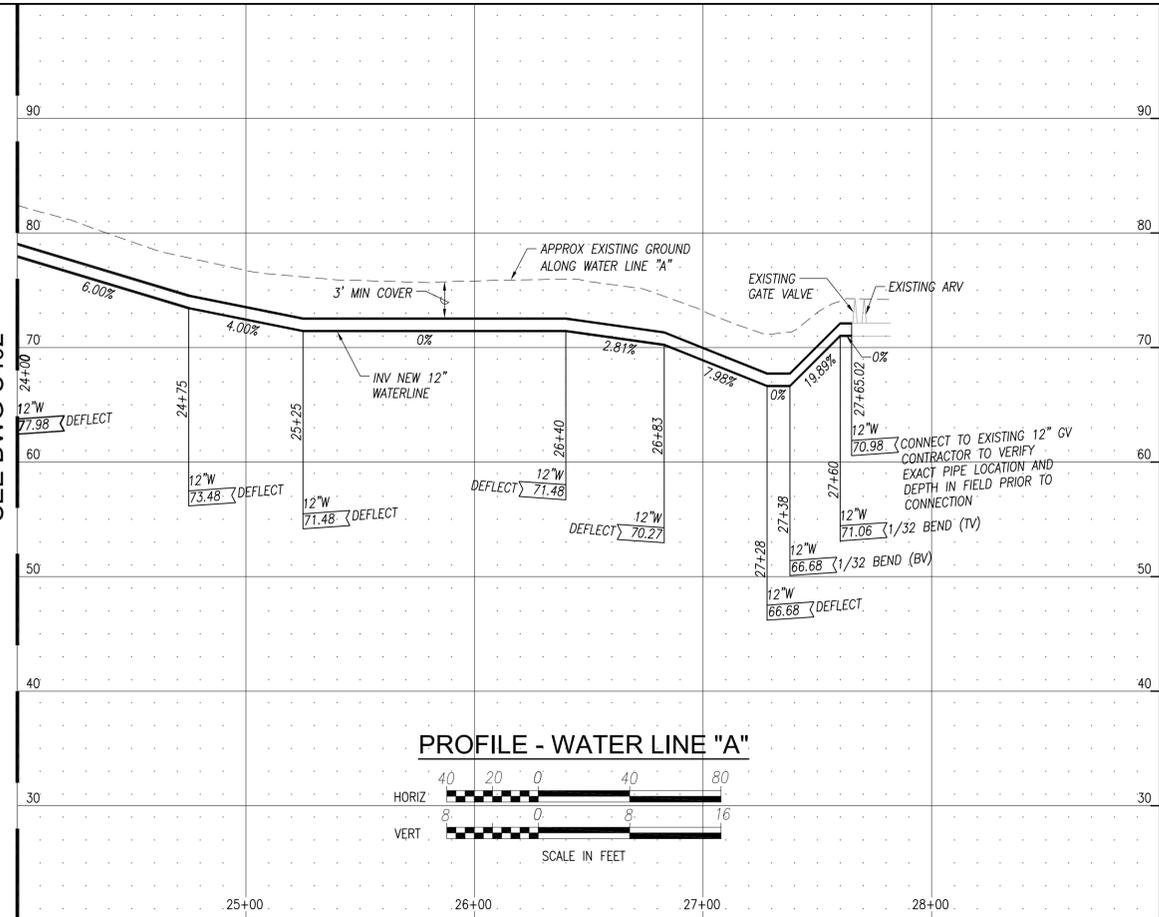


**PLAN - WATER LINE "A"**  
SCALE IN FEET



**SCHEMATIC CONNECTION DIAGRAM  
AT 27+65.02 WATER LINE "A"**  
NOT TO SCALE

MATCH LINE WL 24+00  
SEE DWG C402



**PROFILE - WATER LINE "A"**  
SCALE IN FEET

DWG. NO.  
**C403**  
SHEET 16 OF 25

**PAUL T. MATSUDA**  
LICENSED PROFESSIONAL ENGINEER  
No. 10901-C  
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

SIGNATURE  
LICENSE EXP. DATE: APRIL 30, 2020

REVISION	DATE	DESCRIPTION	BY
7/6/18	REVISED CALLOUT		G70

DEPARTMENT OF HAWAIIAN HOME LANDS  
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI  
HOOLEHUA WATER SYSTEM IMPROVEMENTS  
SITE NO. 2 - KALAMAULA IMPROVEMENTS  
JOB NO.

**PLAN AND PROFILE  
WATER LINE "A" 24+00 TO END**

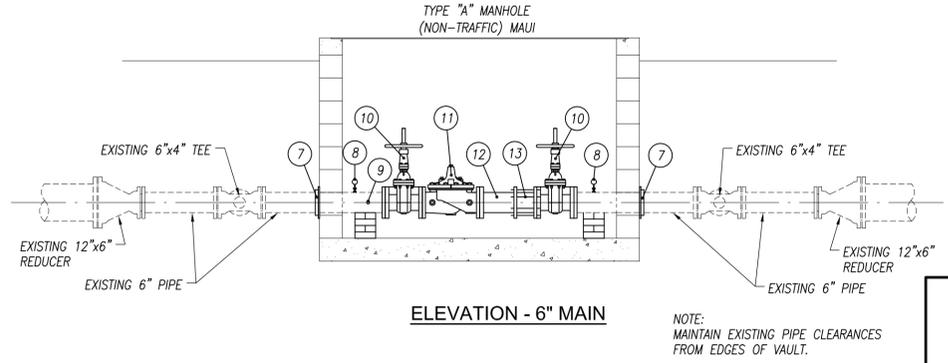
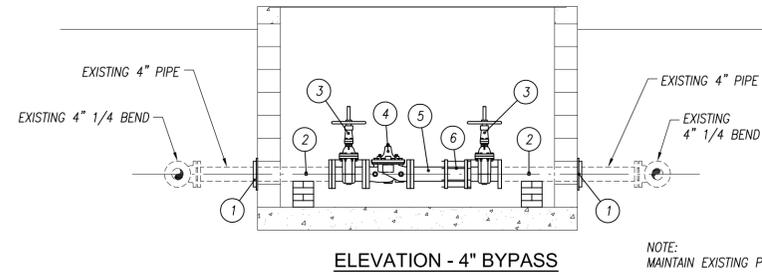
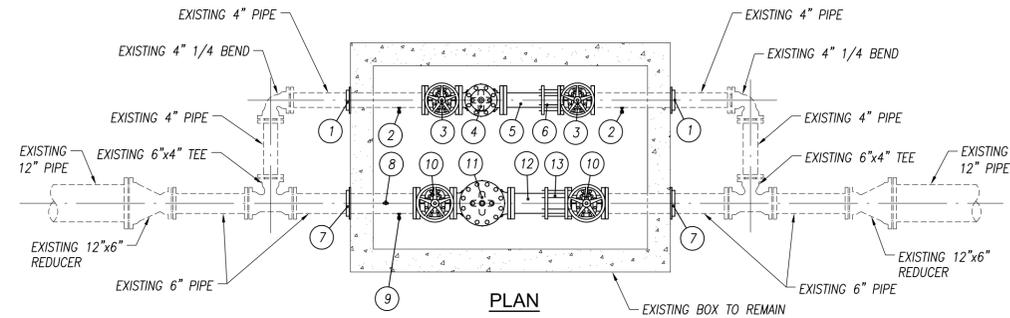
DESIGNED BY: PLM    CHECKED BY: RMKC    DRAWN BY: CKM

111 S. KING STREET, SUITE 170  
HONOLULU, HAWAII 96813  
808.523.5866  
WWW.G7O.DESIGN

**G7O**

JUNE 2018

MATERIALS SCHEDULE	
①	ADD 4" PIPE RESTRAINTS FOR PIPE PENETRATION THROUGH VAULT WALL
②	REPLACE UPSTREAM CORPORATION STOP AND NEW DOWNSTREAM CORPORATION STOP WITH CAPS
③	4" GATE VALVE, FE
④	4" PRESSURE REDUCING VALVE, FE
⑤	4" SPOOL PIECE, FE x PE
⑥	4" FLANGED COUPLING ADAPTOR WITH LOCK PINS
⑦	ADD 6" PIPE RESTRAINTS FOR PIPE PENETRATION THROUGH VAULT WALL
⑧	CORPORATION STOP AND PRESSURE GAGE ASSEMBLY
⑨	REPLACE CORPORATION STOP AND PROVIDE CAP
⑩	6" GATE VALVE, FE
⑪	6" PRESSURE REDUCING VALVE, FE
⑫	6" SPOOL PIECE, FE x PE
⑬	6" FLANGED ADAPTER WITH LOCK PINS



**PRESSURE REDUCING STATION VALVE REPLACEMENT  
KALAMAULA 12" TRANSMISSION MAIN 0.1 MG TO 0.2 MG TANKS)**  
NOT TO SCALE

NOTE: MAINTAIN EXISTING PIPE CLEARANCES FROM EDGES OF VAULT.

