

STATE OF HAWAII  
DEPARTMENT OF HAWAIIAN HOME LANDS

INVITATION FOR BIDS

IFB NO.: IFB-16-HHL-006

DECEMBER 2015

SEALED OFFERS FOR  
CONSOLIDATION/RE-SUBDIVISION KEOKEA-WAIOHULI SUBDIVISION PHASE 1A  
(GRADING AND DRAINAGE IMPROVEMENTS)  
WILL BE RECEIVED NO LATER THAN  
2:00 P.M. (HST) ON JANUARY 15, 2016

AND OPENED SHORTLY THEREAFTER AT THE DEPARTMENT OF HAWAIIAN HOME  
LANDS' MAUI DISTRICT OFFICE, 655 KAUMUALII STREET, SUITE 1, WAILUKU,  
MAUI 96793

QUESTIONS RELATING TO THIS SOLICITATION SHOULD BE DIRECT TO:

STEWART MATSUNAGA, PROJECT MANAGER  
LAND DEVELOPMENT DIVISION, DEPARTMENT OF HAWAIIAN HOME LANDS  
TELEPHONE: (808) 620-9283, FACSIMILE: (808) 620-9299,  
E-MAIL: STEWART.T.MATSUNAGA@HAWAII.GOV

*NOTE: Interested bidders may complete the Invitation for Bids' (IFB) Sign-In Sheet (included with this solicitation) and fax, mail or E-mail to the Project Manager. All bid Addenda will be issued on the Department of Hawaiian Home Lands (DHHL) website. Therefore, all interested bidders should check the website from now through bid opening. It is the sole responsibility of the interested bidder to be knowledgeable of all addenda related to this procurement. The DHHL shall not be responsible for any missing addenda, attachments or other information regarding this IFB if a bid offer is submitted from an incomplete IFB.*

**NOTICE TO BIDDERS  
INVITATION FOR BID  
Department of Hawaiian Home Lands  
Land Development Division  
IFB NO.: IFB-16-HHL-006**

SEALED BIDS for IFB No.: IFB NO.: IFB-16-HHL-006, Consolidation/Re-Subdivision Keokea-Waiohuli Subdivision Phase 1A, Keokea, Makawao, Maui, State of Hawaii, will be received by the Department of Hawaiian Home Lands (DHHL) Maui District Office, at 655 Kaunualii Street, Suite 1, Wailuku, Hawaii 96793, until **2:00 P.M., Hawaii Standard Time (H.S.T.), January 15, 2016**, at which time all bids will be publicly opened and read aloud. Bids received after the time fixed for opening or delivered anywhere other than as specified above will not be considered.

Site development for Consolidation/Re-Subdivision Keokea-Waiohuli Subdivision Phase 1A project consists of constructing drainage improvements and grading work for 46 residential lots resulting from the consolidation and re-subdivision of 37 lots. It will also involve constructing ditches, swales, earth berms, and access improvements. In addition, water laterals and meters, and other utilities will require the relocation of facilities. Contractor shall be required to furnish all labor, materials, and equipment to complete the project.

To be eligible to submit a bid, the Bidder and/or his subcontractors shall possess all required valid State of Hawaii licenses and specialty licenses needed to perform the work for this project. A surety bid bond will be required for this Invitation for Bids (IFB).

This project is subject to Section 103D, Hawaii Revised Statutes, and to the payment of not less than the prevailing salaries and wages promulgated by the State of Hawaii, Department of Labor and Industrial Relations. Contractor shall also comply with U.S. Department of Housing and Urban Development (HUD) Federal Labor Standards Provisions.

Bid documents may be examined at or obtained from DHHL at the Department of Hawaiian Home Lands website:

<http://www.dhhl.hawaii.gov/procurement/>

There is no fee assessment to download the IFB documents from the DHHL website.

**It is the responsibility of Interested Bidders to check the DHHL website for any addenda issued by DHHL.**

All prospective bidders/offerors are invited to attend a PRE-BID CONFERENCE to be held 10:00 A.M., H.S.T, on DECEMBER 22, 2015, at the WAIOHULI COMMUNITY CENTER, located at 881 Lauie Drive, Kula, Maui, Hawaii 96790. Subcontractors and union representatives are also invited to attend. The conference is to provide bidders/offerors with an opportunity to ask questions about the contractual requirements and technical aspects of the project. A site visit of the project site will follow the pre-bid conference. Attendance of the pre-bid conference and/or site visit is not a condition for submitting a bid, but strongly recommended. Persons needing special accommodations due to a disability may submit such requests to Stewart Matsunaga,

Project Manager, Land Development Division, via facsimile at (808) 620-9299, or e-mail to [Stewart.t.matsunaga@hawaii.gov](mailto:Stewart.t.matsunaga@hawaii.gov).

A written NOTICE OF INTENTION TO BID is required and shall be received by the DHHL, Land Development Division, at 91-5420 Kapolei Parkway, Kapolei, Hawaii 96707, no later than 4:30 P.M., DECEMBER 28, 2015. Submittal of a NOTICE OF INTENTION TO BID via facsimile at (808) 620-9299, or E-mailed to: [Stewart.t.matsunaga@hawaii.gov](mailto:Stewart.t.matsunaga@hawaii.gov) is acceptable.

A properly executed and notarized STANDARD QUALIFICATION QUESTIONNAIRE FOR OFFERORS, SPO Form-21 ("Questionnaire") is required and shall be submitted to the DHHL Land Development Division, at 91-5420 Kapolei Parkway, Kapolei, Hawaii 96707 no later than 4:30 P.M., DECEMBER 28, 2015. Completed Questionnaires may also be E-mailed to: [Stewart.t.matsunaga@hawaii.gov](mailto:Stewart.t.matsunaga@hawaii.gov). The Questionnaire can be downloaded at the State Forms Central website:

<http://spo.hawaii.gov/all-forms/>

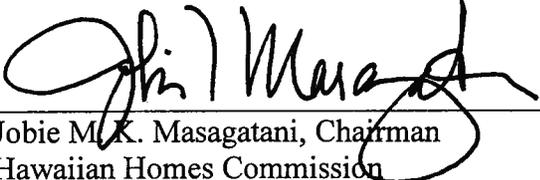
Bids shall comply with the requirements of the IFB. Bids that do not comply with the IFB may be subject to disqualification. DHHL reserves the right to amend the IFB by written addenda, to reject any and all bids, or to waive any defects in said bids where DHHL deems it is in the best interest of the State.

CAMPAIGN CONTRIBUTIONS BY STATE AND COUNTY CONTRACTORS PROHIBITED. If awarded a contract in response to this solicitation, offeror agrees to comply with HRS §11-355, which states that campaign contributions are prohibited from a State and county government contractor during the term of the contract if the contractor is paid with funds appropriated by the legislative body between the execution of the contract through the completion of the contract.

Questions regarding this project may be directed in writing to Stewart Matsunaga, Land Development Division, DHHL, 91-5420 Kapolei Parkway, Kapolei, Hawaii 96707, via facsimile at (808) 620-9299, or E-mail to: [Stewart.t.matsunaga@hawaii.gov](mailto:Stewart.t.matsunaga@hawaii.gov).

Dated at Honolulu, Hawaii, this 11th day of DECEMBER, 2015.

DEPARTMENT OF HAWAIIAN HOME LANDS

  
Jobie M. K. Masagatani, Chairman  
Hawaiian Homes Commission

Posted on the internet at: <http://spo3.hawaii.gov/notices/notices>

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## Department of Hawaiian Home Lands - Land Development Division

### SIGN-IN SHEET

<b>IFB- 16-HHL-006</b>	<b>Project Description: Consolidation/Re-Subdivision Keokea-Waiohuli Subdivision Phase 1A</b> (Grading and Drainage Improvements)
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#### INSTRUCTIONS

Read this packet carefully. After completing this form, you may fax or E-mail this form to Stewart Matsunaga, Project Manager, at #620-9299 (Fax), or [Stewart.t.matsunaga@hawaii.gov](mailto:Stewart.t.matsunaga@hawaii.gov). If you have any questions, you may call Stewart Matsunaga at (808) 620-9283.

<b>Pre-Bid Conference/Site Inspection:</b>	<u>Date:</u> <b>December 22, 2015</b> <u>Time:</u> <b>10:00 A.M.</b> <u>Location:</u> Waiohuli Community Center, 881 Lauie Drive, Kula, Maui, Hawaii 96790.
<b>1) Notice Of Intention To Bid, and</b> <b>2) Standard Qualification Questionnaire</b>  <b>Must Be Received By:</b>	<u>Date:</u> <b>December 28, 2015</b> <u>Time:</u> <b>4:30 PM</b> <u>Location:</u> 91-5420 Kapolei Parkway, Kapolei, HI 96707 *Both may be faxed to: (808) 620-9299, or E-mailed to: <a href="mailto:Stewart.t.matsunaga@hawaii.gov">Stewart.t.matsunaga@hawaii.gov</a> . Questions or comments may be directed to Mr. Stewart Matsunaga, at: (808) 620-9283 (Ofc).
<b>Bid Offers Due No Later Than:</b>  <b>(Bid Opening to Follow)</b>	<u>Date:</u> <b>January 15, 2016</b> <u>Time:</u> <b>2:00 PM</b> <u>Locations:</u> <b>DHHL Maui District Office-</b> 655 Kaunualii Street, Suite 1, Wailuku, Maui, HI 96793.  * The 2:00 P.M. deadline shall be according to the official clock established at each location the bids are received.

<b>Company:</b> _____	<b>Date:</b> _____
<b>Address:</b> _____	
<b>Contact Person:</b> _____	<b>Phone No.</b> _____
<b>Fax No.</b> _____	<b>Cell No.</b> _____
<b>Email Address:</b> _____	
<i>(Signature of Person Downloading Packet (Print Name &amp; Title after signature))</i>	

**NOTICE OF INTENTION TO BID**

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

Mrs. Jobie M.K. Masagatani, Chairman  
Hawaiian Homes Commission  
DEPARTMENT OF HAWAIIAN HOME LANDS  
91-5420 Kapolei Parkway  
Kapolei, Hawaii 96707

Attention: Stewart Matsunaga, Land Development Division  
**Notice of Intention to Bid due 4:30 p.m., December 28, 2015.**

Gentlemen:

In accordance with the provisions of Section 103D-310, Hawaii Revised Statutes and Hawaii Administrative Rules 3-122-111, it is the intention of the undersigned to bid on IFB No. IFB-16-HHL-006, CONSOLIDATION/RE-SUBDIVISION KEOKEA-WAIOHULI SUBDIVISION PHASE 1A (GRADING AND DRAINAGE IMPROVEMENTS), Kula, County of Maui, State of Hawaii, for which bids will be opened after **2:00 p.m., January 15, 2016, at the DHHL Maui District Office.**

_____	_____
Name of Firm	Contractor's License No.
_____	_____
Address	Hawaii General Excise Tax No.
_____	_____
City, State and Zip Code	Telephone No. / Facsimile No.
	_____
	E-mail address

Respectfully submitted,

_____
Signature
_____
Print Name and Title

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

Gentlemen:

The Department of Hawaiian Home Lands acknowledges on this date above, your Notice of Intention to Bid on IFB-16-HHL-006.

\_\_\_\_\_  
Jobie M. K. Masagatani, Chairman  
Hawaiian Homes Commission

# **SAMPLE**

## **STATE OF HAWAII STANDARD QUALIFICATION QUESTIONNAIRE FOR OFFERORS**

issued by the

**PROCUREMENT POLICY BOARD**

**STATE OF HAWAII**

**June 16, 2003**

**To be filed with the procurement officer calling for offers  
in accordance with Section 103D-310, HRS, as amended.**

Submitted By \_\_\_\_\_

Address \_\_\_\_\_

Date \_\_\_\_\_

## STANDARD QUALIFICATION QUESTIONNAIRE

COVERING EXPERIENCE, EQUIPMENT AND FINANCIAL STATEMENT OF OFFERORS. THE OFFICER CALLING FOR OFFERS MAY REQUIRE THE OFFEROR TO FURNISH ADDITIONAL INFORMATION NOT SPECIFICALLY COVERED HEREIN. ALL ITEMS MUST BE ANSWERED AND OMISSIONS MAY BE CONSIDERED GOOD CAUSE FOR UNFAVORABLE CONSIDERATION.

### GENERAL INFORMATION

1. The statements contained in this Questionnaire are being furnished for consideration in submitting an offer for the following project:

(a) Project Title \_\_\_\_\_

(b) Location \_\_\_\_\_

(c) Bid Opening Date \_\_\_\_\_

2. The Questionnaire is being submitted in behalf of:

(a) Name of Offeror \_\_\_\_\_

- A Corporation
- A Partnership
- An Individual
- A Joint-Venture

(b) Address \_\_\_\_\_

(c) Telephone No. \_\_\_\_\_

(d) Date Submitted \_\_\_\_\_

3. If the bid is submitted by a joint venture, composed of two or more individual firms, then each member firm comprising the joint venture must submit all information listed on pages 3 through 16, inclusive, of the Questionnaire and, in addition, answer the following:

(a) Members of joint Venture \_\_\_\_\_

(b) Date of Joint Venture Agreement \_\_\_\_\_

(c) Is agreement between members comprising the joint venture joint and several liability? \_\_\_\_\_

If not, state the terms of agreement in this respect: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



5. Has any officer or partner of your organization in the past five (5) years been an officer or partner of some other organization that failed to complete a contract? If so, state name of individual, other organization and reason therefore \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
6. Has any officer or partner of your organization in the past five (5) years failed to complete a contract handled in his own name? \_\_\_\_\_ If so, state name of individual, name of Owner and reason therefore.  
\_\_\_\_\_  
\_\_\_\_\_
7. In what other lines of business are you financially interested? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
8. For what corporations or individuals in the past five (5) years have you performed work, and to whom do you refer? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
9. For what counties within the State of Hawaii have you performed work and to whom do you refer?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
10. For what Bureaus or Departments of the State government have you performed work and to whom do you refer?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
11. Have you performed work for the U. S. Government? \_\_\_\_\_ If so, when and to whom do you refer?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
12. Have you ever performed any work for any other governmental agencies outside the State of Hawaii? \_\_\_\_\_ If so, when and to whom do you refer? \_\_\_\_\_

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13. What is the [construction] experience of the principal individuals of your organization?

Individual's Name	Present Position or Office	Years of Work Experience	Magnitude and Type of Work	In What Capacity?