NOTE: MAINTAIN EXISTING PIPE CLEARANCES FROM EDGES OF VAULT.

△	7/6/18	REMOVED PRV REPLACEMENT PLAN	G70
REVISION	DATE	BRIEF	MADE BY APPROVED



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LICENSE EXP. DATE: APRIL 30, 2020

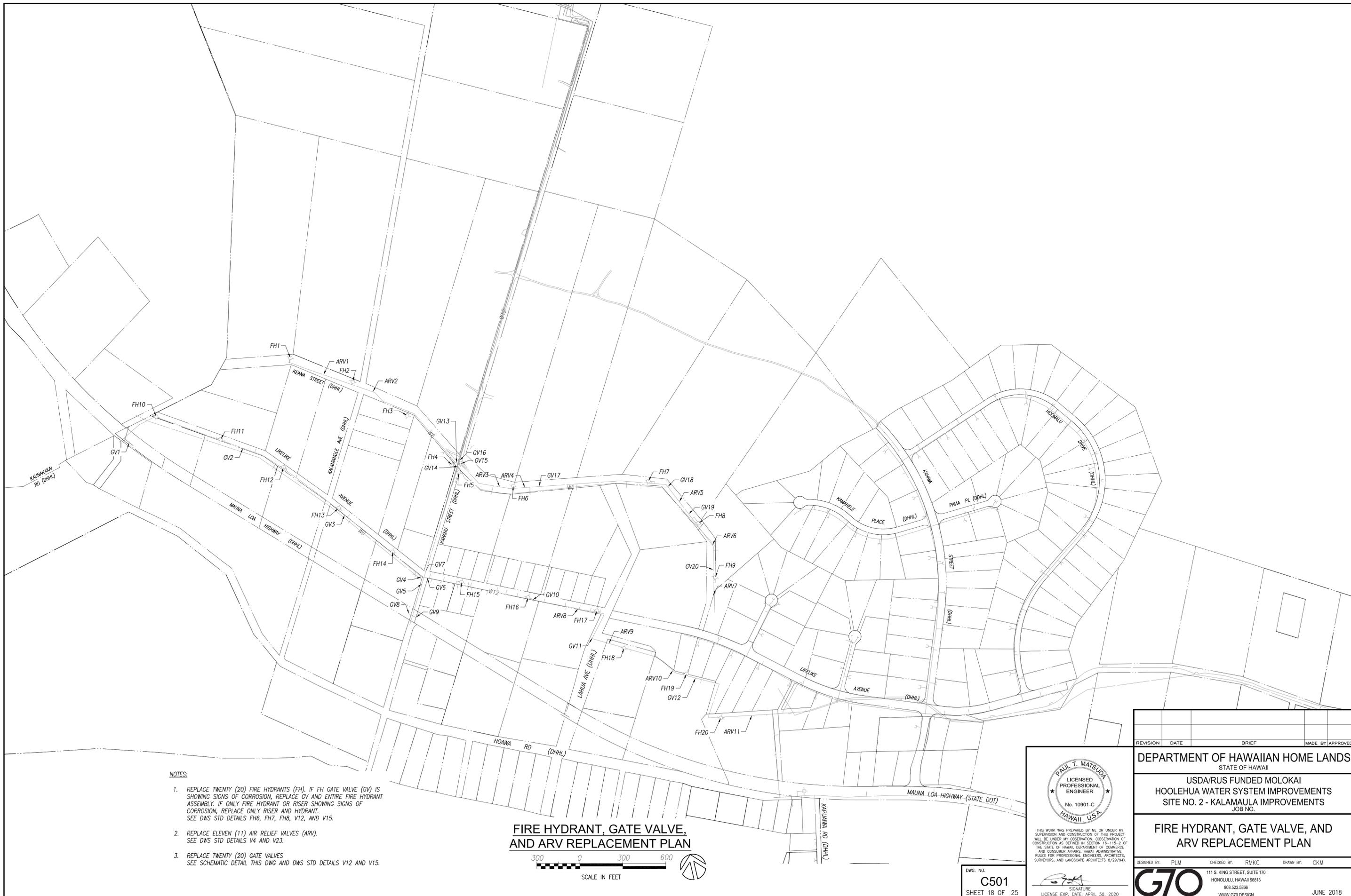
**DEPARTMENT OF HAWAIIAN HOME LANDS**  
STATE OF HAWAII  
**USDA/RUS FUNDED MOLOKAI  
HOOLEHUA WATER SYSTEM IMPROVEMENTS  
SITE NO. 2 - KALAMAULA IMPROVEMENTS  
JOB NO.**

**PRV REPLACEMENT DETAILS**

DESIGNED BY: PLM	CHECKED BY: RMKC	DRAWN BY: CKM
111 S. KING STREET, SUITE 170 HONOLULU, HAWAII 96813 808.523.5866 WWW.G7O.DESIGN		
JUNE 2018		

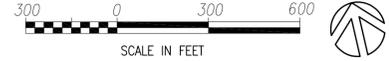
DWG. NO.  
**C500**  
SHEET 17 OF 25

FILE	POCKET	FOLDER	NO.
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- NOTES:**
1. REPLACE TWENTY (20) FIRE HYDRANTS (FH). IF FH GATE VALVE (GV) IS SHOWING SIGNS OF CORROSION, REPLACE GV AND ENTIRE FIRE HYDRANT ASSEMBLY. IF ONLY FIRE HYDRANT OR RISER SHOWING SIGNS OF CORROSION, REPLACE ONLY RISER AND HYDRANT. SEE DWS STD DETAILS FH6, FH7, FH8, V12, AND V15.
  2. REPLACE ELEVEN (11) AIR RELIEF VALVES (ARV). SEE DWS STD DETAILS V4 AND V23.
  3. REPLACE TWENTY (20) GATE VALVES. SEE SCHEMATIC DETAIL THIS DWG AND DWS STD DETAILS V12 AND V15.

**FIRE HYDRANT, GATE VALVE, AND ARV REPLACEMENT PLAN**



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 LICENSE EXP. DATE: APRIL 30, 2020

DWG. NO.  
**C501**  
 SHEET 18 OF 25

REVISION	DATE	BRIEF	MADE BY	APPROVED

**DEPARTMENT OF HAWAIIAN HOME LANDS**  
 STATE OF HAWAII

**USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NO. 2 - KALAMAULA IMPROVEMENTS JOB NO.**

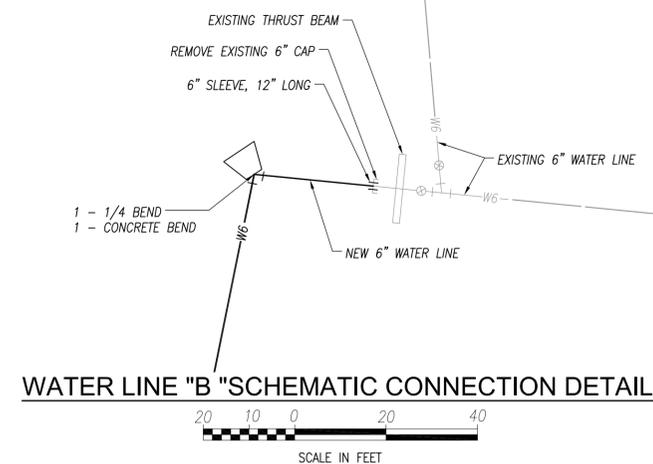
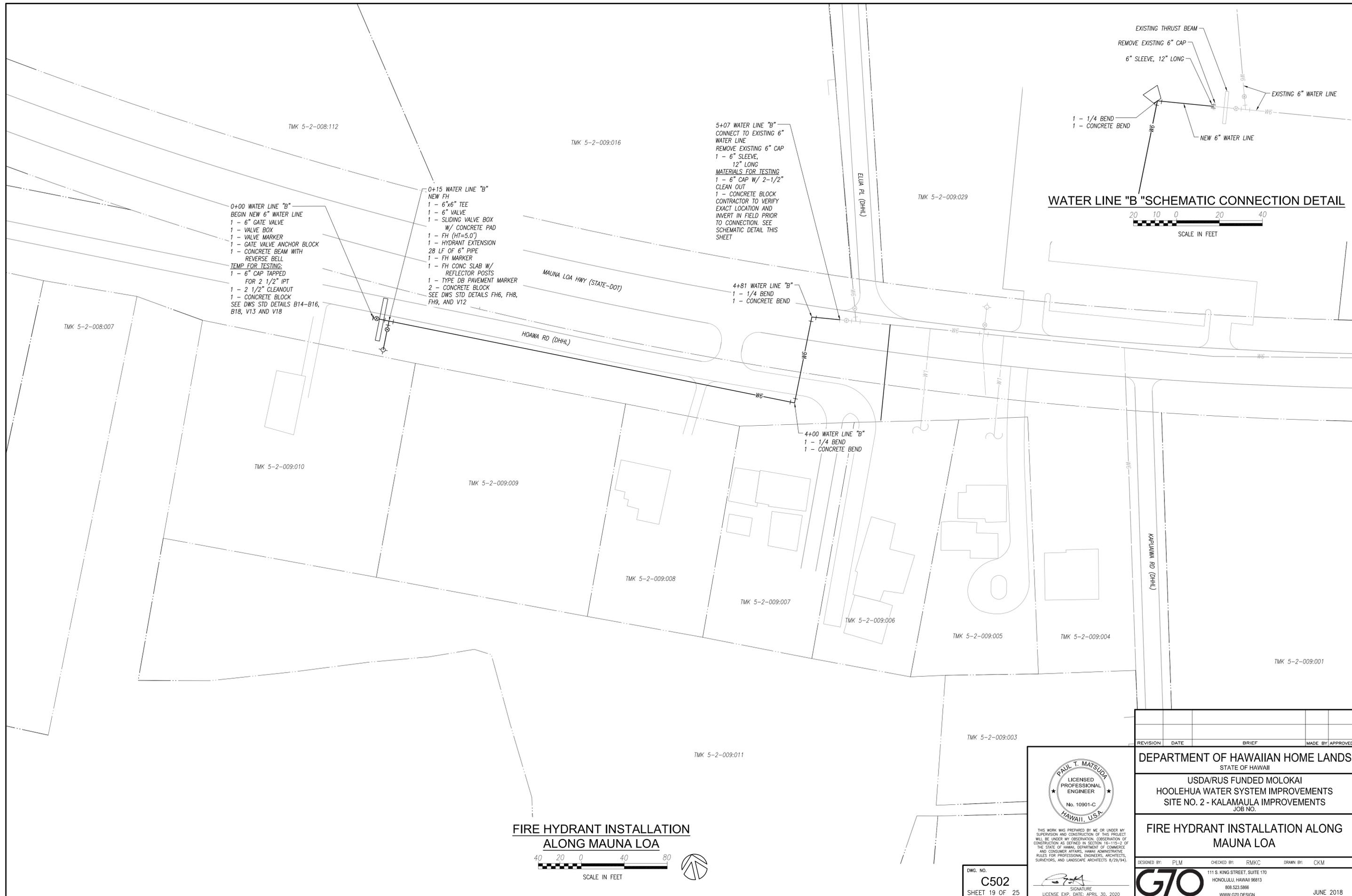
**FIRE HYDRANT, GATE VALVE, AND ARV REPLACEMENT PLAN**

DESIGNED BY: PLM	CHECKED BY: RMKC	DRAWN BY: CKM
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**G70** 111 S. KING STREET, SUITE 170  
 HONOLULU, HAWAII 96813  
 808.523.5866  
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JUNE 2018

FILE	POCKET	FOLDER	NO.



0+00 WATER LINE "B"  
 BEGIN NEW 6" WATER LINE  
 1 - 6" GATE VALVE  
 1 - VALVE BOX  
 1 - VALVE MARKER  
 1 - GATE VALVE ANCHOR BLOCK  
 1 - CONCRETE BEAM WITH REVERSE BELL  
 TEMP FOR TESTING:  
 1 - 6" CAP TAPPED FOR 2 1/2" IPT  
 1 - 2 1/2" CLEANOUT  
 1 - CONCRETE BLOCK  
 SEE DWS STD DETAILS B14-B16, B18, V13 AND V18

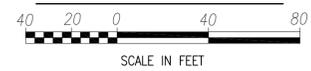
0+15 WATER LINE "B"  
 NEW FH  
 1 - 6"x6" TEE  
 1 - 6" VALVE  
 1 - SLIDING VALVE BOX W/ CONCRETE PAD  
 1 - FH (HT=5.0')  
 1 - HYDRANT EXTENSION  
 28 LF OF 6" PIPE  
 1 - FH MARKER  
 1 - FH CONC SLAB W/ REFLECTOR POSTS  
 1 - TYPE DB PAVEMENT MARKER  
 2 - CONCRETE BLOCK  
 SEE DWS STD DETAILS FH6, FH8, FH9, AND V12

5+07 WATER LINE "B"  
 CONNECT TO EXISTING 6" WATER LINE  
 REMOVE EXISTING 6" CAP  
 1 - 6" SLEEVE, 12" LONG  
 MATERIALS FOR TESTING  
 1 - 6" CAP W/ 2-1/2" CLEAN OUT  
 1 - CONCRETE BLOCK  
 CONTRACTOR TO VERIFY EXACT LOCATION AND INVERT IN FIELD PRIOR TO CONNECTION. SEE SCHEMATIC DETAIL THIS SHEET

4+81 WATER LINE "B"  
 1 - 1/4 BEND  
 1 - CONCRETE BEND

4+00 WATER LINE "B"  
 1 - 1/4 BEND  
 1 - CONCRETE BEND

**FIRE HYDRANT INSTALLATION  
 ALONG MAUNA LOA**



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

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 LICENSE EXP. DATE: APRIL 30, 2020

DWG. NO.  
**C502**  
 SHEET 19 OF 25

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS  
 STATE OF HAWAII  
 USDA/RUS FUNDED MOLOKAI  
 HOOLEHUA WATER SYSTEM IMPROVEMENTS  
 SITE NO. 2 - KALAMAULA IMPROVEMENTS  
 JOB NO.

**FIRE HYDRANT INSTALLATION ALONG  
 MAUNA LOA**

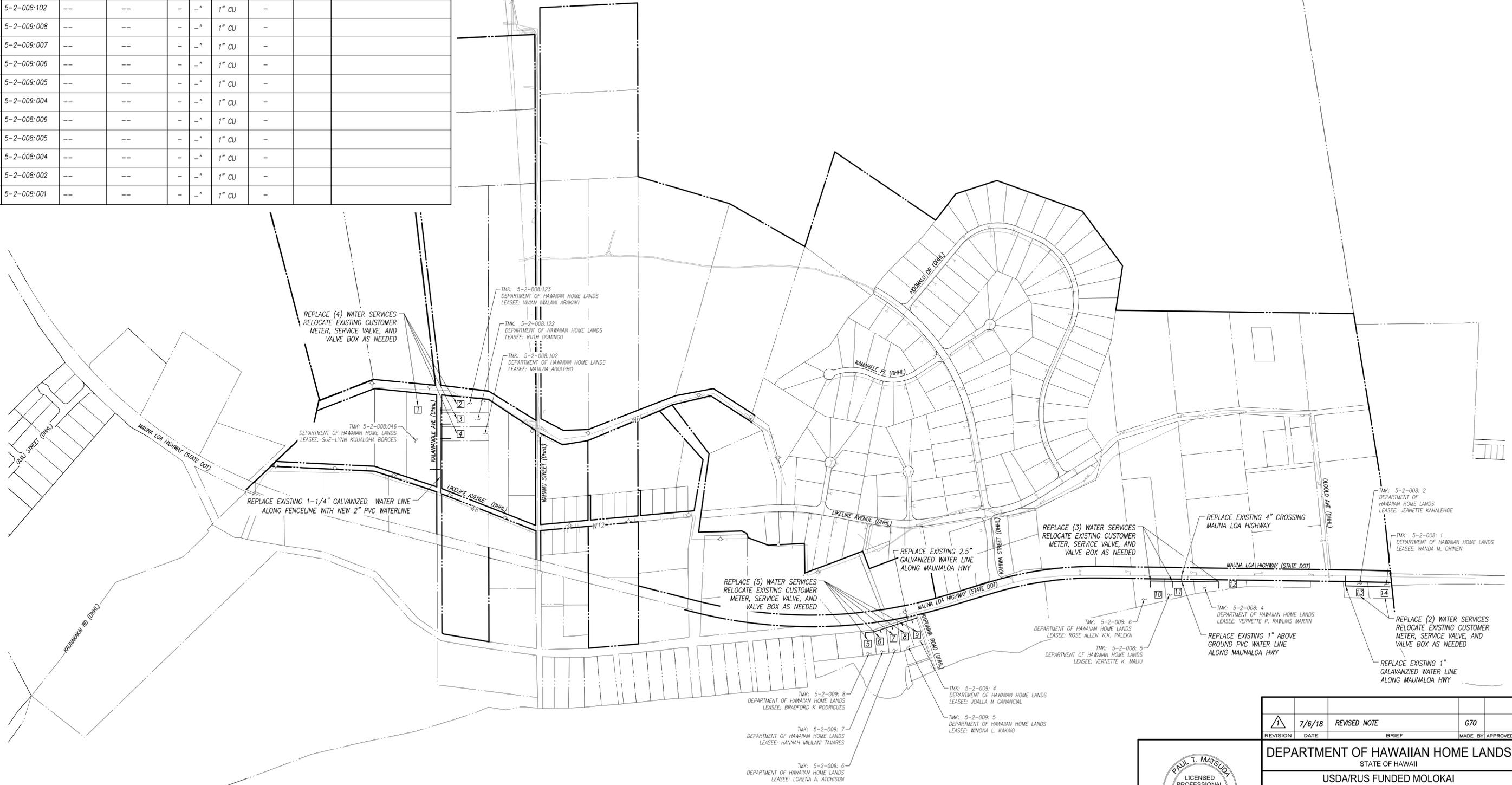
DESIGNED BY: PLM    CHECKED BY: RMKC    DRAWN BY: CKM  
 111 S. KING STREET, SUITE 170  
 HONOLULU, HAWAII 96813  
 808.523.5866  
**G7O**    WWW.G7O.DESIGN    JUNE 2018

FILE	POCKET	FOLDER	NO.