# EQUIPMENT QUESTIONNAIRE

Submitted by \_\_\_\_\_

- A Corporation
- A Partnership
- An Individual

Principal Office \_\_\_\_\_

**The signatory of this questionnaire guarantees the truth and accuracy of all statements and of all answers to interrogatories hereinafter made**

1. In what manner have you inspected this proposed work? Explain in detail. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
2. Explain your plan or layout for performing the proposed work. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
3. The work, if awarded to you, will have the personal supervision of whom?  
\_\_\_\_\_  
\_\_\_\_\_
4. Do you intend to do the hauling on the proposed work with your own force? \_\_\_\_\_ If so, give amount and type of equipment to be used. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
5. If you intend to sublet the hauling or perform it through an agent, state amount of sub-contract or agent's contract, and, if known, the name and address of sub-contractor or agent, amount and type of his equipment and financial responsibility \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
6. Do you intend to do grading on the proposed work with your own forces? \_\_\_\_\_ If so, give type of equipment to be used \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_





# FINANCIAL STATEMENT

Submitted by \_\_\_\_\_

- A Corporation
- A Partnership
- An Individual

Principal Office \_\_\_\_\_

The signatory of this questionnaire guarantees the truth and accuracy of all statements and of all answers to interrogatories hereinafter made

## BALANCE SHEET

As of \_\_\_\_\_, 20\_\_\_\_\_

### Assets

#### Current assets:

Cash and cash equivalents (1)	\$ _____
Short-term investments (2)	_____
Accounts receivable, net (3)	_____
Inventories (4)	_____
Costs and estimated earnings in excess of billings on uncompleted contracts (5)	_____
Prepaid expenses and other (6)	_____
Sub-Total Current Assets	_____

#### Property and equipment:

Land (7)	_____
Buildings (8)	_____
Vehicles, machinery and equipment (9)	_____
Furniture and fixtures (10)	_____
Less accumulated depreciation	( _____ )
Sub-Total Net Property and Equipment	_____

#### Other assets:

Cash surrender value of life insurance policies (11)	_____
Deposits and other (12)	_____
Sub-Total Other Assets	_____

Total Assets: \$ \_\_\_\_\_

**BALANCE SHEET (Continued)**

**Liabilities and Stockholder's Equity**

Current liabilities:

Current portion of long-term debt (1)	\$ _____
Accounts payable (2)	_____
Billings in excess of costs and estimated earnings on uncompleted contracts (3)	_____
Accrued liabilities and other (4)	_____
Sub-Total Current Liabilities	_____

Long-term debt, net of current portion (5) \_\_\_\_\_

Sub-Total Liabilities & Long-term Debt: \$ \_\_\_\_\_

Stockholder's equity:

Capital stock (6)	_____
Additional paid-in capital (7)	_____
Retained earnings	_____
Treasury stock (8)	( _____ )
Sub-Total Stockholder's Equity	\$ _____

Total Liabilities and Stockholder's Equity \$ \_\_\_\_\_

## DETAILS RELATIVE TO ASSETS

(1) Cash and cash equivalents:

<u>Financial Institution</u>	<u>Type of Account</u>	<u>Amount</u>
_____	_____	\$ _____
_____	_____	_____
_____	_____	_____
		\$ _____

(2) Short-term investments:

<u>Type of Security</u>	<u>Cost</u>	<u>Unrealized Gains</u>	<u>Unrealized Losses</u>	<u>Estimated Fair Value</u>
_____	\$ _____	\$ _____	\$ _____	\$ _____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
	\$ _____	\$ _____	\$ _____	\$ _____

(3) Accounts receivable (list major debtors):

Completed contracts

<u>Name</u>	<u>Description</u>	<u>Completion Date</u>	<u>Contract Amount</u>	<u>Amount Receivable</u>
_____	_____	\$ _____	\$ _____	\$ _____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
		\$ _____	\$ _____	\$ _____

Other than completed contracts

<u>Name</u>	<u>Description</u>	<u>Due Date</u>	<u>Amount Receivable</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
	Less allowance for doubtful accounts		( _____ )
			\$ _____

(4) Inventories

<u>Description</u>	<u>Cost</u>	<u>Market Value</u>	<u>Lower of Cost or Market Value</u>
_____	\$ _____	\$ _____	\$ _____
_____	_____	_____	_____
_____	_____	_____	_____
	\$ _____	\$ _____	\$ _____

**DETAILS RELATIVE TO ASSETS (Continued)**

(5) Costs and estimated earnings in excess of billings on uncompleted contracts

<u>Name</u>	<u>Description</u>	<u>Completion Date</u>	<u>Contract Amount</u>	<u>Costs and Estimated Earnings to Date</u>	<u>Billings to Date</u>	<u>Costs and Estimated Earnings in Excess of Billings</u>
		\$ _____	\$ _____	\$ _____	\$ _____	
			\$ _____	\$ _____	\$ _____	\$ _____

(6) Prepaid expenses and other

<u>Description</u>	<u>Amount</u>
_____	\$ _____
_____	_____
_____	_____
	\$ _____

(7) Land

<u>Description</u>	<u>Location</u>	<u>Amount</u>
_____	_____	\$ _____
_____	_____	_____
_____	_____	_____
		\$ _____

(8) Buildings

<u>Description</u>	<u>Location</u>	<u>Amount</u>
_____	_____	\$ _____
_____	_____	_____
_____	_____	_____
		\$ _____

(9) Vehicles, machinery and equipment

<u>Description</u>	<u>Amount</u>
_____	\$ _____
_____	_____
_____	_____
	\$ _____

(10) Furniture and fixtures

<u>Description</u>	<u>Amount</u>
_____	\$ _____
_____	_____
_____	_____
	\$ _____

**DETAILS RELATIVE TO ASSETS (Continued)**

(11) Cash surrender value of life insurance policies

<u>Key Employee</u>	<u>Insurance Company</u>	<u>Policy Amount</u>	<u>Paid-Up Additional Insurance</u>	<u>CSV Amount</u>
_____	_____	\$ _____	\$ _____	\$ _____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
Less loans payable				(_____)
		\$ _____	\$ _____	\$ _____

(12) Deposits and other

<u>Description</u>	<u>Amount</u>
_____	\$ _____
_____	_____
_____	_____
	\$ _____

**DETAILS RELATIVE TO LIABILITIES AND STOCKHOLDER'S EQUITY**

(1) Current portion of long-term debt (maturing within 12 months)

<u>Lender</u>	<u>Description</u>	<u>Security Pledged</u>	<u>Due Date</u>	<u>Amount</u>
_____	_____	_____	_____	\$ _____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	\$ _____

(2) Accounts payable (list major creditors)

<u>Name</u>	<u>Past Due Amount</u>	<u>Amount</u>
_____	\$ _____	\$ _____
_____	_____	_____
_____	_____	_____
_____	\$ _____	\$ _____

(3) Billings in excess of costs and estimated earnings on uncompleted contracts

<u>Name</u>	<u>Description</u>	<u>Completion Date</u>	<u>Contract Amount</u>	<u>Costs and Estimated Earnings to Date</u>	<u>Billings to Date</u>	<u>Billings in excess of costs and Estimated Earnings</u>
_____	_____	_____	\$ _____	\$ _____	\$ _____	\$ _____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	\$ _____	\$ _____	\$ _____	\$ _____

(4) Accrued liabilities and other

<u>Description</u>	<u>Amount</u>
_____	\$ _____
_____	_____
_____	_____
_____	\$ _____

(5) Long-term debt, net of current portion

<u>Lender</u>	<u>Description</u>	<u>Security Pledged</u>	<u>Due Date</u>	<u>Amount</u>
_____	_____	_____	_____	\$ _____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	\$ _____

**DETAILS RELATIVE TO LIABILITIES AND STOCKHOLDER'S EQUITY (Continued)**

(6) Capital stock

<u>Type of Stock</u>	<u>Class</u>	<u>No. of Shares Authorized</u>	<u>No. of Shares Issued and Outstanding</u>	<u>Par Value</u>	<u>Amount</u>
_____	_____	_____	_____	\$ _____	\$ _____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
					\$ _____

(7) Additional paid-in capital

<u>Description</u>	<u>Amount</u>
_____	\$ _____
_____	_____
_____	_____
	\$ _____

(8) Treasury stock

<u>Type of Stock</u>	<u>Class</u>	<u>No. of Shares</u>	<u>Cost</u>
_____	_____	_____	\$ _____
_____	_____	_____	_____
_____	_____	_____	_____
			\$ _____

**STATEMENTS OF INCOME AND RETAINED EARNINGS**

**For the Years Ended \_\_\_\_\_, 20\_\_\_\_ and 20\_\_\_\_**

	20____	20____
	_____	_____
Contract revenues	\$ _____	\$ _____
Costs of contracts	_____	_____
Gross income from contracts		
General and administrative expenses	_____	_____
Income from operations		
Other income (expense)	_____	_____
Income before income taxes		
Income taxes	_____	_____
Net income		
Retained earnings, beginning of the year	_____	_____
Retained earnings, end of the year	\$ _____	\$ _____

If a corporation, answer this: Capital paid in cash, \$ _____ When Incorporated _____ In what State _____ Date registered in Hawaii _____ President's name _____ Vice-President's name _____ Secretary's name _____ Treasurer's name _____	If a partnership, answer this: Date of organization _____ Date registered in Hawaii _____ State whether partnership is general or limited _____  <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 80%;">Name and address of partners:</th> <th style="width: 20%;">Age</th> </tr> </thead> <tbody> <tr><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td></tr> </tbody> </table>	Name and address of partners:	Age	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
Name and address of partners:	Age												
_____	_____												
_____	_____												
_____	_____												
_____	_____												
_____	_____												

**The undersigned hereby declares: that the foregoing is a true statement of the financial condition of the individual, partnership or corporation herein first named, as of the date herein first given; that this statement is for the express purpose of inducing the party to whom it is submitted to award the offeror a contract; and that any depository, vendor or other agency herein named is hereby authorized to supply such party with any information necessary to verify this statement.**

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**NOTE: A partnership must give firm name and signatures of all partners. A corporation must give full corporate name, signature of official, and affix corporate seal.**

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### Affidavit for Individual

STATE OF HAWAII  
 COUNTY OF \_\_\_\_\_

\_\_\_\_\_ being duly sworn, deposes and says that the foregoing financial statement, taken from his books, is a true and accurate statement of his financial condition as of the date thereof and that the answers to the foregoing interrogatories are true.

Sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_ (Applicant must also sign here)

\_\_\_\_\_  
 Notary Public

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### Affidavit for Partnership

STATE OF HAWAII  
 COUNTY OF \_\_\_\_\_

\_\_\_\_\_ being duly sworn, deposes and says that he is a member of the firm of \_\_\_\_\_; and that he is familiar with the books of the said firm showing its financial condition; that the foregoing financial statement, taken from the books of the said firm, is a true and accurate statement of the financial condition of the said firm as of the date thereof and that the answers to the foregoing interrogatories are true.

Sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_ (Members of firm must also sign here)

\_\_\_\_\_  
 Notary Public

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### Affidavit for Corporation

STATE OF HAWAII  
 COUNTY OF \_\_\_\_\_

\_\_\_\_\_ of the \_\_\_\_\_ being duly sworn, deposes and says that he is described in and which executed the foregoing statement; that he is familiar with the books of the said corporation showing its financial condition; that the foregoing financial statement, taken from the books of the said corporation, is a true and accurate statement of the financial condition of said corporation as of the date thereof and that the answers to the foregoing interrogatories are true.

Sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_ (Officer must also sign here)

\_\_\_\_\_  
 Notary Public

# Instructions for Bid Submittal

## General Instructions for Bid Submittal

*The bid offer form must be completed and submitted to the DHHL by the required due date and time, and in the form prescribed by the DHHL. Electronic mail and facsimile transmissions shall not be accepted.*

*For your convenience, an “IFB Checklist for Bidders” is included in this section for your use.*

*No supplemental literature, brochures or other unsolicited information should be included in the bid packet.*

*A written response is required for each item unless indicated otherwise.*

*Bid documents and all certifications should be written legibly or typed and completed with black ink.*

## **I. PROPOSAL REQUIREMENTS AND CONDITIONS**

### **A. QUALIFICATION OF BIDDERS.**

Prospective Bidders must be capable of performing the work for which bids are invited, and must be capable of entering into a public contract of \$25,000 (twenty five thousand dollars) or more.

### **B. NOTICE OF INTENTION TO BID**

1. In accordance with Section 103D-310, Hawaii Revised Statutes, and Section 3-122-108, Hawaii Administrative Rules, a written notice of intention to bid must be submitted to the Chairman, who is the officer charged with letting the contract. The notice may be faxed, hand carried, mailed, or e-mailed to the office indicated in the Notice to Contractors.
2. The written notice must be received by the office indicated in the Notice to Contractors no later than 4:30 p.m. on the 10th calendar day prior to the day designated for opening bids. If the 10th calendar day prior to the day designated for opening bids is a Saturday, Sunday, or legal State holiday, then the written notice must be received by the Department no later than 4:30 p.m. on the last working day immediately prior to said Saturday, Sunday, or legal State holiday. The written notice will be time stamped when received by said office. The time designated by the time stamping device in said office shall be official. If the written notice is hand carried, then the bearer is responsible to ensure that the notice is time stamped by said office. If the notice is faxed, the time of receipt by the Department fax machine shall be official. If the notice is sent by email, the time indicated in the date and time field of the email as received by the Department shall be official.

3. It is the responsibility of the prospective Bidder to ensure that the written notice of intention to bid is received in time and the Department assumes no responsibility for failure of timely delivery caused by the prospective Bidder or by any method of conveyance chosen by the prospective Bidder.
4. If two (2) or more prospective Bidders desire to bid jointly as a joint venture on a single project, they must file an affidavit of joint venture with their notice of intention to bid. Such affidavit of joint venture will be valid only for the specific project for which it is filed. No further license is required when all parties to the joint venture possess current and appropriate contractor's licenses. Joint ventures are required to be licensed in accordance with Chapter 444 of the Hawaii Revised Statutes, as amended, and the rules and regulations of the Contractor's License Board when any party to the joint venture agreement does not hold a current or appropriate contractor's license. The joint venture must be registered with the office of the Director of Commerce and Consumer Affairs in accordance with Chapter 425 of the Hawaii Revised Statutes, as amended.
5. No persons, firm or corporation may bid where (1) the person, firm, or corporation, or (2) a corporation owned substantially by the person, firm, or corporation, or (3) a substantial stockholder or an officer of the corporation, or (4) a partner or substantial investor in the firm is in arrears in any payment owed to the State of Hawaii or any of its political subdivisions or is in default of any obligation to the State of Hawaii or to all or to any of its political subdivisions, including default as a surety or failure to perform faithfully and diligently any previous contract with the Department.

#### C. STANDARD QUALIFICATION QUESTIONNAIRE FOR OFFERORS

1. Prospective Bidders shall submit answers to questions contained in the STANDARD QUALIFICATION QUESTIONNAIRE FOR OFFERORS (SPO Form-21), properly executed and notarized, setting forth a complete statement of the experience of such prospective Bidder and its organization in performing similar work and a statement of the equipment proposed to be used, together with adequate proof of the availability of such equipment, no later than 4:30 p.m. on the tenth calendar day prior to the day designated for opening bids. If the tenth calendar day prior to the day designated for opening bids is a Saturday, Sunday, or legal State holiday, then the questionnaire must be received by the Department no later than 4:30 p.m. on the last working day immediately prior to said Saturday, Sunday, or legal State holiday. The questionnaire will be time stamped when received by said office. The time designated by the time stamping device in said office shall be official. If the questionnaire is hand carried, then the bearer is responsible to ensure that the notice is time stamped by said office. E-mail and facsimile (FAX) transmissions are not acceptable in whole or in part, under any circumstances. If the information in the questionnaire proves satisfactory, the Bidder's proposal will be received. All information contained in the answers to the questionnaire shall be kept confidential. The questionnaire will be returned to the Bidder after it has served its purpose.

2. If upon review of the Questionnaire, or otherwise, the Bidder appears not fully qualified or able to perform the intended work, the Chairman shall, after affording the Bidder an opportunity to be heard and if still of the opinion that the Bidder is not fully qualified to perform the work, refuse to receive or to consider any bid offered by the prospective Bidder.
3. Failure to complete and submit the prequalification questionnaire by the designated deadline will be sufficient cause for the Department to disqualify a prospective Bidder.

#### D. PROPOSAL FORM

1. Prospective Bidders are being furnished with the proposal form giving the location, description, and the contract time of the work contemplated for which a lump sum bid price is asked or containing a schedule of items, together with estimated quantities of work to be performed and materials to be furnished, for which unit bid prices and/or lump sum bid prices are asked.
2. All papers bound with or attached to the proposal form shall be considered a part thereof and shall not be detached or altered when the proposal is submitted.
3. The drawings, specifications and other documents designated in the proposal form will also be considered a part thereof whether attached or not.
4. When quantities for individual items of work are listed in the proposal form for which respective unit prices are asked, said quantities are estimated or approximate and are to be used by the Department only for the purpose of comparing on a uniform basis bids offered for the work. The Department does not, expressly or by implication agree that the actual quantity of work will correspond therewith.
5. On unit price bids, payment will be made only for the actual number of units incorporated into the finished project at the unit price bid, subject to DHHL Construction General Conditions (CGC), Section 4.7, VARIATIONS IN ESTIMATED QUANTITIES.
6. The Bidder's proposal must be submitted on the proposal form furnished by the Department. The proposal must be prepared in full accordance with the instructions herein. The Bidder must state, both in words and numerals, the lump sum price or total sum bid at which the work contemplated is proposed to be done. These prices must be written in ink or typed. In case of a discrepancy between the prices written in words and those written in figures, the words shall govern over the figures. The Bidder shall sign the proposal in the spaces provided with ink.
7. If the proposal is made by an individual, the person's name and post office address must be shown in the space provided. If made by a partnership, the name and post office address of each member of the partnership must be shown and the

proposal signed by all partners or evidence in the form of a partnership agreement must be submitted showing the authority of the partner to enter, on behalf of said partnership, into contract with the Department. If made by a corporation the proposal must show the name, title and business address of the president, secretary and treasurer and also evidence in the form of a corporate resolution must be submitted showing the authority of the particular corporate representative to enter on behalf of said corporation into contract with the Department. If made by a joint-venture the name and post office address of each member of the individual firm, partnership or corporation comprising the joint-venture must be shown with other pertinent information required of individuals, partnerships or corporations as the case may be. The proposal must be signed by all parties to the joint-venture or evidence in the form of a Joint-Venture Agreement must be submitted showing the authority of the joint-venture's representative to enter on behalf of said joint-venture into contract with the Department.