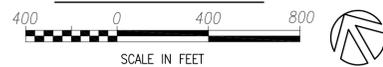
**SERVICE CONNECTION SCHEDULE**

ID NO.	TMK	EXISTING					NEW		
		PREMISE ID NUMBER	DWS MTR NUMBER ON RECORD	BOX TYPE	MTR SIZE	LAT. SIZE	CU RECON/TYPE BOX	LATERAL TYPE BOX	COMMENTS
1	5-2-008:046	--	--	--	1"	CU	--	--	
2	5-2-008:123	--	--	--	1"	CU	--	--	
3	5-2-008:122	--	--	--	1"	CU	--	--	
4	5-2-008:102	--	--	--	1"	CU	--	--	
5	5-2-009:008	--	--	--	1"	CU	--	--	
6	5-2-009:007	--	--	--	1"	CU	--	--	
7	5-2-009:006	--	--	--	1"	CU	--	--	
8	5-2-009:005	--	--	--	1"	CU	--	--	
9	5-2-009:004	--	--	--	1"	CU	--	--	
10	5-2-008:006	--	--	--	1"	CU	--	--	
11	5-2-008:005	--	--	--	1"	CU	--	--	
12	5-2-008:004	--	--	--	1"	CU	--	--	
13	5-2-008:002	--	--	--	1"	CU	--	--	
14	5-2-008:001	--	--	--	1"	CU	--	--	

**NOTE:**  
CONTRACTOR TO VERIFY EXACT LOCATION AND LATERAL SIZE IN FIELD PRIOR TO EXCAVATION FOR CONSTRUCTION TO THE MAIN.



**MAUNA LOA HIGHWAY LATERAL REPLACEMENTS**



DWG. NO.  
**C503**  
SHEET 20 OF 25

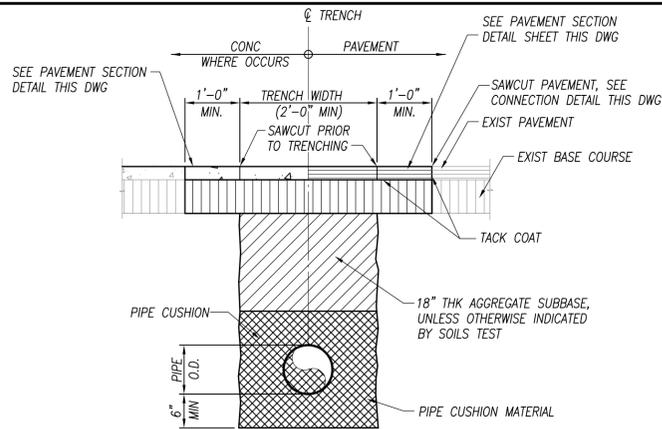
**PAUL T. MATSUDA**  
LICENSED PROFESSIONAL ENGINEER  
No. 10901-C  
HAWAII, U.S.A.

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SIGNATURE  
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REVISION	DATE	REVISION	DATE	REVISION	DATE
	7/6/18	REVISED NOTE		G70	
DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII				MADE BY APPROVED	
USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NO. 2 - KALAMAULA IMPROVEMENTS JOB NO.					
MAUNA LOA HIGHWAY LATERAL REPLACEMENTS					
DESIGNED BY: PLM	CHECKED BY: RMKC	DRAWN BY: CKM			
111 S. KING STREET, SUITE 170 HONOLULU, HAWAII 96813 808.523.5866 WWW.G7O.DESIGN		JUNE 2018			

FILE	POCKET	FOLDER	NO.
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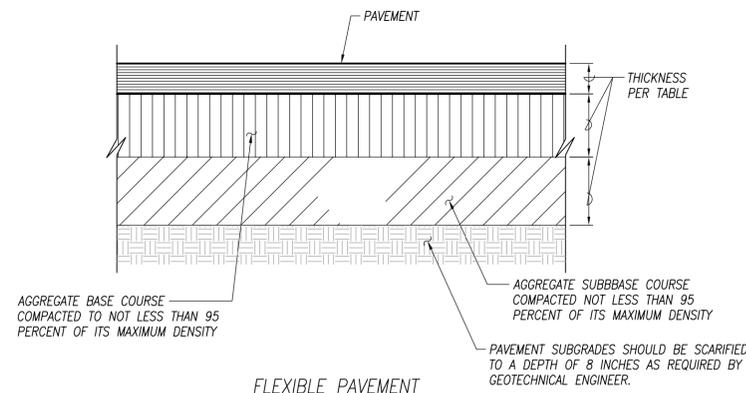


**NOTES:**

1. PAVEMENT STRUCTURES, INCLUDING A.C. PAVEMENT, CONCRETE PAVEMENT, BASE COURSE AND SUBBASE, SHALL BE EQUAL TO OR BETTER IN THICKNESS AND QUALITY.
2. ROADWAY SHALL BE PAVED TO THE TRENCH WIDTH PLUS AN ADDITIONAL ONE FOOT ON EACH SIDE OF THE TRENCH.
3. THE ROADWAY SHALL BE PAVED AN ADDITIONAL TWO FEET IN LENGTH AT EACH END OF THE TRENCH.
4. ALL DISTURBED PAVEMENT MARKINGS SHALL BE REPLACED AND ALL REQUIRED UTILITY ADJUSTMENTS SUCH AS MANHOLE COVERS, ETC., SHALL BE DONE BY THE CONTRACTOR.

**TYPICAL TRENCH RESTORATION**

NOT TO SCALE



**FLEXIBLE PAVEMENT**

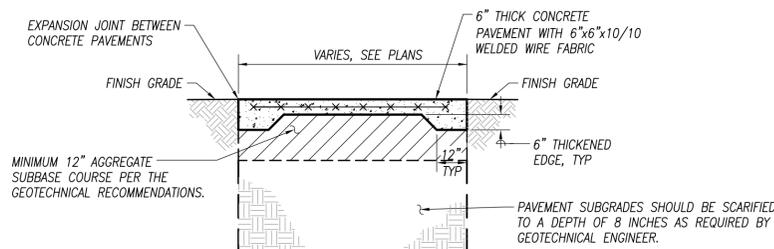
MATERIAL	0.2 MG TANK PERIMETER ROAD	SITE 2 ACCESS ROAD	STATE ROADS
ASPHALT PAVEMENT	2"	3"	4"
AGGREGATE BASE COURSE	6"	6"	8"
AGGREGATE SUBBASE COURSE	12"	12"	12"

**NOTES:**

1. UNLESS SPECIFIED OTHERWISE, ALL CONSTRUCTION SHALL BE PURSUANT TO THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION AS REVISED BY THE CITY AND COUNTY OF MAUI, SEE ENGINEERING AND POLICY MEMORANDUM NO. CEB-1-12, DATED OCTOBER 12, 2012, TITLED "AMENDING THE STANDARD SPECIFICATIONS ON ASPHALT TREATED BASE, ASPHALT SURFACE TREATMENT, AND ASPHALT CONCRETE PAVEMENT."
2. SEE PLAN FOR PAVEMENT TYPE LOCATIONS.

**PAVEMENT SECTION**

NOT TO SCALE

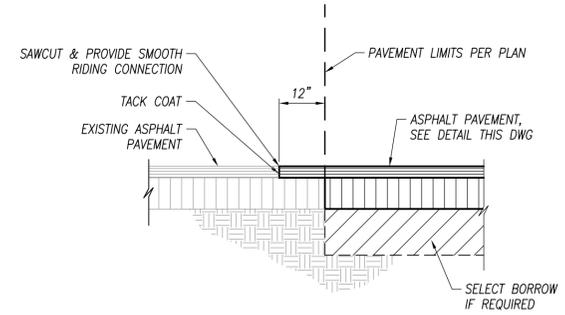


**NOTE:**

1. ALL CONCRETE PAVEMENT (PRIVATE) SHALL BE CONSTRUCTED PURSUANT TO "SECTION 37 - PORTLAND CEMENT CONCRETE PAVEMENT" OF STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION. THICKENED PAVEMENT EDGES SHALL BE PLACED ADJACENT TO UNPAVED AREAS AND SHOULD BE EMBEDDED AT LEAST 12 INCHES BELOW THE LOWEST ADJACENT GRADE.

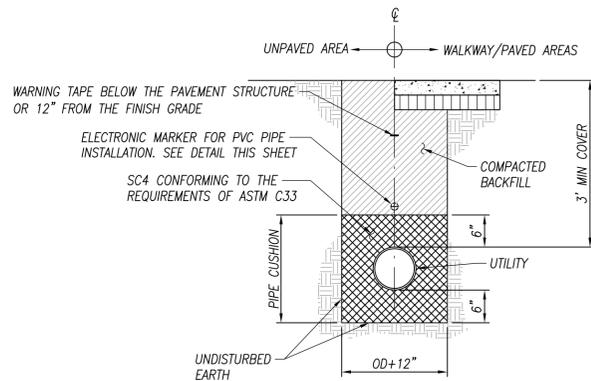
**VEHICULAR CONCRETE PAVEMENT**

NOT TO SCALE



**AC PAVEMENT CONNECTION**

NOT TO SCALE

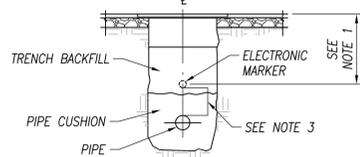
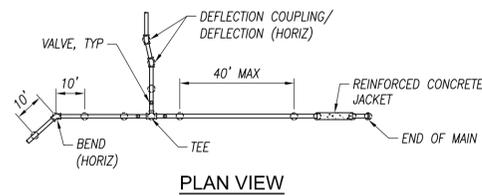


**WATER TRENCH DETAIL**

NOT TO SCALE

**NOTE:**

- ELECTRONIC MARKER

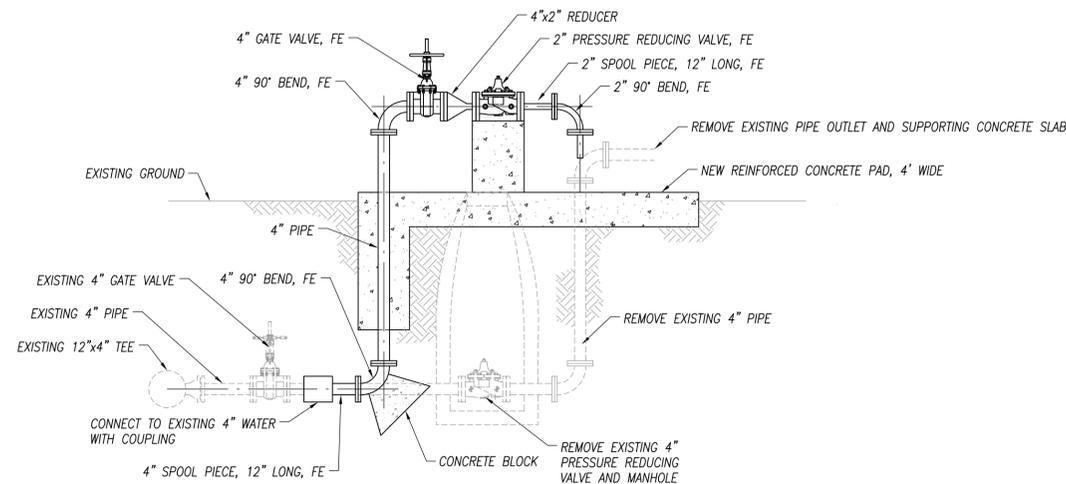


**NOTES:**

1. INSTALL ELECTRONIC MARKER OVER CENTER LINE OF PIPE AT A MINIMUM DEPTH OF 2 FEET AND A MAXIMUM DEPTH OF 3 FEET FROM FINISH GRADE.
2. INSTALL TRENCH BACKFILL AND PIPE CUSHION MATERIAL IN ACCORDANCE TO THE PLANS AND SPECIFICATIONS.
3. INSTALL ELECTRONIC MARKER AT A MINIMUM CLEARANCE OF 6-INCHES, WHERE POSSIBLE. INSTALL MARKERS ON OR ABOVE CONCRETE JACKETS.

**ELECTRONIC MARKER INSTALLATION**

NOT TO SCALE



**ELEVATION - 4" PRESSURE REDUCING VALVE REPLACEMENT**

NOT TO SCALE

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS  
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI  
HOOLEHUA WATER SYSTEM IMPROVEMENTS  
SITE NO. 2 - KALAMAULA IMPROVEMENTS  
JOB NO.