8. Pursuant to the requirements of Section 103D-302, HRS, each Bidder shall include in its bid the name of each person or firm to be engaged by the Bidder on the project as joint contractor or subcontractor indicating also the nature and scope of work to be performed by such joint contractor and/or subcontractor and their respective contractor's license number. A joint contractor or subcontractor performing less than or equal to one percent of the total bid amount is not required to be listed in the proposal. The Bidder shall be solely responsible for verifying that their joint contractor or subcontractor has the proper license at the time of the submitted bid.
9. It is understood and agreed that the Contractor shall make no claim for anticipated profit, loss of profit or unabsorbed field, branch or home office overhead and impact losses due to the exercise of the Departments right to eliminate entire portions of the work or to increase or decrease any or all the quantities shown in the proposal form.
10. By submitting a bid on the proposal form, a Bidder accepts the language therein as its own.

## E BID SECURITY

1. Subject to the exceptions in Section 3-122-223(d) HAR, all lump sum bids of \$50,000 (fifty thousand dollars) and higher, or lump sum base bids including alternates of \$50,000 (fifty thousand dollars) and higher, that are not accompanied by bid security are non-responsive. Bid security shall be one of the following: §3-122-222(a) HAR
  - a. Surety bid bond underwritten by a company licensed to issue bonds in this State which shall be substantially in the form of the Surety Bid Bond form in Procurement Circular No. 2007-05; or
  - b. Legal Tender; or

- c. Certificate of Deposit; credit union share certificate; or cashier's, treasurer's, teller's or official check drawn by, or a certified 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 or the National Credit Union Administration.
  - (a) These instruments may be utilized only to a maximum of \$100,000 (one hundred thousand dollars).
  - (b) If the required security or bond amount totals over \$100,000 (one hundred thousand dollars), more than one instrument not exceeding \$100,000 (one hundred thousand dollars) each and issued by different financial institutions shall be accepted.
  - (c) CAUTION - Bidders are cautioned that certificates of deposit or share certificates with an early withdrawal penalty must have a face value sufficient to cover the maximum penalty amount in addition to the proposal guaranty requirement. If the certificate is made out to two names, the certificate must be assigned unconditionally to the Chairman.
2. Unless otherwise stated, the bid security shall be in an amount equal to at least five percent (5%) of the lump sum bid or lump sum base bid including all additive alternates or in an amount required by the terms of the federal funding, where applicable.
3. If the Bidder is a corporation, evidence in the form of a corporate resolution, authorizing the corporate representative to execute the bond must be submitted with the proposal. (See sample in Appendix.) If the Bidder is a partnership, all partners must sign the bond or evidence in the form of a partnership agreement must be submitted showing the authority of the partner.
4. If the Bidder is a joint-venture, all parties to the joint-venture must sign the bond; provided, that one party to the joint-venture may sign on behalf of the joint-venture if evidence in the form of a joint-venture agreement or power of attorney, is submitted showing the authority of the signatory to sign the bond on behalf of the joint-venture.
5. In the case where the award will be made on a group or item basis, the amount of bid security shall be based on the total bid for all groups or items submitted.
6. Bidders are cautioned that surety bid bonds which place a limit in value to the difference between the bid amount and the next acceptable bid, such value not to exceed the purported amount of the bond, are not acceptable. Also, surety bid bonds which place a time limit on the right of the State to make claim other than allowed by statutes or the GENERAL CONDITIONS are not acceptable. Bidders are hereby notified that a surety bid bond containing such limitation(s) is not

acceptable and a bid accompanied by such surety bid bond will be automatically rejected.

**F. BIDDER'S RESPONSIBILITY FOR EXAMINATION OF CONTRACT DOCUMENTS, SITE OF WORK, ETC.**

The Bidder shall carefully examine the project site and study all Contract Documents (as defined in the DHHL Construction General Conditions) and any documents or items referenced therein and contract and bond forms therefore. The submission of a bid shall be considered as a warranty that the Bidder has made such examination and is informed of the conditions to be encountered in performing the Work and of the requirements of the Contract Documents and any documents and items referenced therein, and contract and bonds.

**G. ADDENDA AND BID CLARIFICATIONS**

1. The terms and requirements of the bid documents (i.e. drawings, specifications and other bid and contract documents) cannot be changed prior to the bid opening except by a duly issued addendum.
2. The Department may alter, increase or decrease the scope of the work or the contract time, provisions and conditions by issuing a written addendum which sets forth such alterations, increase or decrease.
3. If a Bidder discovers what it considers to be a discrepancy, ambiguity, omission or doubt as to the meaning of drawings, specifications and any other bid or contract documents, the Bidder shall request in writing an interpretation from the Chairman.
4. If the Department agrees that a discrepancy, ambiguity, omission or doubt exists, it shall issue a written addendum to the bid documents to all prospective Bidders known to have received a solicitation eight (8) days before the bids are opened. The Department may extend the bid opening to allow at least eight (8) days from the notification date of the addendum. Upon notification by the Department, all Bidders/addressees shall be deemed to be on notice of the information therein whether or not the addendum is actually received. All addenda so issued shall become part of the contract documents.
5. No claim for additional compensation and/or time for performance will be allowed if the Contractor discovered, or in the exercise of reasonable care, should have discovered a discrepancy, ambiguity, omission or doubt for which an interpretation was not requested.

**H. SUBSTITUTION OF MATERIALS AND EQUIPMENT BEFORE BID OPENING**

1. Brand names of materials or equipment are specified or shown on the drawings to indicate a quality, style, appearance or performance and not to limit competition. The Bidder shall base its bid on one of the specified brand names unless alternate brands are qualified as equal or better in an addendum. Qualifications of such

proposed alternate brands shall be submitted in writing and addressed to the Project Manager. The face of the envelope containing the request must be clearly marked "SUBSTITUTION REQUEST". The request may be hand carried or mailed to DHHL, 91-5420 Kapolei Parkway, Kapolei, Hawaii, 96707. In either case, the written request must be received by DHHL no later than fourteen (14) days before the bid opening date and time specified in the Notice to Bidders. The written request will be time stamped by DHHL. For the purpose of this section, the time designated by the time stamping device in DHHL shall be official. If the written request is hand carried, the bearer is responsible to ensure that the request is time stamped by DHHL.

2. Submit three (3) sets of the written request, technical brochures, and a statement of variances.
3. A statement of variances must list all features of the proposed substitution which differ from the drawings, specifications and/or product(s) specified and must further certify that the substitution has no other variant features. The brochure and information submitted shall be clearly marked showing make, model, size, options, etc., and must include sufficient evidence to evaluate each feature listed as a variance. A request will be denied if submitted without sufficient evidence. If after installing the substituted product, an unlisted variance is discovered, Contractor shall immediately replace the product with a specified product at no cost to the Department.
4. Any substitution request not complying with the above requirements will be denied. Substitution requests sent to other agencies and received by Project Manager after the deadline above will be denied.
5. An addendum shall be issued to inform all prospective Bidders of any accepted substitution.

I. DELIVERY OF PROPOSALS.

The entire proposal shall be placed together with the bid security, in a sealed envelope and delivered as indicated in the Notice to Bidders. Bids which do not comply with this requirement may not be considered. Proposals will be received up to the time fixed in the public notice for opening of bids and must be in the hands of the official by the time indicated. The time designated by the time stamping device in DHHL shall be official.

J. WITHDRAWAL OR REVISION OF PROPOSAL. Proposal may be modified prior to the deadline to submit the proposal by any of the following documents:

1. Withdrawal of Proposals:
  - (a) A signed, written notice received in the office designated in the solicitation; or
  - (b) A signed written notice faxed or e-mailed to the office designated in the solicitation.

2 Modification of Proposals:

- (a) A signed written notice received in the office designated in the solicitation, accompanied by a duly executed certificate of resolution for corporations, partnerships and joint-ventures, stating that a modification to the proposal is submitted; and
- (b) The actual modification sealed securely in a separate envelope or container, accompanying the written notice.
- (c) The modification may be sent by fax or email, provided that the originals must be submitted within two working days of the fax or email.

K. PUBLIC OPENING OF PROPOSALS.

Proposals will be opened and read publicly at the time and place indicated in the Notice to Bidders. Bidders, their authorized agents and other interested parties are invited to be present.

L. DISQUALIFICATION OF BIDDERS. Any one or more of the following causes will be considered as sufficient for the disqualification of a Bidder and the rejection of its proposal or proposals:

- 1. Non-compliance with Section I.A. QUALIFICATION OF BIDDERS;
- 2. Evidence of collusion among Bidders;
- 3. Lack of responsibility and cooperation as shown by past work such as failing to complete all of the requirements to close the project within a reasonable time or engaging in a pattern of unreasonable or frivolous claims for extra compensation;
- 4. Being in arrears on existing contracts with the State of Hawaii, or having defaulted on a previous contract with the State of Hawaii;
- 5. Lack of proper equipment and/or sufficient experience to perform the work contemplated, as revealed by the Standard Questionnaire and Financial Statement for Bidders;
- 6. No contractor's license or a contractor's license which does not cover type of work contemplated;
- 7. More than one proposal for the same work from an individual, firm, partnership, corporation or joint venture under the same or different name;
- 8. Delivery of bids after the deadline specified in the advertisement calling for bids;
- 9. Failure to pay, or satisfactorily settle, all bills overdue for labor and materials of former contracts in force at the time of issuance of proposal forms; and/or

10. Debarment or suspension pursuant to the provisions of Chapters 103D, 104 and 444, Hawaii Revised Statutes, as amended.

**M. PROTESTS**

1. Protests shall be governed by Section 103D-701, Hawaii Revised Statutes, and amended hereafter, and its implementing rules set forth in Title 3, Chapter 126, Subchapter 1, of the Hawaii Administrative Rules, and as amended hereafter.
2. The Chairman is the Department's chief procurement officer to whom protests shall be addressed unless specified otherwise in the solicitation.

**N. WRONGFUL REFUSAL TO ACCEPT A BID.**

In the event the Chairman, for any reason, wrongfully refuses to accept what would otherwise be a responsive and responsible lowest bid, the exclusive remedy for such lowest Bidder shall be the recovery of the reasonable actual costs of preparing the bid. No other Bidder shall have any claim for damages.

**II AWARD AND EXECUTION OF CONTRACT**

**A. CONSIDERATION OF PROPOSALS; CANCELLATION.**

After the proposals are opened and read, the figures will be extended and/or totaled in accordance with the bid prices of the acceptable proposals and the totals will be compared and the results of such comparison shall be made public. In the event of a tie bid, the low Bidder shall be determined in accordance with HAR 3-122-34. In the comparison of bids, words written in the proposals will govern over figures and unit prices will govern over totals. Until the award of the contract, the Department may cancel the solicitation, reject any and all proposals in whole or part and may waive any defects or technicalities whenever such action is deemed to be in the best interest of the Department.

**B. IRREGULAR PROPOSALS.**

Proposals will be considered irregular and may be rejected for the following reasons:

1. If the proposal is unsigned.
2. If bid security is not in accordance with Section I.E. BID SECURITY.
3. If proposal is on a form other than that furnished by the Department; or if the form is altered or any part thereof detached.
4. If the proposal shows any non-compliance with applicable law, alteration of form, additions not called for, conditional bids, incomplete bids, non-initialed erasures, other defects, or if the prices are obviously unbalanced.
5. If the Bidder adds any provisions reserving the right to accept or reject an award.

6. If the Bidder adds any provisions reserving the right to enter into a contract pursuant to an award.
7. When a proposal is signed by an officer or officers of a corporation and a currently certified corporate resolution authorizing such signer(s) to submit such proposal is not submitted with the proposal or when the proposal is signed by an agent other than the officer or officers of a corporation or a member of a partnership and a power of attorney is not submitted with the proposal.
8. Where there is an incomplete or ambiguous listing of joint contractors and/or subcontractors the proposal may be rejected. All work which is not listed as being performed by joint contractors and/or subcontractors must be performed by the Bidder with its own employees. Additions to the list of joint contractors or subcontractors will not be allowed. Whenever there is a doubt as to the completeness of the list, the Bidder will be required to submit within five (5) working days, a written confirmation that the work in question will be performed with its own work force. Whenever there is more than one joint contractor and/or subcontractor listed for the same item of work, the Bidder will be required to either confirm in writing within five (5) working days that all joint contractors or subcontractors listed will actually be engaged on the project or obtain within five (5) working days written releases from those joint contractors and/or subcontractors who will not be engaged.
9. If in the opinion of the Chairman, the Bidder and/or its listed subcontractors do not have the contractor's licenses or combination of contractor's licenses necessary to complete all of the work.

C. CORRECTION OF BIDS AND WITHDRAWAL OF BIDS (§3-122-31 HAR)

1. Corrections to bids after bid openings but prior to award may be made under the following conditions:
  - (a) If the mistake is attributable to an arithmetical error, the Chairman shall so correct the mistake. In case of error in extension of bid price, the unit price shall govern.
  - (b) If the mistake is a minor informality which shall not affect price, quantity, quality, delivery, or contractual conditions, the Bidder shall request correction by submitting proof of evidentiary value which demonstrates that a mistake was made. The Chairman shall prepare a written approval or denial in response to this request. Examples of such mistakes include:
    - (1) Typographical errors;
    - (2) Transposition errors;
    - (3) Failure of a Bidder to sign the bid, but only if the unsigned bid is accompanied by other material indicating the Bidder's intent to be bound.

- (c) For reasons not allowable under Subsections II.C.1.(a) and II.C.1.(b) when the Chairman determines that the correction or waiver of an obvious mistake is in the best interest of the Department or is warranted for the fair treatment of other Bidders.
- 2. Withdrawal of bids after bid opening but prior to award may be made when the bid contains a mistake attributable to an obvious error which affects price, quantity, quality, delivery, or contractual conditions, and the Bidder requests withdrawal by submitting proof of evidentiary value which demonstrates that a mistake was made. The Chairman shall prepare a written approval or denial in response to this request.
- 3. Correction or withdrawal of bids after award is not permissible except in response to a written withdrawal or correction request by the Contractor, and the Chairman makes a written determination that the Department's procurement practices and policies would not be materially affected by such correction or withdrawal.

#### D. AWARD OF CONTRACT

- 1. The award of contract, if it be awarded, will be made within one hundred twenty (120) consecutive calendar days after the opening of the proposals to the lowest responsible and responsive Bidder (including the alternate or alternates which may be selected by the Chairman in the case of alternate bids) whose proposal complies with all the requirements prescribed, but in no case will an award be made until all necessary investigations are made. The successful Bidder will be notified, by letter mailed to the address shown on the proposal, that its bid has been accepted and that it has been awarded the contract.
- 2. If the contract is not awarded within the one hundred twenty (120) days noted in Subsection II.D.1 above, the Department may request the successful Bidder to extend the time for the acceptance of its bid. The Bidder may reject such a request without penalty; and in such case, the Department may at its sole discretion make a similar offer to the next lowest responsive and responsible Bidder and so on until a bid is duly accepted or until the Department elects to stop making such requests.
- 3. No contract will be awarded to any person or firm suspended or debarred under the provisions of Chapters 103D, 104 and Chapter 444, Hawaii Revised Statutes as amended.
- 4. The contract will be drawn on the forms furnished by the Chairman. The contract will not be binding on the Department until all required signatures have been affixed thereto and written certification that funds are available for the work has been made.
- 5. Prior to award of the contract, the Department shall verify compliance with Sections 103D-310 and 103D-328 HRS via Hawaii Compliance Express (HCE).

E. CANCELLATION OF AWARD.

The Department reserves the right to cancel the award of any contract at any time before the execution of said contract by all parties. The exclusive remedy to the awardee for such cancellation shall be payment of the reasonable bid preparation costs and the reimbursement of any direct expenses incurred as directed in the Notice of Award. Such cancellation will not incur any liability by the Department to any other Bidder.

F. RETURN OF BID SECURITY.

All bid securities, except those of the four (4) lowest Bidders, will be returned following the opening and checking of the proposals. The retained bid securities of the four lowest Bidders will be returned within five (5) working days following the complete execution of the contract.

G. REQUIREMENT OF PERFORMANCE AND PAYMENT BONDS

1. Performance and Payment Bonds shall be required for contracts \$50,000 (fifty thousand dollars) and higher. At the time of the execution of the contract, the successful Bidder shall file good and sufficient performance and payment bonds on the form furnished by the Department, each in an amount equal to one hundred percent (100%) of the amount of the contract price unless otherwise stated in the solicitation of bids. Acceptable performance and payment bonds shall be limited to the following:
  2. Surety bonds underwritten by a company licensed to issue bonds in this State; or
  3. A certificate of deposit; credit union share certificate; or cashier's, treasurer's, teller's or official check drawn by, or a certified check accepted by, and payable on demand to the Department by a bank, a savings institution, or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration.
    - (a) These instruments may be utilized only a maximum of \$100,000 (one hundred thousand dollars).
    - (b) If the required security or bond amount totals over \$100,000 (one hundred thousand dollars), more than one instrument not exceeding \$100,000 (one hundred thousand dollars) each and issued by different financial institutions shall be acceptable.
4. If the Contractor fails to deliver the required performance and payment bonds, the Contractor's award shall be canceled, the Department shall have the remedies provided below under FAILURE TO EXECUTE THE CONTRACT and award of the contract shall be made to the next lowest responsible and responsive Bidder.

## H. EXECUTION OF THE CONTRACT

1. The contract shall be signed by the successful Bidder and returned, together with satisfactory performance and payment bonds, within ten (10) calendar days after the Bidder is awarded the contract for execution or within such further time as the Chairman may allow. No proposal or contract shall be considered binding upon the Department until the contract has been fully and properly executed by all parties thereto. For projects funded with State Capital Improvement Project (CIP) funds, the Chairman shall also endorse thereon its certificate, as required by Section 103D-309, HRS, that there is an available unexpended appropriation or balance of an appropriation over and above all outstanding contracts sufficient to cover the Department's amount required by such contract.
2. On any individual award totaling less than \$25,000 (twenty five thousand dollars), the Department reserves the right to execute the contract by the issuance of a Purchase Order. Issuance of a Purchase Order shall result in a binding contract between the parties without further action by the Department. The issuance of a Purchase Order shall not be deemed a waiver of the General Conditions, and Contract Document requirements.

## I. FAILURE TO EXECUTE THE CONTRACT

1. Before the Award. If a low Bidder without legal justification withdraws its bid after the opening of bids but before the award of the contract, the Department shall be entitled to retain as damages the amount established as bid security, and may take all appropriate actions to recover the damages sum from the property or third-party obligations deposited as bid security.
2. After the Award. If the Bidder to which a contract is awarded shall fail or neglect to enter into the contract and to furnish satisfactory security within ten (10) calendar days after such award or within such further time as the Chairman may allow, the Department shall be entitled to recover from such Bidder its actual damages, including but not limited to the difference between the bid and the next lowest responsive bid, as well as personnel and administrative costs, consulting and legal fees and other expenses incurred in arranging a contract with the next low responsible and responsive Bidder or calling for new bids. The Department may apply all or part of the amount of the bid security to reduce its damages. If upon determination by the Department that the bid security exceeds the amount of its damages, it shall release or return the excess to the person who provided same.
3. Chairman's Options. Upon a withdrawal of the lowest responsive bid, or upon a refusal or failure of the lowest Bidder to execute the contract, the Chairman may thereupon award the contract to the next lowest responsible and responsive Bidder or may call for new bids, whichever method the Chairman may deem to be in the best interests of the Department.

## **IFB Checklist for Bidders**

IFB-16- HHL-006

Consolidation/Re-Subdivision Keokea-Waiohuli Subdivision, Phase 1  
(Grading and Drainage Improvements)

### **Items Required for Submittal to DHHL, Land Development Division Prior to Bid Opening:**

- 'Notice of Intention to Bid' to be submitted to DHHL, Land Development Division per the instructions in the 'Notice to Bidders' and 'IFB Sign-In Sheet', subject to any addendum issued prior to Bid Opening.
- 'SPO Form 21' (Standard Qualification Questionnaire), to be submitted to DHHL, Land Development Division per the instructions in the 'Notice to Bidders' and 'IFB Sign-In Sheet', subject to any addendum issued prior to Bid Opening.
- 'SPO-38' (Hawaii Product Preference Request, if any), to be submitted to DHHL, Land Development Division per the instructions in the 'Bid Offer Form'.

### **Items Required with Sealed Bid:**

- Bid Package Envelope Cover (with the words "Sealed Bid"), included with this IFB.

The Envelope Cover Form shall be used for Sealed Bid Envelopes. The cover form should be glued or taped to the front of the bid envelope and the information type- written or printed clearly in ink.

- Bid Offer Form (included with this IFB)

The total sum bid amount must be typed or clearly written in both numbers and words in the appropriate space on Page 8 of the Bid Offer Form. Illegible writing on any portion of the Bid Offer Form, except for the signer's signature, may be grounds for considering a Bid "non-responsive".

- Corporate Resolution (Indicating who is authorized to sign bid documents and contracts)
- Bid Security
- Form 1 – Certification of Bidder's Participation in Approved Apprenticeship Program Under Act 17 (Apprenticeship Agreement Preference, if any).

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

**BID OFFER FORM FOR**

**CONSOLIDATION/RE-SUBDIVISION  
KEOKEA-WAIOHULI SUBDIVISION PHASE 1A  
(GRADING AND DRAINAGE IMPROVEMENTS)**

**KULA, ISLAND OF MAUI, HAWAII**

**TAX MAP KEYS: (2) 2-2-033:021 to 38, & 058 to 74  
(2) 2-2-034:001 to 016, 026 & 029**

**IFB NO.: IFB-16-HHL-006**

Chairman  
Hawaiian Homes Commission  
Department of Hawaiian Home Lands  
91-5420 Kapolei Parkway  
Kapolei, Hawaii 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-16-HHL-006. The State of Hawaii'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-16-HHL-006 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 Hawaii 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 **Hawaii business** incorporated or organized under the laws of the State of Hawaii; **OR**
- A **Compliant Non-Hawaii business** not incorporated or organized under the laws of the State of Hawaii, is or shall be registered at the State of Hawaii Department of Commerce and Consumer Affairs Business Registration Division (DCCA-BREG) to do business in the State of Hawaii.

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

Offeror is:

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

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

Hawaii 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 IFB-16-HHL-006 for the Department of Hawaiian Home Lands.

**CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A**

The prices bid herein for the following items shall include all materials, labor, tools, equipment, machinery and all incidentals necessary to install or to construct these items in place complete, all in accordance with the plans and specifications. Note. Prices are exclusive of general excise tax (GET).

Item No.	Estimated Quantity	Description	Unit Price	Total
<b><u>SITE WORK</u></b>				
1.	L.S.	Clearing and Grubbing (8.5 acres), including handling and removal of vegetation and debris off of DHHL Lands.	Lump Sum \$ _____	\$ _____
2.	L.S.	Installation, Maintenance, Monitoring and Removal of BMP, Including Silt Fence, Temporary Erosion Control, Dust Control, and 8" Thick Ingress/Egress Gravel Access (13'x20'); In place complete.	Lump Sum \$ _____	\$ _____
3.	L.S.	Mass Grading for Lot 148 including Removal and Replacement of Ash materials off of DHHL lands (45 CY), Embankment (1,200 CY), and Hydro-Mulch Seeding (85 SY) and 90-day Maintenance.	Lump Sum \$ _____	\$ _____

**SWALE CONSTRUCTION**

4.	L.S.	Construction of Trapezoidal Grass Swale (1' bottom width x 1.5' depth) including Excavation (4,700 CY), Grading, Removal and Replacement of Ash materials (2,200 CY) off of DHHL Lands, Embankment (50 CY), Swale transition, Hydro-Mulch Seeding (3,000 SY) and 90-day Maintenance.  Swale Nos. 2, 3, 4, 8, 10, 11, 12, 13, 18, 19, 20, 34, 35, 36, and 45; In place complete	Lump Sum \$ _____	\$ _____
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5. L.S. Construction of Trapezoidal GRP Swale (1' bottom width x 1.5' depth) including Excavation (900 CY), Grading, Removal and Replacement of Ash Material off of DHHL Lands (400 SY), Embankment (100 CY), Swale Transition/Merge/Connection, and Hydro-Mulch Seeding (600 SY) and 90-day Maintenance.  
Swale Nos. 22, 24, 25, 26, 27, 30, and 38; In place complete.
- Lump Sum \$ \_\_\_\_\_ \$ \_\_\_\_\_
6. L. S. Construction of Trapezoidal GRP Swale (1' bottom width x 2' depth) including Excavation (800 CY), Grading, Removal and Replacement of Ash Material off of DHHL Lands (400 CY), Embankment (200 CY), Swale Transition/Merge/Connection, and Hydro-Mulch Seeding (600 SY) and 90-day Maintenance.  
Swale Nos. 17, 29, and 31; In place complete.
- Lump Sum \$ \_\_\_\_\_ \$ \_\_\_\_\_
7. L. S. Construction of Trapezoidal GRP Swale (2' bottom width x 2' depth) including Excavation (1,900 CY), Grading, Removal and Replacement of Ash Material off of DHHL Lands (900 CY), Embankment (5 CY), Swale Transition, and Hydro-Mulch Seeding (900 SY) and 90-day Maintenance.  
Swale Nos. 28, and 37; In place complete.
- Lump Sum \$ \_\_\_\_\_ \$ \_\_\_\_\_
8. L.S. Construction of Trapezoidal GRP Swale (2' bottom width x 2.5' depth) including Excavation (4,800 CY), Grading, Removal and Replacement of Ash Material off of DHHL Lands (2,500 CY), Embankment (800 CY), Swale Transition/Merge/Connection, and Hydro-Mulch Seeding (2,200 SY) and 90-day Maintenance.  
Swale Nos. 1, 5, 6, 7, 16, 21, 32, and 41; In place complete.
- Lump Sum \$ \_\_\_\_\_ \$ \_\_\_\_\_

9. L.S. Construction of Trapezoidal GRP Swale (2' bottom width x 3' depth) including Excavation (1,600 CY), Grading, Removal and Replacement of Ash Material off of DHHL Lands (800 CY), Embankment (200 CY), Swale Transition/Merge/Connection, and Hydro-Mulch Seeding (800 SY) and 90-day Maintenance.  
Swale Nos. 40, 42, and 43; In place complete.  
Lump Sum \$ \_\_\_\_\_ \$ \_\_\_\_\_
10. L.S. Construction of Trapezoidal GRP Swale (3' bottom width x 3' depth) including Excavation (1,000 CY), Grading, Removal and Replacement of Ash Material off of DHHL Lands (600 CY), Embankment (100 CY), Swale Transition/Merge/Connection, and Hydro-Mulch Seeding (300 SY) and 90-day Maintenance.  
Swale Nos. 9, and 44; In place complete.  
Lump Sum \$ \_\_\_\_\_ \$ \_\_\_\_\_
11. L.S. Construction of Trapezoidal GRP Swale (3' bottom width x 3.5' depth) including Excavation (500 CY), Grading, Removal and Replacement of Ash Material off of DHHL Lands (300 CY), Embankment (100 CY), Swale Transition/Merge/Connection, and Hydro-Mulch Seeding (200 SY) and 90-day Maintenance.  
Swale No. 15; In Place Complete.  
Lump Sum \$ \_\_\_\_\_ \$ \_\_\_\_\_
12. L.S. Construction of Trapezoidal GRP Swale (4' bottom width x 3.5' depth) including Excavation (1,100 CY), Grading, Removal and Replacement of Ash Material off of DHHL Lands (400 CY), Embankment, Swale Transition/Merge/Connection, and Hydro-Mulch Seeding (400 SY) and 90-day Maintenance.  
Swale No. 23; In Place Complete.  
Lump Sum \$ \_\_\_\_\_ \$ \_\_\_\_\_

13. L.S. Construction of Trapezoidal GRP Swale (4' bottom width x 4' depth) including Excavation (8,200 CY), Grading, Removal and Replacement of Ash Material off of DHHL Lands (3,200 CY), Embankment, Swale Transition/Merge/Connection, and Hydro-Mulch Seeding (2,100 SY) and 90-day Maintenance.  
Swale No. 14, 33, and Offsite Diversion Swale; In Place Complete.

Lump Sum \$ \_\_\_\_\_ \$ \_\_\_\_\_

14. L.S. Construction of CRM Wing Wall (9 EA) including Demolition of existing wing wall, Grading, Hydro-Mulch Seeding and 90-day Maintenance, Connection with New GRP Swales and Existing headwall; In place Complete

Lump Sum \$ \_\_\_\_\_ \$ \_\_\_\_\_

15. L.S. Construction of Earth Berm including Removal and Replacement of Ash Material off of DHHL Lands (550 CY), Embankment (700 CY), Hydro-Mulch Seeding (900 SY) and 90-day Maintenance; In place complete.

Lump Sum \$ \_\_\_\_\_ \$ \_\_\_\_\_

**ROAD CONSTRUCTION**

16. L.S. Construction of 15' wide Non-Paved Driveway ( 1,200 LF) Grading including Cut (6,000 CY) and Fill (1,700 CY), Removal and Replacement of Ash Material off of DHHL Lands (1,250 CY), and Hydro-Mulch Seeding ( 2,400 SY) and 90-day Maintenance.

Lump Sum \$ \_\_\_\_\_ \$ \_\_\_\_\_

17. L.S. Construction of 10' A.C. Paved Access Road (1,670 LF) including Cut (16,500 CY ), Fill ( 580 CY ), Removal and Replacement of Ash Material off of DHHL Lands (1,300 CY), Fine Grading (17,000 SF), Geofabric ( 760 SY), and Hydro-Mulch Seeding (10,200 SY) and 90-day Maintenance; In place complete.

Lump Sum \$ \_\_\_\_\_ \$ \_\_\_\_\_

**DETENTION BASIN CONSTRUCTION**

- 18. L.S. Construction of Detention Basin Outlet Structure and Grading including Fine grading (138,000 SF), 12” thick GRP Slope lining for overflow (560 SY), Fence with Double Swing Gate (1,700 LF), and Hydro-Mulch Seeding (15,500 SY) and 90-day Maintenance; In place complete.

Lump Sum \$ \_\_\_\_\_ \$ \_\_\_\_\_

**WATER METER**

- 19. L.S. Demolition/Salvage of existing Water Meter, Box, Pad including cut and plug existing service lateral and all appurtenances (10 Doubles, and 13 Singles).  
Construction/Relocation of Water Meter, Box (23 Salvage existing, 1 New), Pad, and all Appurtenances, including Trenching, Restoration of Pavement, 1” Copper service lateral with Type A copper service connection, 1-1/2” Copper service lateral with Type A-1 copper service connection and all appurtenances, PRVs, Chlorination, Removal and Replacement of Ash Material off of DHHL lands, Excavation (570 CY), Hydro-Mulch Seeding (550 SY) and 90-day Maintenance; In place complete.

Lump Sum \$ \_\_\_\_\_ \$ \_\_\_\_\_

**MISCELLANEOUS ITEMS**

- 20. L.S. Temporary Traffic Control

Lump Sum \$ \_\_\_\_\_ \$ \_\_\_\_\_

- 21. L.S. Project Sign including installation and removal; In place complete.

Lump Sum \$ \_\_\_\_\_ \$ \_\_\_\_\_

- 22. L.S. Mobilization, Demobilization, and Field Office including installation and removal; In place complete

Lump Sum \$ \_\_\_\_\_ \$ \_\_\_\_\_

TOTAL – PHASE 1A DEVELOPMENT (Items 1 to 22, inclusive) \$ \_\_\_\_\_

**RECAPITULATION**

SITE WORK (Items 1 to 3, inclusive)	\$ _____
SWALE CONSTRUCTION (Items 4 to 15, inclusive)	\$ _____
ROAD CONSTRUCTION (Items 16 to 17, inclusive)	\$ _____
DETENTION BASIN CONSTRUCTION (Items 18, inclusive)	\$ _____
WATER METER (Items 19, inclusive)	\$ _____
MISCELLANEOUS ITEMS (Items 20 to 22, inclusive)	\$ _____

The following bid is hereby submitted for IFB-16-HHL-006 to the Department of Hawaiian Home Lands.