**DETAILS**

DESIGNED BY: PLM CHECKED BY: RMKC DRAWN BY: CKM

111 S. KING STREET, SUITE 170  
HONOLULU, HAWAII 96813  
808.523.5866  
WWW.G7O.DESIGN

JUNE 2018

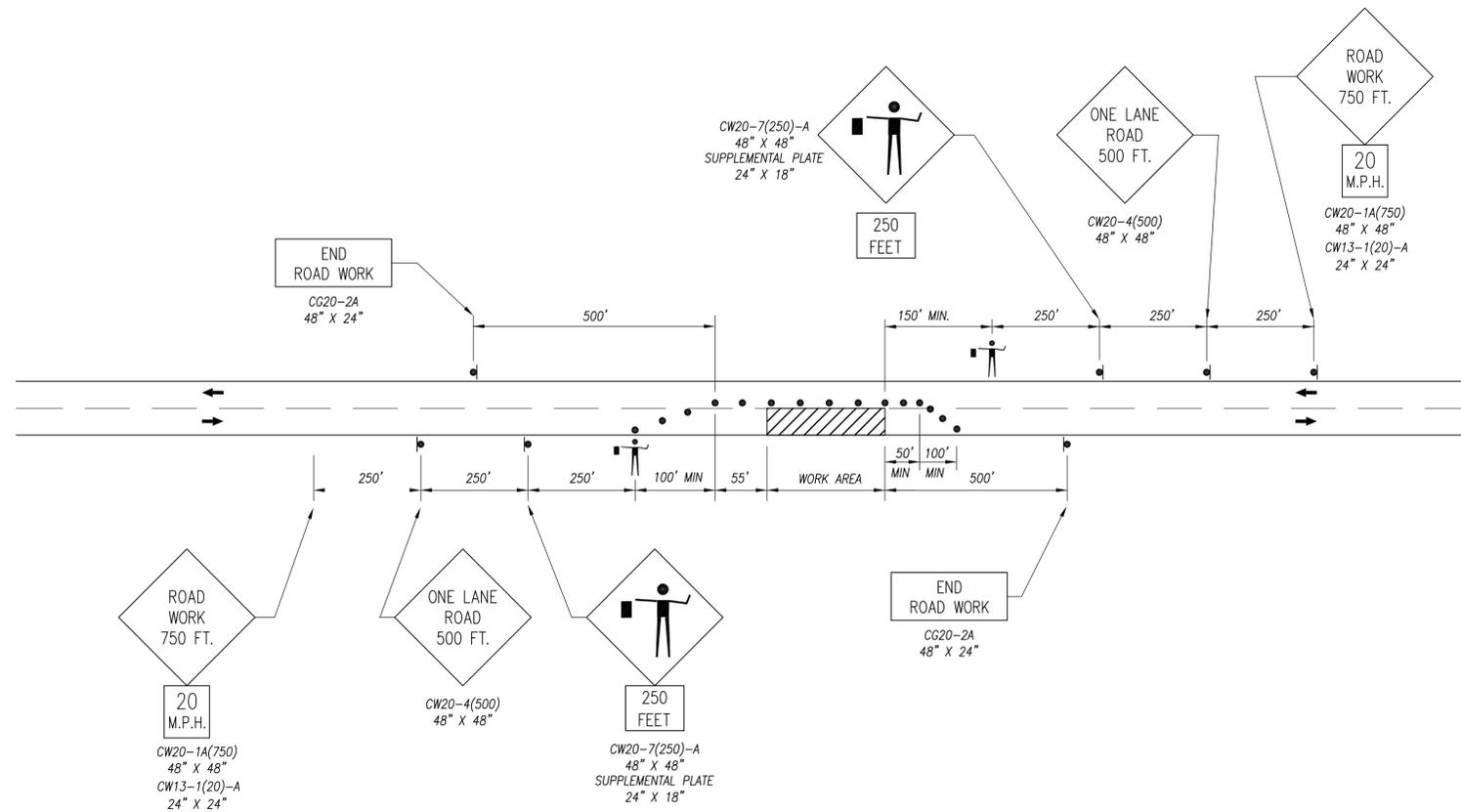
PAUL T. MATSUDA  
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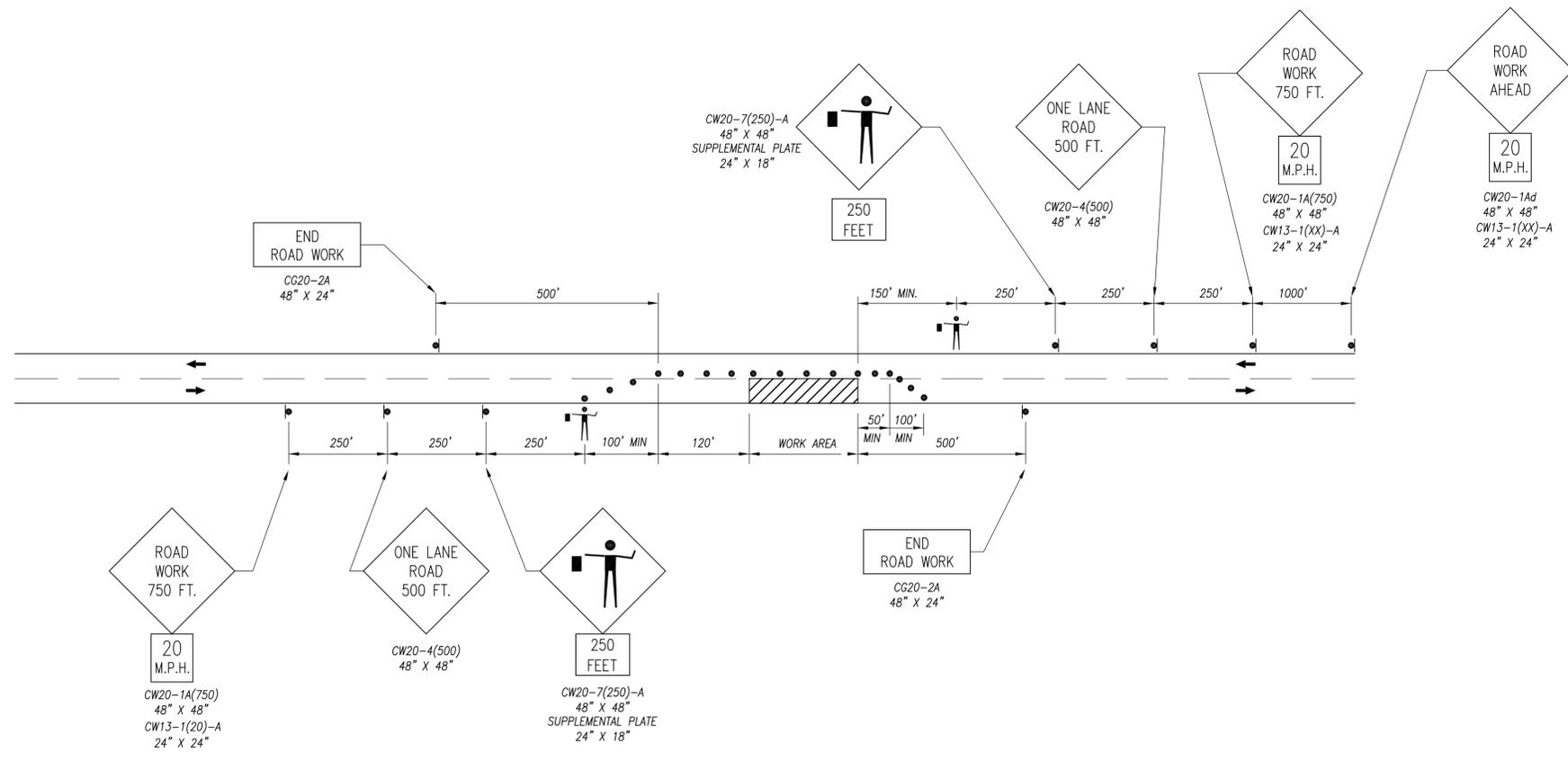
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LICENSE EXP. DATE: APRIL 30, 2020

DWG. NO.  
**C600**  
SHEET 21 OF 25

FILE	POCKET	FOLDER	NO.



**TYPICAL ONE LANE CLOSED FOR 25 MPH**  
NOT TO SCALE



**TYPICAL ONE LANE CLOSED FOR 35 MPH**  
NOT TO SCALE

**LEGEND**

- SIGN
- CONE OR DELINEATOR
- ➔ DIRECTION OF TRAFFIC
- 🚧 POLICE OFFICER/FLAGMAN
- ▨ WORK AREA

**TRAFFIC CONTROL PLAN NOTES:**

1. CONES OR DELINEATORS SHALL BE INSTALLED AT 25' O.C. MAX ON TAPERS.
2. CONES OR DELINEATORS SHALL BE INSTALLED AT 10' O.C. MAX AT ALL OTHER LOCATIONS.
3. THE PERMITEE SHALL MAKE MINOR ADJUSTMENTS AT INTERSECTIONS, DRIVEWAYS, BRIDGES, STRUCTURES, ETC., TO FIT FIELD CONDITIONS.
4. TRAFFIC CONTROL DEVICES SHALL BE INSTALLED SUCH THAT THE SIGN OR DEVICE FARTHEST FROM THE WORK AREA IS PLACED FIRST. THE OTHERS SHALL THEN BE PLACED PROGRESSIVELY TOWARD THE WORK AREA.
5. REGULATORY AND WARNING SIGNS WITHIN THE CONSTRUCTION ZONE THAT ARE IN CONFLICT WITH THE TRAFFIC CONTROL PLANS SHALL BE REMOVED OR COVERED.
6. FLAGGERS AND/OR POLICE OFFICERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES.
7. ALL TRAFFIC LANES SHALL BE A MINIMUM OF 10 FEET WIDE.
8. ALL CONSTRUCTION WARNING SIGNS SHALL BE PROMPTLY REMOVED OR COVERED WHENEVER THE MESSAGE IS NOT APPLICABLE OR NOT IN USE.
9. THE BACKS OF ALL SIGNS USED FOR TRAFFIC CONTROL SHALL BE APPROPRIATELY COVERED TO PRELUDE THE DISPLAY OF INAPPLICABLE SIGN MESSAGES (I.E. WHEN SIGNS HAVE MESSAGES ON BOTH FACES).
10. LANE CLOSURE SHALL BE LIMITED TO THE EXTENT OF ACCOMPLISHING EACH DAY'S WORK. AS SOON AS EACH DAY'S WORK IS COMPLETED, THE PERMITEE SHALL REMOVE ALL TRAFFIC CONTROL DEVICES NO LONGER NEEDED TO PERMIT FREE AND SAFE PASSAGE OF PUBLIC TRAFFIC. REMOVAL SHALL BE IN THE REVERSE ORDER OF INSTALLATION. EXISTING FADED OR OBLITERATED PAVEMENT MARKINGS THAT ARE NECESSARY FOR SAFE TRAFFIC FLOW IN THE CONSTRUCTION AREA SHALL BE REPLACED WITH TEMPORARY OR PERMANENT MARKINGS BEFORE OPENING THE ROADWAY TO PUBLIC TRAFFIC EACH DAY.
11. PERMANENT PAVEMENT MARKINGS AND TRAFFIC SIGNS SHALL BE REPLACED UPON COMPLETION OF EACH PHASE OF WORK.
12. DRIVEWAYS SHALL BE KEPT OPEN UNLESS THE OWNERS OF THE PROPERTY USING THE RIGHT-OF-WAY ARE OTHERWISE PROVIDED FOR SATISFACTORILY. FURTHER, THE PERMITEE SHALL CONTROL TRAFFIC GOING IN AND OUT OF DRIVEWAYS.
13. BUFFER AND TAPER AREAS ON APPROACH TO ANY WORK AREA SHALL BE KEPT CLEAR OF VEHICLES AND EQUIPMENT.
14. "NO PARKING" SIGNS SHALL BE POSTED WITHIN ANY WORK AREA AND FOR THE BUFFER AND TAPER AREAS APPROACHING THE WORK AREA.
15. THE CONTRACTOR SHALL BE FULLY FAMILIAR WITH THE PROJECT SITE, SURROUNDING TRANSPORTATION SYSTEM, AND THE TRAFFIC CONTROL REQUIREMENTS THAT ARE NECESSARY TO CONSTRUCT THE PROJECT COMPLETE IN PLACE AND OPERATIONAL. IT IS THE CONTRACTOR'S RESPONSIBILITY TO IMPLEMENT THE TRAFFIC CONTROL PLAN FOR THE PROTECTION OF ROAD USERS, WORKERS AND RESPONDERS THROUGH ANY AND ALL PORTIONS OF THE CONSTRUCTION OPERATIONS IN ACCORDANCE WITH THE MUTCD AND HAWAII ADMINISTRATIVE RULES. IN ADDITION, THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR THE CONTINUOUS AND EXPEDITIOUS OPERATION AND MAINTENANCE OF ALL CONSTRUCTION WARNING SIGNS, BARRICADES, LIGHTS, FLAGGERS, AND OTHER TRAFFIC CONTROL MEASURES AND/OR DEVICES REQUIRED BY THE TRAFFIC CONTROL PLAN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTINUOUSLY REVIEWING AND MAINTAINING ALL TRAFFIC CONTROL MEASURES.