**TOTAL SUM BID =** \_\_\_\_\_  
\_\_\_\_\_ Dollars(\$ \_\_\_\_\_).

**The prices herein for the above items shall include all materials, labor, tools, equipment, machinery and all incidentals necessary, exclusive 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 Three Hundred Sixty-Five (365) calendar days after receiving written Notice to Proceed, subject to extensions, as may be granted.

## HAWAII PRODUCTS PREFERENCE

In accordance with HRS §103D-1002, the Hawaii products preference is applicable to this solicitation. Hawaii Products may be available for those items noted on the offer form. The Hawaii products list is available on the SPO webpage at <http://hawaii.gov/spo>, under Toolbox/QuickLinks click on Goods, Services and Construction, then click on Goods, Services and Construction for Vendors, Contractors and Service Providers, under Preferences, click on Preferences pursuant to HRS 103D Part X including Hawaii Products, then click on Preference for Hawaii Products, and select *Hawaii Products List* to view.

Offeror submitting a Hawaii Product (HP) shall identify the HP on the solicitation offer page(s). Any person desiring a Hawaii product preference shall have the product(s) certified and qualified if not currently on the Hawaii products list, prior to the deadline for receipt of offer(s) specified in the procurement notice and solicitation. The responsibility for certification and qualification shall rest upon the person requesting the preference.

Persons desiring to qualify their product(s) not currently on the Hawaii product list shall complete form SPO-038, *Certification for Hawaii Product Preference* and submit to the Procurement Officer issuing the solicitation (IFB or RFP), and provide all additional information required by the Procurement Officer. For each product, one form shall be completed and submitted (i.e. 3 products should have 3 separate forms completed). Form SPO-038 is available on the SPO webpage at <http://spo.hawaii.gov/all-forms/>. The manufacturers and producers must complete and submit SPO-38 to DHHL. The form must be received by DHHL no later than **4:30 p.m., November 25, 2015**. Submittal by facsimile (808 620-9299) is acceptable. If DHHL receives and approves SPO-38s relating to this solicitation DHHL will issue an addendum listing the additional certified and qualified Hawaii products by **4:30 p.m., December 2, 2015**.

Bidders may claim a Hawaii product preference for products that it manufactures or produces with its own workforce and equipment. The SPO-38, *Certification for Hawaii Product Preference*, must be submitted in accordance with the procedures described above in order for Bidder to claim a Hawaii product preference for such Hawaii products Bidder intends to use in this work.

When a solicitation contains both HP and non-HP, then for the purpose of selecting the lowest bid or purchase price only, the price offered for a HP item shall be decreased by subtracting 10% for the class I or 15% for the class II HP items offered, respectively. The lowest total offer, taking the preference into consideration, shall be awarded the contract unless the offer provides for additional award criteria. The contract amount of any contract awarded, however, shall be the amount of the price offered, exclusive of the preferences.

Change in Availability of Hawaii product. In the event of any change that materially alters the offeror's ability to supply Hawaii products, the offeror shall notify the procurement officer in writing no later than five working days from when the offeror knows of the change and the parties shall enter into discussions for the purposes of revising the contract or terminating the contract for convenience.

A partial list of approved products is provided below. The complete current list as compiled by the State Procurement Office is available at:

<http://www4.hawaii.gov/spoh/HiProducts/hiProducts.htm>

**Preferences, Hawaii Products**

**CONSTRUCTION PRODUCTS AND SOIL AMENDMENTS/PRODUCTS**

<b>Aggregates – Basaltic Termite Barrier</b>							
<b>Product Subcategory as applicable</b>	<b>Effective</b>	<b>Revised</b>	<b>Manufacturer</b>	<b>Oahu</b>	<b>Maui</b>	<b>Hawaii</b>	<b>Kauai</b>
	11/03/09		<a href="#">Ameron International Corporation</a>	X	X		
<b>Aggregates and Sand – Basalt, Rock, Cinder, Limestone and Coral</b>							
<b>Product Subcategory as applicable</b>	<b>Effective</b>	<b>Revised</b>	<b>Manufacturer</b>	<b>Oahu</b>	<b>Maui</b>	<b>Hawaii</b>	<b>Kauai</b>
	11/03/09		<a href="#">Ameron International Corporation</a>	X	X		
	10/23/09		<a href="#">CTS Earthmoving, Inc.</a>			X	
	11/03/09	1/20/10	<a href="#">Delta Construction Corporation</a>	X			
	12/14/09		<a href="#">Edwin Deluz Trucking &amp; Gravel LLC</a>			X	
	01/28/10		<a href="#">Goodfellow Bros., Inc.</a>	X			
	11/02/09		<a href="#">Grace Pacific</a>	X		X	X
	4/26/11		<a href="#">GW Construction</a>			X	
	11/03/09		<a href="#">Hawaiian Cement</a>	X	X		
	12/15/09		<a href="#">Jas. W. Glover, Ltd.</a>			X	X
	06/30/10		<a href="#">Kauai Aggregates</a>				X
	10/20/09	07/22/10	<a href="#">Sanford's Service Center, Inc.</a>			X	
	11/05/09		<a href="#">Tileco, Inc.</a>	X	X	X	X
	11/03/09		<a href="#">West Hawaii Concrete</a>			X	
	11/02/09		<a href="#">Yamada and Sons, Inc.</a>			X	
<b>Aggregates – Recycled Asphalt and Concrete</b>							
<b>Product Subcategory as applicable</b>	<b>Effective</b>	<b>Revised</b>	<b>Manufacturer</b>	<b>Oahu</b>	<b>Maui</b>	<b>Hawaii</b>	<b>Kauai</b>
	12/15/09		<a href="#">Glover Honsador</a>				X
	11/02/09		<a href="#">Grace Pacific</a>	X			

	12/15/09		<a href="#">Jas. W. Glover, Ltd.</a>	X		X	
	10/18/10		<a href="#">West Oahu Aggregate Co. Inc.</a>	X			

### Asphalt and Paving Materials - HI Products

Product Subcategory as applicable	Effective	Revised	Manufacturer	Oahu	Maui	Hawaii	Kauai
	06/15/10		<a href="#">Black Maui Rose LLC</a>		X		
	12/22/09		<a href="#">Black Plumeria LLC</a>	X			
	10/21/09	11/02/09	<a href="#">Grace Pacific Corporation</a>	X		X	X
	12/05/09		<a href="#">Jas. W. Glover, Ltd.</a>			X	X
	11/03/11		<a href="#">Maui Asphalt X-IV, LLC</a>		X		
	10/28/09		<a href="#">Maui Paving LLC</a>		X		
	11/20/09		<a href="#">Walker-Moody Pavement Products and Equipment</a>	X	X	X	X
	11/22/09		<a href="#">Yamada and Sons, Inc.</a> dba YS Rock and Con-Agg of Hawaii			X	

### Cement and Concrete Products

Product Subcategory as applicable	Effective Date	Last Revised Date	Manufacturer	Oahu	Maui	Hawaii	Kauai
	11/03/09		<a href="#">Ameron International Corporation</a>	X			
	01/19/10		<a href="#">BOMAT, Ltd.</a>	X	X	X	X
	12/15/09		<a href="#">Glover Honsador</a>				X
	11/03/09		<a href="#">Hawaiian Cement</a>	X	X		
	12/15/09		<a href="#">Jas. W. Glover, Ltd.</a>			X	X
	12/15/09		<a href="#">Kohala Coast Concrete &amp; Precast LLC</a>			X	
	06/30/10		<a href="#">O. Thronas, Inc.</a>				X
	11/05/09		<a href="#">Tileco, Inc.</a>	X	X	X	X
	11/03/09		<a href="#">West Hawaii Concrete</a>			X	

### Precast Concrete Products

Product Subcategory as applicable	Effective Date	Revised Date	Manufacturer	Oahu	Maui	Hawaii	Kauai
	7/12/10		<a href="#">Aloha Precast, Inc.</a>	X	X	X	X
	11/03/09	04/15/10	<a href="#">Ameron International Corporation</a>	X			
	08/02/10		<a href="#">GPRM Prestress, LLC</a>	X	X	X	X
	11/03/09		<a href="#">Hawaii Concrete Products, Inc.</a>	X			
	12/15/09		<a href="#">Kohala Coast Concrete &amp; Precast</a>			X	

			<a href="#">LLC</a>				
	11/03/09		<a href="#">Ramtek Fabrication Co., Inc.</a>	X	X	X	X
	06/30/10	02/26/10	<a href="#">Walker Industries, Ltd.</a>	X	X	X	X
<b>Environmental Sewage-Treatment Innovative System (ESIS) Individual Wastewater System which utilizes anaerobic/aerobic processing to treat wastewater to R-2 quality at discharge</b>							
<b>Product Subcategory as applicable</b>	<b>Effective</b>	<b>Revised</b>	<b>Manufacturer</b>	Oahu	Maui	Hawaii	Kauai
	11/20/09		<a href="#">Environmental Waste Management Systems, Inc.</a>	X	X	X	X
<b>Septic Tanks</b>	11/03/09		<a href="#">Ameron International Corporation</a>	X			
	11/05/09	02/26/10	<a href="#">Walker Industries, Ltd.</a>	X	X	X	X
<b>Hot Dip Galvanizing</b>							
<b>Product Subcategory as applicable</b>	<b>Effective Date</b>	<b>Revised Date</b>	<b>Manufacturer</b>	Oahu	Maui	Hawaii	Kauai
	03/03/10		<a href="#">Universal Associates, Inc.</a>	X			
<b>Pipes-Aluminum and Galvanized</b>							
<b>Product Subcategory as applicable</b>	<b>Effective Date</b>	<b>Revised Date</b>	<b>Manufacturer</b>	Oahu	Maui	Hawaii	Kauai
<b>Pipes-Miscellaneous</b>	11/03/09		<a href="#">Ameron International Corporation</a>	X			
<b>Aluminum Docks, Floating, etc. - Miscellaneous</b>							
<b>Product Subcategory as applicable</b>	<b>Effective</b>	<b>Revised</b>	<b>Manufacturer</b>	Oahu	Maui	Hawaii	Kauai
	05/25/10	06/14/10	<a href="#">Bluewater Marine and Dock Specialties</a>	X	X	X	X
<b>Playground Surfaces</b>							
<b>Product Subcategory as applicable</b>	<b>Effective</b>	<b>Revised</b>	<b>Manufacturer</b>	Oahu	Maui	Hawaii	Kauai
	01/07/10		<a href="#">Innovative Playgrounds and Recreation, Inc.</a>	X	X	X	X

<b>Signs - Traffic, Regulatory and Construction</b>							
<b>Product Subcategory as applicable</b>	<b>Effective</b>	<b>Revised</b>	<b>Manufacturer</b>	Oahu	Maui	Hawaii	Kauai
	12/14/09		<a href="#">GP Roadway Solutions, Inc.</a>	X	X	X	X
	11/20/09		Safety Systems Hawaii, Inc.	X	X	X	X
<b>Veneer</b>							
<b>Product Subcategory as applicable</b>	<b>Effective</b>	<b>Revised</b>	<b>Manufacturer</b>	Oahu	Maui	Hawaii	Kauai
	11/14/11		<a href="#">Big Rock Manufacturing</a>	x	x	x	x
<b>Soil Amendments, Mulch, Compost</b>							
<b>Product Subcategory as applicable</b>	<b>Effective Date</b>	<b>Revised Date</b>	<b>Manufacturer</b>	Oahu	Maui	Hawaii	Kauai
	10/16/09		<a href="#">Kauai Nursery &amp; Landscaping, Inc.</a>	X	X	X	X
	10/20/09		<a href="#">Sanford's Service Center, Inc.</a>			X	
<b>Compost Filter</b>							
<b>Product Subcategory as applicable</b>	<b>Effective Date</b>	<b>Revised Date</b>	<b>Manufacturer</b>	Oahu	Maui	Hawaii	Kauai
	01/25/10		<a href="#">EnviroTech BioSolutions Hawaii, Inc.</a>	X	X	X	X
	6/02/11		<a href="#">Certified Erosion Control Hawaii LLC</a>	X	X	X	X

SCHEDULE OF ACCEPTABLE HAWAII PRODUCTS AND DESIGNATION OF HAWAII PRODUCTS TO BE USED			
ACCEPTABLE HAWAII PRODUCTS		HAWAII PRODUCTS TO BE USED Cost FOB Jobsite, Unloaded Including Applicable General Excise and Use Taxes	
Description	Manufacturer	Base Bid	Additive Alternate
		\$ _____	\$ _____
		\$ _____	\$ _____
		\$ _____	\$ _____
		\$ _____	\$ _____
		\$ _____	\$ _____
		\$ _____	\$ _____
		\$ _____	\$ _____
		\$ _____	\$ _____
		\$ _____	\$ _____
		\$ _____	\$ _____

It is further understood by the Bidder that if upon being granted Hawaii Products, and being awarded the contract, if the Bidder fails to use such products or meet the requirements of such preference, the Bidder shall be subject to penalties, if applicable.

## **APPRENTICESHIP AGREEMENT PREFERENCE**

Hawaii 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 (for example, Hawaii Products Preference), 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

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:

- 1) 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.
- 2) 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.
- 3) 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.
- 4) 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, Hawaii 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, Hawaii 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:

Table with 2 columns: Addendum No. and Date. Rows 1-8.

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:

- ( ) Surety Bond (\*1)
( ) Legal Tender (\*2)
( ) Cashier's Check (\*3)
( ) Certificate of Deposit (\*3)
( ) Certified Check (\*3)
( ) Official Check (\*3)
( ) Share Certificate (\*3)
( ) Teller's Check (\*3)
( ) Treasurer's 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 Hawaii 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 \_\_\_\_\_, Hawaii, 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 Hawaii 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

DEPARTMENT OF HAWAIIAN HOME LANDS

**CONSOLIDATION/RE-SUBDIVISION  
KEOKEA-WAIOHULI SUBDIVISION PHASE 1  
(GRADING AND DRAINAGE IMPROVEMENTS)**

KULA, MAUI, HAWAII

(2) 2-2-033:021 to 38, & 058 to 74

(2) 2-2-034:001 to 016, 026 & 029

IFB NO.: IFB-16-HHL-006

**\*SEALED BID\***

Submitted by:

---

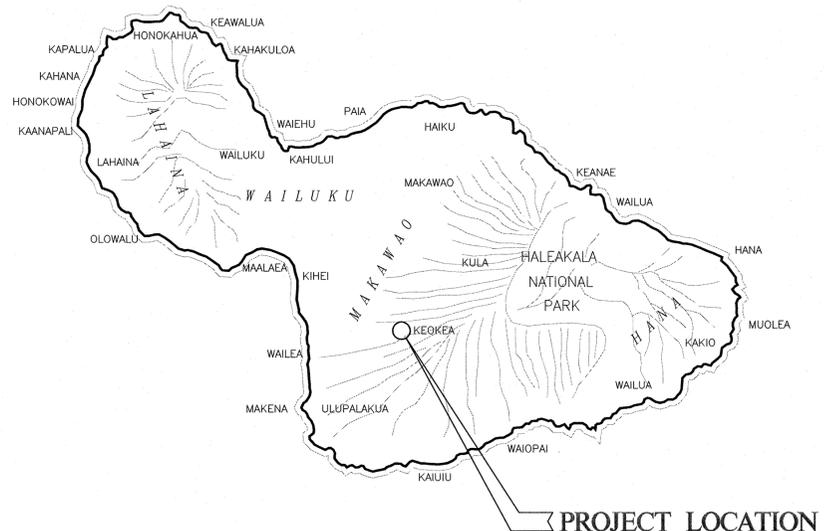
Address:

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Date:

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Bid Package Envelope Cover



**VICINITY MAP**

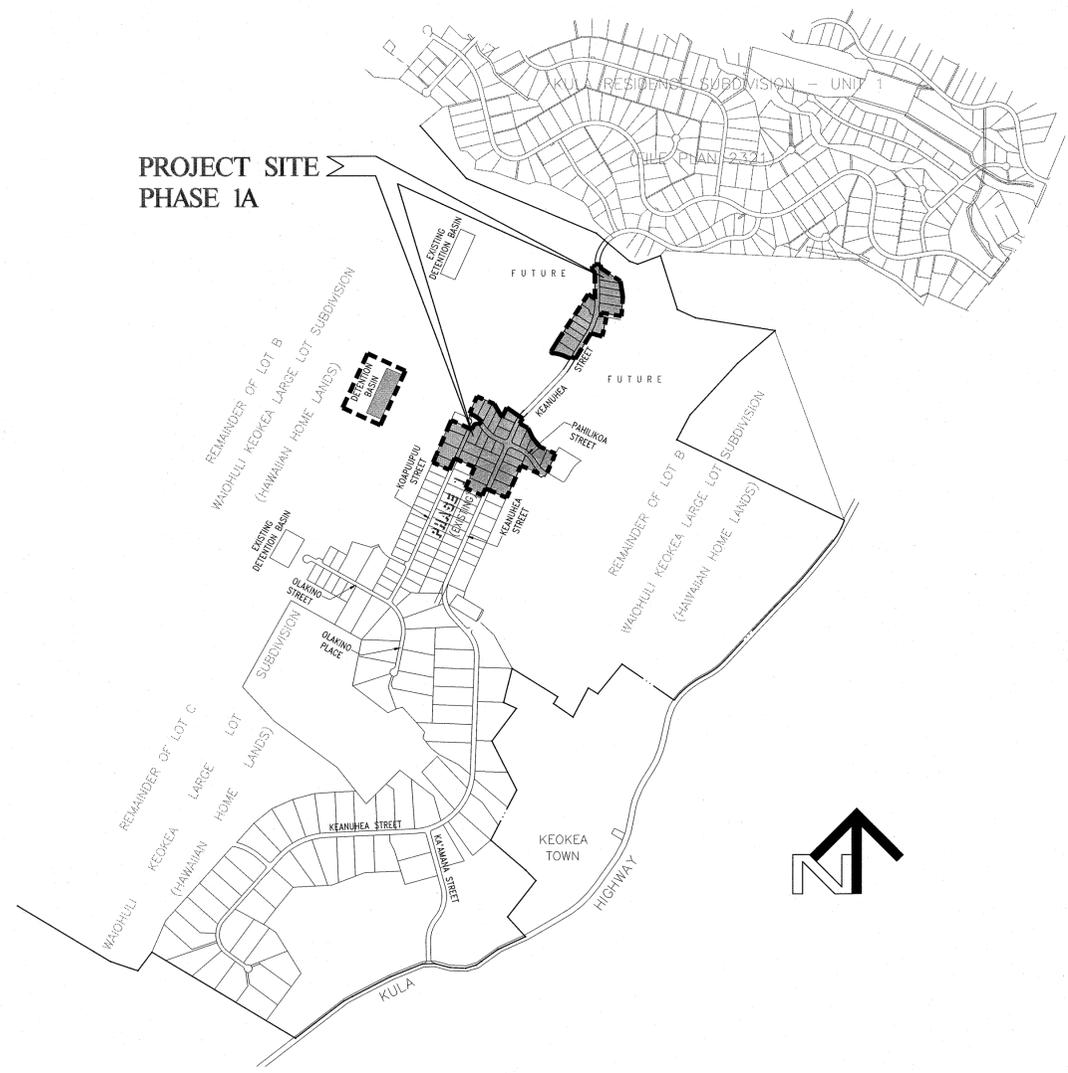
NOT TO SCALE



CONSTRUCTION PLANS  
FOR  
**CONSOLIDATION / RE-SUBDIVISION**  
**KEOKEA-WAIOHULI DEVELOPMENT**  
**PHASE 1A**  
**KEOKEA & WAIOHULI, MAKAWAO, MAUI**

OWNER AND DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
TAX MAP KEYS: (2) 2-2-033: 021 TO 38, & 058-74 AND (2) 2-2-34: 001 TO 016, 026 & 029  
DSA SUBDIVISION FILE NOS. 2.3242, 2.3243, 2.3245, 2.3246 & 2.3248  
DWS FILE NO. 14-013, 14-014, 14-015, 14-016, 14-017, 14-018, 14-026 & 14-027

**PROJECT SITE  
PHASE 1A**



**LOCATION MAP**

NOT TO SCALE

CONSULTANTS

CIVIL ENGINEER:  
**COMMUNITY PLANNING AND ENGINEERING, INC.**

STRUCTURAL ENGINEER:  
**TANIMURA AND ASSOCIATES, INC.**

SOILS ENGINEER:  
**PSC CONSULTANTS, LLC**

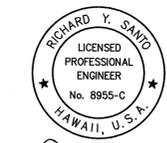
APPROVED

	3/19/15
CHAIRMAN, HAWAIIAN HOMES COMMISSION DEPARTMENT OF HAWAIIAN HOME LANDS STATE OF HAWAII	DATE
_____ DIRECTOR, DEPARTMENT OF PUBLIC WORKS COUNTY OF MAUI	DATE
	01-06-2015
CHIEF, ENVIRONMENTAL MANAGEMENT DIVISION DEPARTMENT OF HEALTH, STATE OF HAWAII	DATE
for 	1/22/2015
DIRECTOR, DEPARTMENT OF WATER SUPPLY COUNTY OF MAUI (APPROVAL LIMITED TO IMPROVEMENTS WHICH WILL BE DEDICATED TO THE DEPARTMENT OF WATER SUPPLY)	DATE

CONSOLIDATION / RE-SUBDIVISION KEOKEA - WAIOHULI DEVELOPMENT PHASE 1A

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07	EROSION CONTROL PLAN & DETAILS
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	<b>CIVIL</b>
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THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. LICENSE EXPIRATION DATE: 04/30/16

REVISION DATE	DESCRIPTION	MADE BY	APPROVED
<b>Community Planning and Engineering, Inc.</b> Engineering Design   Construction Management   Infrastructure Planning 1288 Queen Emma Street, Third Floor Honolulu, Hawaii			
<b>CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A</b> KEOKEA & WAIOHULI, MAKAWAO, MAUI OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS TAX MAP KEYS: (2) 2-2-033; 021 TO 038 & 058-074 AND (2) 2-2-34; 001 TO 016, 026 & 029			
<b>INDEX OF DRAWINGS</b>			
DRAWN BY: KWNW	ENGINEER: KWNW/MFC	CHECKED BY: RYS	
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**GENERAL NOTES**

- LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE BASED ON AVAILABLE "AS-BUILT" OR RECORD CONSTRUCTION PLANS AND ARE APPROXIMATE ONLY AND THEIR ACCURACY IS NOT GUARANTEED.
- EXISTING CONTOURS AND FEATURES ARE BASED ON "TOPOGRAPHIC SURVEY OF KEOKEA FARM LOTS" PREPARED BY AUSTIN TSUTSUMI & ASSOCIATES, INC. DATED MAY 18, 2001.
- ELEVATIONS SHOWN ARE BASED ON PROJECT BENCHMARK - 1/2-INCH PIPE FOUND ON SOUTH SIDE OF KULA HIGHWAY AND SOUTHERLY SIDE OF PROJECT SITE. ELEVATION = 2,752.73 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 HE 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 AGREES 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, BRIDGE AND PUBLIC WORKS CONSTRUCTION," 1994 SHALL BE INCLUDED AS PART OF THESE CONSTRUCTION PLANS. THE CONTRACTOR SHALL OBTAIN THE LATEST REVISIONS BEFORE COMMENCING CONSTRUCTION. THE FOLLOWING DETAILS SHOWN IN "STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION," DATED SEPTEMBER 1984, AS AMENDED, SHALL BE APPLICABLE TO THIS PROJECT:  
 R-9 CONCRETE PAVEMENT  
 R-10 CONCRETE PAVEMENT JOINT DETAILS  
 R-11 CONCRETE PAVEMENT JOINT DETAILS  
 R-19 6" CHAIN LINK FENCE  
 R-21A TYPICAL DOUBLE GATE  
 R-55 ROADWAY SWALE
- IF HISTORIC SITES SUCH AS WALLS, PLATFORMS, PAVEMENTS AND MOUNDS OR REMAINS SUCH AS ARTIFACTS, BURIALS, CONCENTRATION OF CHARCOAL OR SHELLS ARE 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 (587-0013), 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 (TELEPHONE:587-0047), 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.
- PRIOR TO ANY LAND ALTERATION, ALL TASKS OF THE HISTORIC SITES INTERIM PROTECTION PLAN MUST BE IN PLACE FOR THE ISOLATED NON-BURIAL SITES TO BE PRESERVED AND THE HISTORIC PRESERVE. ISOLATED SIGNIFICANT HISTORIC SITES AND THE HISTORIC PRESERVE MUST HAVE PROTECTION MEASURES IN PLACE PRIOR TO ANY LAND ALTERATION. SUCH PROTECTION SHALL INCLUDE PERMANENT FENCING AND TEMPORARY PLASTIC CONSTRUCTION FENCING. THE CONSTRUCTION CREWS MUST BE BRIEFED ON THE IMPORTANCE OF THESE PROTECTIVE MEASURES.

**DEPARTMENT OF WATER SUPPLY NOTES**

- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF WATER SUPPLY (DWS), IN WRITING, ONE (1) WEEK PRIOR TO COMMENCEMENT OF WORK.
- ALL MATERIALS USED AND METHODS 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:  
 A. 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.

**DEPARTMENT OF WATER SUPPLY NOTES: CONT.**

- 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 OPERATORS, AND DOES NOT PROVIDE PERSONNEL FOR THE ACTUAL CONNECTION, THE CONTRACTOR SHALL PROVIDE ALL PIPE-FITTERS 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-SEIZE 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:  
 A. 316 STAINLESS STEEL T-BOLTS WITH THE HEAVY DUTY STAINLESS STEEL NUTS (ONLY) FURNISHED WITH TRIPAC 2000 BLUE COATING SYSTEM. ANTI-SEIZE SHALL NOT BE USED.  
 B. 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.  
 C. COR-TEN T-BOLTS AND NUTS BOTH FACTORY COATED WITH TRIPAC 2000 BLUE COATING SYSTEM BY "TRIPAC FASTENERS".  
 ALL HOT FORGED STAINLESS STEEL BOLTS ARE REQUIRED TO BE PASSIVATED PER ASTM A380. MANUFACTURER CERTIFICATES ARE REQUIRED FOR PROOF WITH EACH SHIPMENT.
  - ALL BURIED METALS, INCLUDING COPPER PIPES, 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 TIF FORMAT SHALL BE PROVIDED TO THE DWS FOR ALL PROJECTS.
- CHLORINATION OF WATER SYSTEMS**
- WATER MAINS AND APPURTENANCES SHALL BE DISINFECTED IN ACCORDANCE WITH AWWA C651. ALL PROCEDURES AND MATERIALS (LIQUID CHLORINE OR CALCIUM HYPOCHLORITE) USED FOR THE CHLORINATION OF THE PROJECT SHALL CONFORM TO AWWA REQUIREMENTS.
  - PRIOR TO CHLORINATION, THE PROJECT PIPELINES SHALL BE THOROUGHLY CLEANED. CLEANING OF LINES 8" AND LARGER SHALL BE BY PIGGING USING FOAM PIGS. SMALLER LINES CAN BE FLUSHED IN ACCORDANCE WITH AWWA REQUIREMENTS IF ADEQUATE WATER SUPPLY IS PROVIDED, OTHERWISE BY PIGGING. THE CONTRACTOR SHALL SUBMIT HIS PLAN OF PIPELINE CLEANING, INCLUDING FITTING REQUIREMENTS FOR PIGGING, FOR APPROVAL PRIOR TO PROCEEDING.
  - THE INTERIOR SURFACES OF THE PROJECT SHALL BE EXPOSED TO THE CHLORINATING SOLUTION FOR A MINIMUM OF 24 HOURS AND THE 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 PROJECT TO BE CHLORINATED.
  - AT THE END OF THE 24-HOUR DISINFECTION PERIOD, REPRESENTATIVE SAMPLES SHALL BE TAKEN AND ANALYZED TO ASSURE A CHLORINE RESIDUAL OF AT LEAST 10 PPM. MEASUREMENTS FOR CHLORINE RESIDUAL TESTS SHALL BE BY A TRAINED, QUALIFIED TESTER APPROVED BY THE DIRECTOR.
  - SHOULD THE RESULTS INDICATE ADEQUATE CHLORINATION, THE PROJECT SHALL BE THOROUGHLY FLUSHED AND FILLED WITH POTABLE WATER FROM THE EXISTING POTABLE SYSTEM AND AGAIN TESTED FOR CHLORINE RESIDUAL. THE FLUSHING SHALL BE CONSIDERED ADEQUATE IF THE TEST RESULTS INDICATE THAT THE WATER IN THE PROJECT HAS A COMPARABLE CHLORINE RESIDUAL AS THE WATER IN THE EXISTING SYSTEM.
  - FOLLOWING THE ACCEPTABLE FLUSHING OF THE HIGH CONCENTRATION CHLORINE SOLUTION, TWO CONSECUTIVE SETS OF ACCEPTABLE SAMPLES SHALL BE TAKEN AT LEAST 24 HOURS APART FROM REPRESENTATIVE POINTS IN THE PROJECT AND SUBJECT TO MICROBIOLOGICAL TESTS PERFORMED BY A CERTIFIED LABORATORY APPROVED BY THE DEPARTMENT OF HEALTH. AT LEAST ONE SET OF SAMPLES SHALL BE COLLECTED AND TESTED 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. POSITIVE RESULTS WILL NOT BE ACCEPTABLE AND THE PROCESS WILL BE REPEATED.
  - ANALYSIS FOR RESIDUAL CHLORINE SHALL BE MADE IN ACCORDANCE WITH "STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER," AMERICAN PUBLIC HEALTH ASSOCIATION, CURRENT EDITION.
  - MICROBIOLOGICAL TESTS SHALL BE MADE IN ACCORDANCE WITH "STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER," AMERICAN PUBLIC HEALTH ASSOCIATION, CURRENT EDITION.
  - THE DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH ALL OF THE FOREGOING.

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

- THE 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 APPLICABLE SECTIONS OF THE HAWAII STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND PUBLIC WORKS CONSTRUCTION, AND THE SEPTEMBER 1984 "STANDARD DETAILS" FOR PUBLIC WORKS CONSTRUCTION OF THE DEPARTMENT OF PUBLIC WORKS", AS AMENDED.
  - IF EXISTING UTILITIES, WHETHER OF NOT SHOWN ON PLANS, ARE DAMAGED DURING CONSTRUCTION, THE CONTRACTOR SHALL AT HIS OWN EXPENSE BE REQUIRED TO REPAIR SUCH UTILITIES.
  - 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 VERSIONS OF "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 THE 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", DATED 2003.
  - THE DIRECTOR 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 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 COST 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 ORDINANCES.
  - THE CONTRACTOR SHALL SUBMIT A TIF AND FIVE (5) COPIES OF THE "AS-BUILT" DRAWINGS PRIOR TO THE FINAL APPROVAL OF THE IMPROVEMENTS.
  - 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.
  - 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 @ 243-5169 WHICH WILL ASSESS THE SIGNIFICANCE OF THE FIND AND RECOMMEND AN APPROPRIATE MITIGATION MEASURE, IF NECESSARY.
  - PURSUANT OF 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 COUNCIL'S MEMBERS AT A REGULAR OR SPECIAL MEETING OF THE MAUI COUNTY COUNCIL.
- DEPARTMENT OF PUBLIC WORKS NOTES**
- THE CONTRACTOR SHALL ALLOW FOUR WEEKS TO OBTAIN A GRADING PERMIT FROM THE DSA 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 AND IN ACCORDANCE WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREET AND HIGHWAY, 2003." THE CONTRACTOR SHALL PREPARE AND OBTAIN NECESSARY APPROVALS OF TRAFFIC CONTROL PLANS IF REQUIRED BY THE DSA.
  - STANDARD DETAIL DRAWINGS OF THE DEPARTMENT OF PUBLIC WORKS AND THE HAWAII STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND PUBLIC WORKS CONSTRUCTION (2005) AS AMENDED, 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, BRIDGE AND PUBLIC WORKS CONSTRUCTION, AS AMENDED, 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.
- 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 IRRIGATION 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 COUNCIL'S MEMBERS AT A REGULAR OR SPECIAL MEETING OF THE MAUI COUNTY COUNCIL.