REVISION	DATE	BRIEF	MADE BY	APPROVED

PAUL T. MATSUDA  
LICENSED PROFESSIONAL ENGINEER  
No. 10901-C  
HAWAII, U.S.A.

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SIGNATURE  
LICENSE EXP. DATE: APRIL 30, 2020

DEPARTMENT OF HAWAIIAN HOME LANDS  
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI  
HOOLEHUA WATER SYSTEM IMPROVEMENTS  
SITE NO. 2 - KALAMAULA IMPROVEMENTS  
JOB NO.

**TRAFFIC CONTROL PLANS**

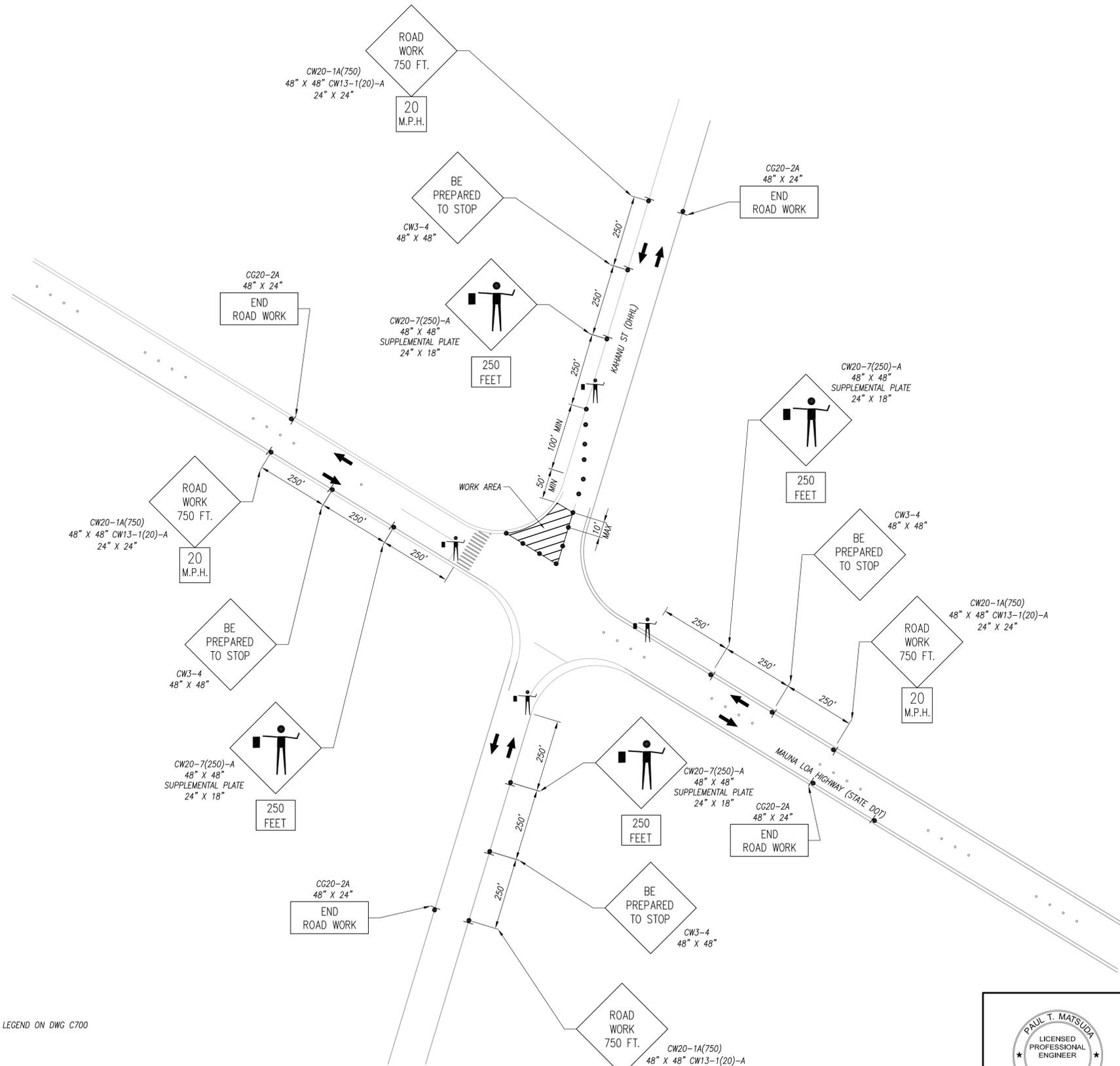
DESIGNED BY: PLM    CHECKED BY: RMKC    DRAWN BY: CKM

111 S. KING STREET, SUITE 170  
HONOLULU, HAWAII 96813  
808.523.5866  
WWW.G7O.DESIGN

JUNE 2018

DWG. NO.  
**C700**  
SHEET 22 OF 25

FILE	POCKET	FOLDER	NO.
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**NOTE:**  
SEE TRAFFIC CONTROL PLAN NOTES AND LEGEND ON DWG C700

**MAUNA LOA HIGHWAY AND KAHANU STREET  
TRAFFIC CONTROL PLAN**



**PAUL T. MATSUDA**  
LICENSED PROFESSIONAL ENGINEER  
No. 10901-C  
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).

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LICENSE EXP. DATE: APRIL 30, 2020