**DEPARTMENT OF HEALTH NOTES**

- 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.
- ALL GRADING OPERATIONS SHALL BE PERFORMED IN CONFORMANCE WITH THE APPLICABLE PROVISIONS OF THE WATER QUALITY STANDARDS CONTAINED IN THE PUBLIC HEALTH REGULATIONS, STATE DEPARTMENT OF HEALTH, ON WATER POLLUTION CONTROL AND WATER QUALITY STANDARDS.
- ALL SLOPES AND EXPOSED AREAS SHALL BE SODDED OR PLANTED IMMEDIATELY AFTER THE GRADING WORK HAS BEEN COMPLETED.
- 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 COMPLY WITH THE CONDITIONS OF THE BEST MANAGEMENT PRACTICE PLAN AND GENERAL PERMIT COVERING DISCHARGE OF STORM WATER ASSOCIATED WITH CONSTRUCTION ACTIVITIES AND HYDROTESTING WATER.

**DISABILITY AND COMMUNICATION ACCESS BOARD (DCAB) REQUIREMENTS**

WHERE PEDESTRIAN WALKWAYS EXIST, THEY SHALL BE MAINTAINED IN PASSABLE CONDITION OR OTHER FACILITIES FOR PEDESTRIANS SHALL BE PROVIDED. PASSAGE BETWEEN WALKWAYS AT INTERSECTIONS SHALL LIKEWISE BE PROVIDED. TEMPORARY PEDESTRIAN PASSAGES SHALL BE ACCESSIBLE PER ADAAG 4.1.1 (4) AND SHALL COMPLY W/ADAAG 4.3.1.

**GRADING NOTES**

- FINISH SPOT ELEVATIONS AND FINISH CONTOURS, AS SHOWN ON PLAN REPRESENTS FINISH GRADING. THE SITEWORK CONTRACTOR SHALL COORDINATE WITH THE LANDSCAPE CONTRACTOR 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, ASH MATERIAL, 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:  
 A. MINIMIZE TIME OF CONSTRUCTION.  
 B. RETAIN EXISTING GROUND COVER UNTIL THE LATEST DATE TO COMPLETE CONSTRUCTION.  
 C. CONSTRUCT REMAINING PERMANENT EROSION AND DRAINAGE CONTROL FEATURES AS EARLY AS POSSIBLE.  
 D. USE TEMPORARY AREA SPRINKLERS IN NON-ACTIVE CONSTRUCTION AREAS WHEN GROUND COVER IS REMOVED.  
 E. STATION WATER TRUCK ON-SITE DURING CONSTRUCTION PERIOD TO PROVIDE FOR IMMEDIATE SPRINKLING, AS NEEDED, IN ACTIVE CONSTRUCTION AREAS (WEEKENDS AND HOLIDAYS INCLUDED).  
 F. USE TEMPORARY BERMS AND CUT-OFF DITCHES, WHERE NEEDED, FOR CONTROL OF EROSION. IMPLEMENT AND MAINTAIN THE MEASURES OF THE BMP PLAN.  
 G. GRADED AREAS SHALL BE THOROUGHLY WATERED AFTER CONSTRUCTION ACTIVITY HAS CEASED FOR THE DAY AND ON WEEKENDS.  
 H. ALL CUT AND FILL SLOPES SHALL BE SODDED OR PLANTED IMMEDIATELY AFTER GRADING WORK HAS BEEN COMPLETED.

**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:  
 a. EMBANKMENT/SELECT BORROW AND SUBGRADE MATERIALS: ONE (1) COMPACTION TEST PER 600 SQUARE YARDS PER LIFT;  
 b. AGGREGATE SUBBASE COURSE: ONE (1) COMPACTION TEST PER 400 SQUARE YARDS; ONE (1) GRADATION AND SAND EQUIVALENT TEST PER PROJECT;  
 c. AGGREGATE BASE COURSE: ONE (1) COMPACTION TEST PER 300 SQUARE YARDS; ONE (1) GRADATION AND SAND EQUIVALENT TEST PER PROJECT;  
 d. ASPHALT CONCRETE PAVEMENT OR ASPHALT TREATED BASE COURSE; THREE (3) A.C. CORES FOR THICKNESS AND DENSITY TESTS PER PROJECT;  
 e. 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.

**DUST SCREENS**

THE COUNTY INSPECTOR AND/OR THE OWNERS ENGINEER SHALL DIRECT THE CONTRACTOR ON WHERE DUST SCREENS SHALL BE INSTALLED. THE COUNTY INSPECTOR SHALL BE INFORMED OF THESE LOCATIONS.

**STOCKPILING**

- ALL STOCKPILING WORK SHALL BE DONE IN ACCORDANCE WITH THE SOILS REPORT BY PSC DATED MARCH 2005.
- NO CONTRACTOR SHALL PERFORM ANY STOCKPILING OPERATION SO AS TO CAUSE FALLING ROCKS, SOIL OR DEBRIS IN ANY FORM TO FALL, SLIDE OR FLOW ONTO ADJOINING PROPERTIES, STREETS OR NATURAL WATERCOURSES. SHOULD SUCH VIOLATIONS OCCUR, THE CONTRACTOR MAY BE CITED AND THE CONTRACTOR SHALL IMMEDIATELY MAKE ALL REMEDIAL ACTIONS NECESSARY.
- 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 THE HAWAII ADMINISTRATIVE RULES, TITLE 11, CHAPTER 60.1, "AIR POLLUTION CONTROL."
- THE UNDERGROUND PIPES, CABLES OR DUCTLINES KNOWN TO EXIST BY THE ENGINEER FROM HIS SEARCH OF RECORDS ARE INDICATED ON THE PLANS. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND DEPTHS OF THE FACILITIES AND EXERCISE PROPER CARE IN EXCAVATING IN THE AREA. WHEREVER CONNECTIONS OF NEW UTILITIES ARE SHOWN ON THE PLANS, THE CONTRACTOR SHALL EXPOSE THE EXISTING LINES AT THE PROPOSED CONNECTIONS TO VERIFY THEIR LOCATIONS AND DEPTHS PRIOR TO EXCAVATION FOR THE NEW LINES.
- ADEQUATE PROVISIONS SHALL BE MADE TO PREVENT SURFACE WATERS FROM DAMAGING THE CUT FACE OF AN EXCAVATION OF THE SLOPED SURFACES OF A FILL. FURTHERMORE, ADEQUATE PROVISIONS SHALL BE MADE TO PREVENT SEDIMENT-LADEN RUNOFF FROM LEAVING THE SITE.
- ALL SLOPES AND EXPOSED AREAS SHALL BE SODDED OR PLANTED AS SOON AS THE FINAL GRADES HAVE BEEN ESTABLISHED. PLANTING SHALL NOT BE DELAYED UNTIL ALL STOCKPILING WORK HAS BEEN COMPLETE. STOCKPILING TO FINAL GRADE SHALL BE CONTINUOUS, AND ANY AREA WITHIN WHICH WORK HAS BEEN INTERRUPTED OR DELAYED SHALL BE PLANTED.
- FILLS ON SLOPES STEEPER THAN 5:1 SHALL BE KEYED.
- THE COUNTY SHALL BE INFORMED OF THE LOCATION OF THE BORROW SITE FOR THE PROJECT WHEN THE APPLICATION FOR A STOCKPILING PERMIT IS MADE. THE BORROW SITE MUST ALSO FULFILL THE REQUIREMENTS OF THE GRADING ORDINANCE.
- NO STOCKPILING WORK SHALL BE DONE ON SATURDAYS, SUNDAYS AND HOLIDAYS AT ANY TIME WITHOUT PRIOR NOTICE TO THE DIRECTOR, DHLL, PROVIDED SUCH STOCKPILING WORK IS ALSO IN CONFORMANCE WITH COMMUNITY NOISE CONTROL STANDARDS CONTAINED IN THE HAWAII ADMINISTRATIVE RULES, TITLE 11, CHAPTER 46, "COMMUNITY NOISE CONTROL."

REVISION DATE	DESCRIPTION	MADE BY	APPROVED
 <b>Community Planning and Engineering, Inc.</b> Engineering Design   Construction Management   Infrastructure Planning 1288 Queen Emma Street, Third Floor Honolulu, Hawaii			
<b>CONSOLIDATION / RE-SUBDIVISION          KEOKEA-WAIOHULI DEVELOPMENT          PHASE 1A</b>			
KEOKEA & WAIOHULI, MAKAWAO, MAUI OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS TAX MAP KEYS: (2) 2-2-033; 021 TO 038, & 058-074 AND (2) 2-2-34; 001 TO 016, 026 & 029			
<b>GENERAL NOTES - 1</b>			
DRAWN BY: KWNW	ENGINEER: KWNW/MFC	CHECKED BY: RYS	
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. LICENSE EXPIRATION DATE: 04/30/16			
FILE	POCKET	FOLDER	NO.

**STOCKPILING CONT.**

- 10. THE LIMITS OF THE AREA TO BE STOCKPILED SHALL BE FLAGGED BEFORE THE COMMENCEMENT OF THE STOCKPILING WORK.
- 11. ALL STOCKPILING OPERATIONS SHALL BE PERFORMED IN CONFORMANCE WITH THE APPLICABLE PROVISIONS OF THE WATER QUALITY AND WATER POLLUTION CONTROL STANDARDS CONTAINED IN HAWAII ADMINISTRATIVE RULES, TITLE 11, CHAPTER 54, "WATER QUALITY STANDARDS" AND TITLE 11, CHAPTER 55, "WATER POLLUTION CONTROL", AND IF APPLICABLE, THE NPDES PERMIT FOR THE PROJECT.
- 12. WHERE APPLICABLE AND FEASIBLE THE MEASURES TO CONTROL EROSION AND OTHER POLLUTANTS SHALL BE IN PLACE BEFORE ANY STOCKPILING WORK IS INITIATED.
- 13. TEMPORARY EROSION CONTROLS SHALL NOT BE REMOVED BEFORE PERMANENT EROSION CONTROLS ARE IN-PLACE AND ESTABLISHED.
- 14. TEMPORARY EROSION CONTROL PROCEDURES SHALL BE SUBMITTED FOR APPROVAL PRIOR TO APPLICATION FOR STOCKPILING PERMIT.
- 15. IF THE STOCKPILING WORK INVOLVES CONTAMINATED SOIL, THEN ALL STOCKPILING WORK SHALL BE DONE IN CONFORMANCE WITH APPLICABLE STATE AND FEDERAL REQUIREMENTS.
- 16. THE CONTRACTOR SHALL NOTIFY THE CIVIL ENGINEERING BRANCH, DEPT. OF PUBLIC WORKS TO ARRANGE FOR INSPECTORIAL SERVICES AND SUBMIT THREE (3) SETS OF APPROVED CONSTRUCTION PLANS SEVEN (7) DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION WORK.
- 17. NON-COMPLIANCE TO ANY OF THE ABOVE REQUIREMENTS SHALL MEAN IMMEDIATE SUSPENSION OF ALL WORK, AND REMEDIAL WORK SHALL COMMENCE IMMEDIATELY. ALL COSTS INCURRED SHALL BE BILLED TO THE VIOLATOR. FURTHERMORE, VIOLATORS SHALL BE SUBJECT TO ADMINISTRATIVE, CIVIL AND/OR CRIMINAL PENALTIES.
- 18. FOR BENCH MARK, SEE SHEET 9.
- 19. LIFE OF THE STOCKPILE SHALL BE 1.5 YEAR.

**BEST MANAGEMENT PRACTICES NOTES**

- 1. ALL GRADED AREAS SHALL BE PROTECTED FROM EROSION BY HYDROMULCHING EXPOSED AREAS AS SOON AS GRADES ARE ATTAINED.
- 2. ALL TEMPORARY EROSION CONTROL MEASURES, SUCH AS SILT FENCES, STABILIZED CONSTRUCTION ENTRANCE, AND HYDROMULCHING SHALL BE INSTALLED AND MAINTAINED UNTIL SUCH TIME PERMANENT EROSION CONTROL MEASURES ARE ESTABLISHED.
- 3. HYDROMULCHING AREAS SHALL BE MAINTAINED UNTIL GRASS HAS BEEN ESTABLISHED.

**TEMPORARY EROSION CONTROL NOTES**

- 1. FOLLOW SEQUENCE OF OPERATION AS RECOMMENDED BY THE "SOIL EROSION STANDARDS AND GUIDELINES," DEPARTMENT OF PUBLIC WORKS, CITY AND COUNTY OF HONOLULU, NOV. 1975.
- 2. THE CONTRACTOR SHALL PROVIDE A STABILIZED CONSTRUCTION ENTRANCE FOR INGRESS AND EGRESS.
- 3. SILT FENCING SHALL BE USED AS SHOWN AND AT SELECTED LOCATIONS, AS SHOWN ON PLANS. ADDITIONAL SILT FENCING SHALL BE INSTALLED AS DIRECTED BY THE OFFICER-IN-CHARGE.
- 4. THE CONTRACTOR SHALL MINIMIZE THE AMOUNT OF LAND TO BE EXPOSED AT ANY ONE TIME.
- 5. ALL GRADED AREAS SHALL BE HYDROMULCHED IN ORDER TO PREVENT EROSION AND SILT RUNOFF. TWO APPLICATIONS OF HYDROMULCHING SHALL BE PROVIDED DURING THE DURATION OF CONSTRUCTION.
- 6. THE ABOVE PROCEDURE FOR EROSION AND SEDIMENT CONTROL MAY BE REVISED BY THE CONTRACTOR TO CONFORM TO HIS GRADING OPERATION PROCEDURE. HOWEVER, ANY REVISIONS TO THE ABOVE SHALL BE SUBMITTED TO THE DEPARTMENT OF PUBLIC WORKS' (DPW) CHIEF ENGINEER FOR APPROVAL, BY THE CONTRACTOR. A COPY OF THE APPROVED PLAN SHALL BE SUBMITTED TO THE OFFICER-IN-CHARGE PRIOR TO STARTING WORK.

**GRUBBING**

- 1. ALL GRUBBING WORK SHALL BE DONE IN ACCORDANCE WITH THE SOILS REPORTS BY PSC DATED MARCH 2005 AND APRIL 2013.
- 2. NO CONTRACTOR SHALL PERFORM ANY GRUBBING OPERATION SO AS TO CAUSE FALLING ROCKS, SOIL OR DEBRIS IN ANY FORM TO FALL, SLIDE OR FLOW ONTO ADJOINING PROPERTIES, STREETS OR NATURAL WATERCOURSES. SHOULD SUCH VIOLATIONS OCCUR, THE CONTRACTOR MAY BE CITED AND THE CONTRACTOR SHALL IMMEDIATELY MAKE ALL REMEDIAL ACTIONS NECESSARY.
- 3. 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 THE HAWAII ADMINISTRATIVE RULES, CHAPTER 11-60, "AIR POLLUTION CONTROL."
- 4. ADEQUATE PROVISIONS SHALL BE MADE TO PREVENT SURFACE WATERS FROM DAMAGING THE CUT FACE OF AN EXCAVATION OR THE SLOPED SURFACES OF A FILL. FURTHERMORE, ADEQUATE PROVISIONS SHALL BE MADE TO PREVENT SEDIMENT-LADEN RUNOFF FROM LEAVING THE SITE.
- 5. ALL GRUBBED AREAS SHALL BE SODDED OR PLANTED IMMEDIATELY AFTER THE GRUBBING WORK HAS BEEN COMPLETED.
- 6. THE COUNTY SHALL BE INFORMED OF THE LOCATION OF THE DISPOSAL SITE FOR THE PROJECT WHEN THE APPLICATION FOR A GRUBBING PERMIT IS MADE. THE DISPOSAL SITE MUST ALSO FULFILL THE REQUIREMENTS OF THE GRADING ORDINANCE.
- 7. NO GRUBBING WORK SHALL BE DONE ON SATURDAYS, SUNDAYS AND HOLIDAYS AT ANY TIME WITHOUT PRIOR NOTICE TO THE DIRECTOR, DHHL, PROVIDED SUCH GRUBBING WORK IS ALSO IN CONFORMANCE WITH THE COMMUNITY NOISE CONTROL STANDARDS CONTAINED IN THE HAWAII ADMINISTRATIVE RULES, CHAPTER 11-43, "COMMUNITY NOISE CONTROL FOR OAHU."