DWG. NO.  
**C701**  
SHEET 23 OF 25

REVISION	DATE	BRIEF	MADE BY	APPROVED

**DEPARTMENT OF HAWAIIAN HOME LANDS**  
STATE OF HAWAII

**USDA/RUS FUNDED MOLOKAI  
HOOLEHUA WATER SYSTEM IMPROVEMENTS  
SITE NO. 2 - KALAMAULA IMPROVEMENTS  
JOB NO.**

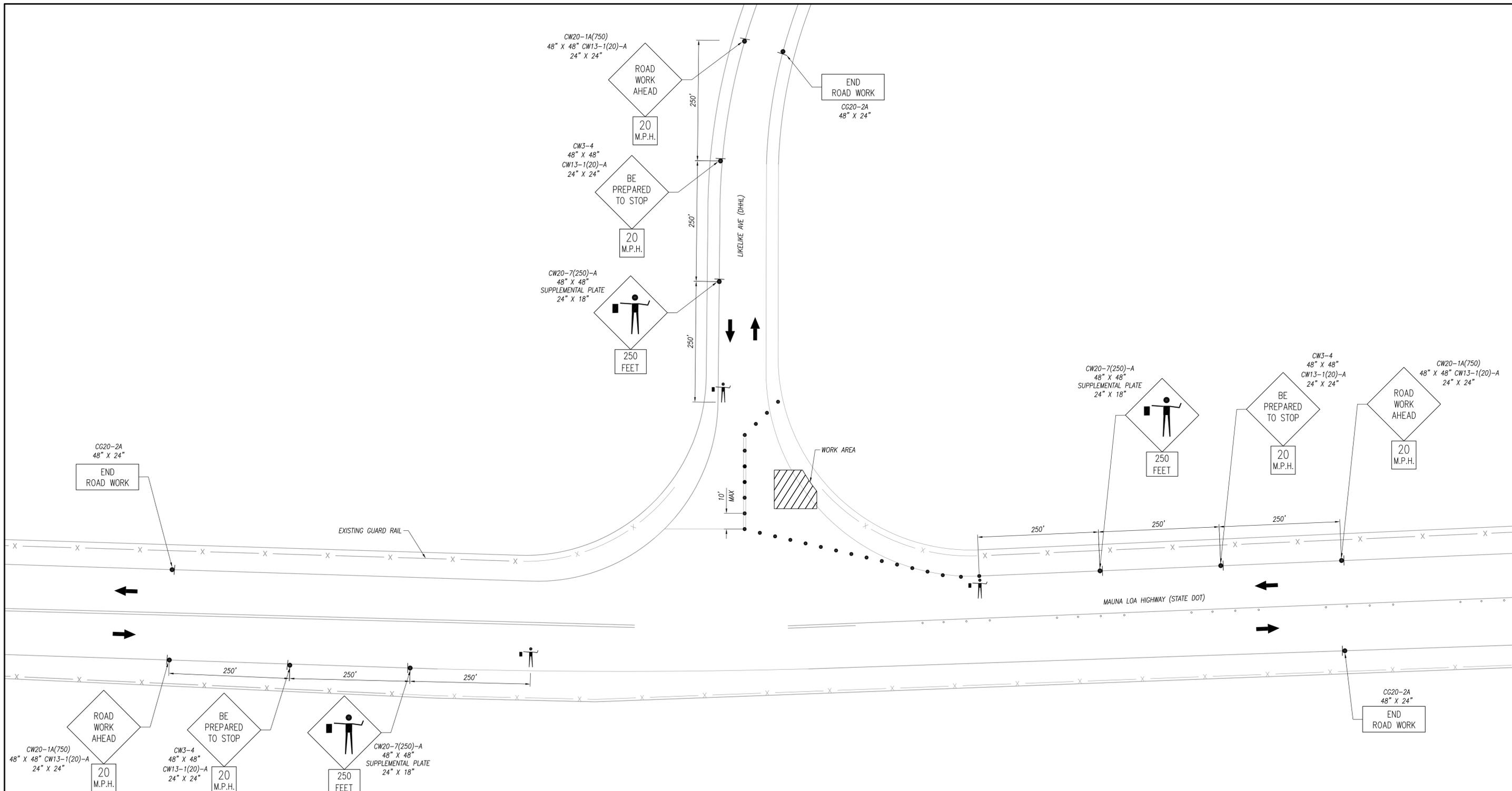
**MAUNA LOA HWY AND KAHANU ST  
TRAFFIC CONTROL PLAN**

DESIGNED BY: PLM    CHECKED BY: RMKC    DRAWN BY: CKM

**G7O**    111 S. KING STREET, SUITE 170  
HONOLULU, HAWAII 96813  
808.523.5866    WWW.G7O.DESIGN

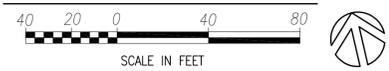
JUNE 2018

FILE	POCKET	FOLDER	NO.



**NOTE:**  
SEE TRAFFIC CONTROL PLAN NOTES AND LEGEND ON DWG C700

**MAUNA LOA HIGHWAY AND LIKELIKE AVE  
TRAFFIC CONTROL PLAN**



PAUL T. MATSUDA  
LICENSED PROFESSIONAL ENGINEER  
No. 10901-C  
HAWAII, U.S.A.

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REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF HAWAIIAN HOME LANDS  
STATE OF HAWAII

USDA/RUS FUNDED MOLOKAI  
HOOLEHUA WATER SYSTEM IMPROVEMENTS  
SITE NO. 2 - KALAMAULA IMPROVEMENTS  
JOB NO.

**MAUNA LOA HWY AND LIKELIKE AVE  
TRAFFIC CONTROL PLAN**

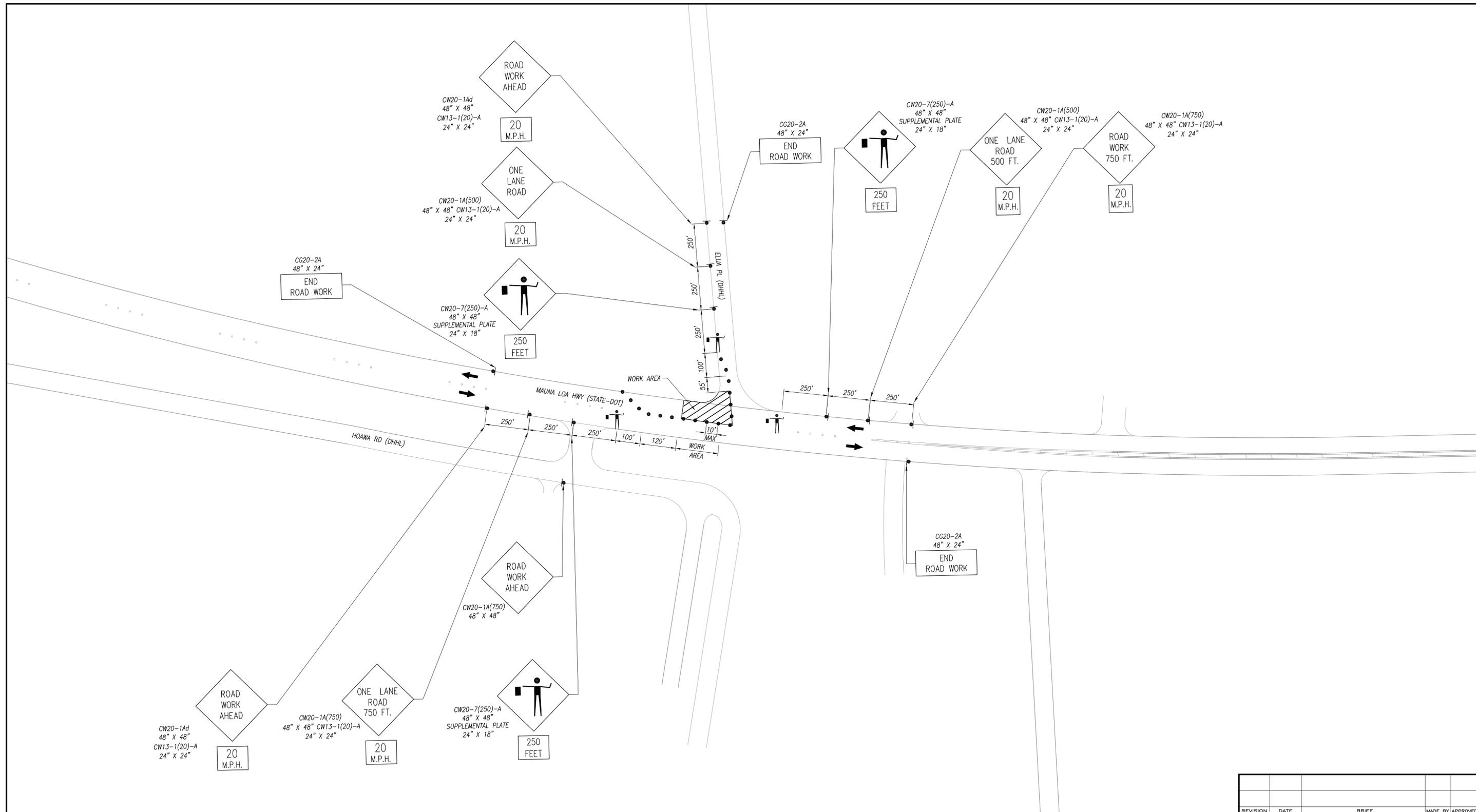
DESIGNED BY: PLM    CHECKED BY: RMKC    DRAWN BY: CKM

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JUNE 2018

DWG. NO.  
**C702**  
SHEET 24 OF 25

FILE	POCKET	FOLDER	NO.



**NOTE:**

SEE TRAFFIC CONTROL PLAN NOTES AND LEGEND ON DWG C700

**MAUNA LOA HIGHWAY AND ELUA PLACE  
TRAFFIC CONTROL PLAN**



REVISION	DATE	BRIEF	MADE BY APPROVED	
<b>DEPARTMENT OF HAWAIIAN HOME LANDS</b> STATE OF HAWAII USDA/RUS FUNDED MOLOKAI HOOLEHUA WATER SYSTEM IMPROVEMENTS SITE NO. 2 - KALAMAULA IMPROVEMENTS JOB NO.				
<b>MAUNA LOA HIGHWAY AND ELUA PL</b> <b>TRAFFIC CONTROL PLAN</b>				
DESIGNED BY: PLM	CHECKED BY: RMKC	DRAWN BY: CKM		
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII, DEPARTMENT OF COMMERCE AND CONSUMER AFFAIRS, HAWAII ADMINISTRATIVE RULES FOR PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS, AND LANDSCAPE ARCHITECTS 8/29/94).		<b>G7O</b> 111 S. KING STREET, SUITE 170 HONOLULU, HAWAII 96813 808.523.5866 WWW.G7O.DESIGN		
DWG. NO. <b>C703</b> SHEET 25 OF 25		LICENSE EXP. DATE: APRIL 30, 2020 JUNE 2018		

FILE	POCKET	FOLDER	NO.
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