**WATER POLLUTION AND EROSION CONTROL NOTES**

**A. GENERAL:**

- 8. THE LIMITS OF THE AREA TO BE GRUBBED SHALL BE FLAGGED BEFORE THE COMMENCEMENT OF THE GRUBBING WORK.
- 9. ALL GRUBBING OPERATIONS SHALL BE PERFORMED IN CONFORMANCE WITH THE APPLICABLE PROVISIONS OF THE WATER QUALITY AND WATER POLLUTION CONTROL STANDARDS CONTAINED IN HAWAII ADMINISTRATIVE RULES, CHAPTER 11-54, "WATER QUALITY STANDARDS" AND CHAPTER 11-55, "WATER POLLUTION CONTROL", AND IF APPLICABLE, THE NPDES PERMIT FOR THE PROJECT.
- 10. WHERE APPLICABLE AND FEASIBLE, THE MEASURES TO CONTROL EROSION AND OTHER POLLUTANTS SHALL BE IN PLACE BEFORE ANY GRUBBING WORK IS INITIATED.
- 11. TEMPORARY EROSION CONTROLS SHALL NOT BE REMOVED BEFORE PERMANENT EROSION CONTROLS ARE IN-PLACE AND ESTABLISHED.
- 12. TEMPORARY EROSION CONTROL PROCEDURES SHALL BE SUBMITTED FOR APPROVAL PRIOR TO APPLICATION FOR GRUBBING PERMIT.
- 13. IF THE GRUBBING WORK INVOLVES CONTAMINATED SOIL, THEN ALL GRUBBING WORK SHALL BE DONE IN CONFORMANCE WITH APPLICABLE STATE AND FEDERAL REQUIREMENTS.
- 14. THE CONTRACTOR SHALL NOTIFY THE CIVIL ENGINEERING BRANCH, DEPT. OF PUBLIC WORKS TO ARRANGE FOR INSPECTORIAL SERVICES AND SUBMIT THREE (3) SETS OF APPROVED CONSTRUCTION PLANS SEVEN (7) DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION WORK.
- 15. NON-COMPLIANCE TO ANY OF THE ABOVE REQUIREMENTS SHALL MEAN IMMEDIATE SUSPENSION OF ALL WORK, AND REMEDIAL WORK SHALL COMMENCE IMMEDIATELY. ALL COSTS INCURRED SHALL BE BILLED TO THE VIOLATOR. FURTHERMORE, VIOLATORS SHALL BE SUBJECT TO ADMINISTRATIVE, CIVIL AND/OR CRIMINAL PENALTIES.

**CONSTRUCTION BMPs**

- A. CONSTRUCTION MANAGEMENT TECHNIQUES INCLUDE:
  - 1. CLEARING AND GRUBBING SHALL BE HELD TO THE MINIMUM NECESSARY FOR GRADING AND EQUIPMENT OPERATION (15 ACRES MAX.).
  - 2. CONSTRUCTION SHALL BE SEQUENCED TO MINIMIZE THE EXPOSURE TIME OF CLEARED SURFACE AREA. (15 ACRES MAX.).
  - 3. CONSTRUCTION SHALL BE STAGED OR PHASED FOR LARGE PROJECTS. AREAS OF ONE PHASE SHALL BE IN PLACE AND FUNCTIONAL PRIOR TO THE START OF THE NEXT PHASE. STABILIZATION CAN BE ACCOMPLISHED BY TEMPORARILY OR PERMANENTLY PROTECTING THE DISTURBED SOIL SURFACE FROM RAINFALL IMPACTS AND RUNOFF.
  - 4. EROSION AND SEDIMENT CONTROL MEASURES, INCLUDING BERMS IN DRAINAGE WAYS SHALL BE IN PLACE AND FUNCTIONAL PRIOR TO THE START OF THE GRADING WORK AND SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD. TEMPORARY MEASURES MAY BE REMOVED AT THE BEGINNING OF THE WORK DAY, BUT SHALL BE REPLACED AT THE END OF THE WORK DAY.
  - 5. ALL CONTROL MEASURES SHALL BE CHECKED AND REPAIRED, AS NECESSARY, FOR EXAMPLE, WEEKLY IN DRY PERIODS AND WITHIN 24-HOURS AFTER ANY RAINFALL OF 0.5 INCHES OR GREATER WITHIN A 24-HOUR PERIOD. DURING PROLONGED RAINFALL, DAILY CHECKING IS NECESSARY. THE PERMITTEE SHALL MAINTAIN RECORDS OF CHECKS AND REPAIRS.
  - 6. THE PERMITTEE SHALL MAINTAIN RECORDS OF THE DURATION AND ESTIMATED VOLUME OF STORM WATER DISCHARGE(S).
  - 7. A SPECIFIC INDIVIDUAL SHALL BE DESIGNATED TO BE RESPONSIBLE FOR EROSION AND SEDIMENT CONTROLS ON EACH PROJECT SITE.

**B. VEGETATION CONTROLS INCLUDE:**

- 1. PRE-CONSTRUCTION VEGETATIVE GROUND COVER SHALL NOT BE DESTROYED, REMOVED OR DISTURBED MORE THAN 20 CALENDAR DAYS PRIOR TO SITE DISTURBANCE.
- 2. TEMPORARY SOIL STABILIZATION WITH APPROPRIATE VEGETATION SHALL BE APPLIED ON AREAS THAT WILL REMAIN UNFINISHED FOR MORE THAN 30 CALENDAR DAYS.
- 3. PERMANENT SOIL STABILIZATION WITH PERENNIAL VEGETATION SHALL BE APPLIED AS SOON AS PRACTICABLE AFTER FINAL GRADING.

**C. STRUCTURAL CONTROLS INCLUDE:**

- 1. STORM WATER FLOWING TOWARD THE CONSTRUCTION AREA SHALL BE DIVERTED BY USING APPROPRIATE CONTROL MEASURES, AS PRACTICAL.
- 2. EROSION CONTROL MEASURES SHALL BE DESIGNED ACCORDING TO THE SIZE OF DISTURBED OR DRAINAGE AREAS, TO DETAIN RUNOFF AND TRAP SEDIMENT.
- 3. WATER MUST BE DISCHARGED THROUGH A PIPE OR LINED CHANNEL SO THAT THE DISCHARGE DOES NOT CAUSE EROSION.
- 4. MUDDY WATER TO BE PUMPED FROM EXCAVATION AND WORK AREAS MUST BE HELD IN SETTLING BASINS OR TREATED BY FILTRATION OR OTHER APPROPRIATE MEASURES PRIOR TO ITS DISCHARGE INTO STATE WATERS. WATER MUST BE DISCHARGED THROUGH A PIPE OR LINED CHANNEL SO THAT THE DISCHARGE DOES NOT CAUSED EROSION AND SEDIMENTATION.
- 5. STORM DRAIN INLET PROTECTION.
- 6. CONTRACTOR SHALL CLEAN OUT ALL ACCUMULATED SILT AND DEBRIS IN EXISTING DRAINAGE DITCHES AND INLETS. FLUSHING IS PROHIBITED.
- D. REMOVAL OF TEMPORARY SILT FENCE:
  - 1. REMOVAL OF TEMPORARY SILT FENCE SHALL BE DONE AFTER PERMANENT VEGETATIVE GROUND COVER HAS BEEN ACCEPTED BY THE GOVERNING AGENCY.

- 1. SEE SPECIAL PROVISION SECTION 209 - WATER POLLUTION AND EROSION CONTROL. SECTION 209 DESCRIBES BUT IS NOT LIMITED TO: SUBMITTAL REQUIREMENTS; SCHEDULING OF A WATER POLLUTION AND EROSION CONTROL CONFERENCE WITH THE ENGINEER; CONSTRUCTION REQUIREMENTS; METHOD OF MEASUREMENT; AND BASIS OF PAYMENT. IN ADDITION, APPENDIX A LISTS POTENTIAL POLLUTANT SOURCES AND CORRESPONDING BMPs USED TO MITIGATE THE POLLUTANTS.
- 2. FOLLOW THE GUIDELINES IN THE CURRENT HDOT CONSTRUCTION BEST MANAGEMENT PRACTICES FIELD MANUAL IN DEVELOPING, INSTALLING AND MAINTAINING THE BEST MANAGEMENT PRACTICES (BMP) FOR THE PROJECT. FOR ANY CONFLICTING REQUIREMENTS BETWEEN THE MANUAL AND APPLICABLE BID DOCUMENTS, THE APPLICABLE BID DOCUMENTS WILL GOVERN. SHOULD A REQUIREMENT NOT BE CLEARLY DESCRIBED WITHIN THE APPLICABLE BID DOCUMENTS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY FOR INTERPRETATION. FOR THE PURPOSES OF CLARIFICATION UNDER NOTE A.2, "APPLICABLE BID DOCUMENTS" INCLUDE THE CONSTRUCTION PLANS, STANDARD SPECIFICATIONS, SPECIAL PROVISIONS, PERMITS, AND THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) WHEN APPLICABLE.
- 3. FOLLOW THE GUIDELINES IN THE HONOLULU'S CITY & COUNTY "RULES RELATING TO SOIL EROSION STANDARDS AND GUIDELINES" ALONG WITH APPLICABLE SOIL EROSION GUIDELINES FOR PROJECTS ON MAUI, MOLOKAI, KAUAI, AND HAWAII.
- 4. THE ENGINEER MAY ASSESS LIQUIDATED DAMAGES OF UP TO \$27,500 FOR NON-COMPLIANCE OF EACH BMP REQUIREMENT AND EACH REQUIREMENT STATED IN SECTION 209 AND SPECIAL PROVISIONS, FOR EVERY DAY OF NON-COMPLIANCE. THERE IS NO MAXIMUM LIMIT ON THE AMOUNT OF ASSESSED PER DAY.
- 5. THE ENGINEER WILL DEDUCT THE COST FROM THE PROGRESS PAYMENT FOR ALL CITATIONS RECEIVED BY THE DEPARTMENT FOR NON-COMPLIANCE, OR THE CONTRACTOR SHALL REIMBURSE THE STATE FOR THE FULL AMOUNT OF THE OUTSTANDING COST INCURRED BY THE STATE.
- 6. IF NECESSARY, INSTALL A RAIN GAGE PRIOR TO ANY FIELD WORK INCLUDING THE INSTALLATION OF ANY SITE-SPECIFIC BEST MANAGEMENT PRACTICES. THE RAIN GAGE SHALL HAVE A TOLERANCE OF AT LEAST 0.05 INCHES OF RAINFALL. INSTALL THE RAIN GAGE ON THE PROJECT SITE IN AN AREA THAT WILL NOT DETER RAINFALL FROM ENTERING THE GAGE OPENING. DO NOT INSTALL IN A LOCATION WHERE RAIN WATER MAY SPLASH INTO RAIN GAGE. THE RAIN GAGE INSTALLATION SHALL BE STABLE AND PLUMBED. DO NOT BEGIN FIELD WORK UNTIL THE RAIN GAGE IS INSTALLED AND SITE-SPECIFIC BEST MANAGEMENT PRACTICES ARE IN-PLACE.
- 7. SUBMIT SITE-SPECIFIC BMP PLAN TO THE ENGINEER ALONG WITH A COMPLETED SITE-SPECIFIC BMP REVIEW CHECKLIST WITHIN 30 CALENDAR DAYS OF CONTRACT EXECUTION. THE SITE-SPECIFIC BMP REVIEW CHECKLIST MAY BE OBTAINED FROM HTTP://WWW.STORMWATERHAWAII.COM.

**B. WASTE DISPOSAL:**

- 1. WASTE MATERIALS:
  - COLLECT AND STORE ALL WASTE MATERIALS IN A SECURELY LIDDED METAL DUMPSTER OR ROLL OFF CONTAINER WITH COVER TO KEEP RAIN OUT OR LOSS OF WASTE DURING WINDY CONDITIONS. THE DUMPSTER SHALL MEET ALL LOCAL AND STATE SOLID WASTE MANAGEMENT REGULATIONS. DEPOSIT ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE IN THE DUMPSTER. EMPTY THE DUMPSTER WEEKLY OR WHEN THE CONTAINER IS TWO-THIRDS FULL, WHICHEVER IS SOONER. DO NOT BURY CONSTRUCTION WASTE MATERIALS ONSITE. THE CONTRACTOR'S SUPERVISORY PERSONNEL SHALL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL. POST NOTICES STATING THESE PRACTICES IN THE OFFICE TRAILER, ON A WEATHERPROOF BULLETIN BOARD, OR OTHER ACCESSIBLE LOCATION ACCEPTABLE TO THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SEEING THAT THESE PROCEDURES ARE FOLLOWED. SUBMIT THE SOLID WASTE DISCLOSURE FORM FOR CONSTRUCTION SITES TO THE ENGINEER WITHIN 30 CALENDAR DAYS OF CONTRACT EXECUTION. PROVIDE A COPY OF ALL THE DISPOSAL RECEIPTS FROM THE FACILITY PERMITTED BY THE DEPARTMENT OF HEALTH TO RECEIVE SOLID WASTE TO THE ENGINEER MONTHLY. THIS SHOULD ALSO INCLUDE DOCUMENTATION FROM ANY INTERMEDIARY FACILITY WHERE SOLID WASTE IS HANDLED OR PROCESSED.
- 2. HAZARDOUS WASTE:
  - DISPOSE ALL HAZARDOUS WASTE MATERIALS IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATIONS AND BY THE MANUFACTURER. THE CONTRACTOR'S SITE PERSONNEL SHALL BE INSTRUCTED IN THESE PRACTICES AND SHALL BE RESPONSIBLE FOR SEEING THAT THESE PRACTICES ARE FOLLOWED.
- 3. SANITARY WASTE:
  - COLLECT ALL SANITARY WASTE FROM THE PORTABLE UNITS A MINIMUM OF ONCE PER WEEK, OR AS REQUIRED. POSITION SANITARY FACILITIES WHERE THEY ARE SECURE AND WILL NOT BE TIPPED OVER OR KNOCKED DOWN.

**C. EROSION AND SEDIMENT CONTROL INSPECTION AND MAINTENANCE PRACTICES:**

- 1. FOR PROJECTS WITH AN NPDES PERMIT FOR CONSTRUCTION ACTIVITIES, INSPECT AT THE FOLLOWING INTERVALS. FOR CONSTRUCTION AREAS DISCHARGING TO NUTRIENT OR SEDIMENT IMPAIRED WATERS, INSPECT ALL CONTROL MEASURES AT LEAST ONCE EACH WEEK AND WITHIN 24 HOURS OF ANY RAINFALL EVENT OF 0.25 INCHES OR GREATER WITHIN A 24 HOUR PERIOD. FOR CONSTRUCTION AREAS DISCHARGING TO WATERS NOT IMPAIRED FOR NUTRIENT OR SEDIMENTS, INSPECT ALL CONTROL MEASURES WEEKLY. INSPECTIONS ARE ONLY REQUIRED DURING THE PROJECT'S NORMAL WORKING HOURS. THE DISCHARGE POINT WATER CLASSIFICATION MAY BE FOUND IN THE SWPPP.
- 2. FOR PROJECTS WITHOUT AN NPDES PERMIT FOR CONSTRUCTION ACTIVITIES, INSPECT ALL CONTROL MEASURES WEEKLY.

- 3. MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES PER SPECIFICATION SECTIONS 3.02 FIELD QUALITY CONTROL AND 3.03 INSPECTIONS. IF REPAIR IS NECESSARY, INITIATE REPAIR IMMEDIATELY AND COMPLETE BY THE CLOSE OF THE NEXT WORK DAY IF THE PROBLEM DOES NOT REQUIRE SIGNIFICANT REPAIR OR REPLACEMENT, OR IF THE PROBLEM CAN BE CORRECTED THROUGH ROUTINE MAINTENANCE. WHEN INSTALLATION OF A NEW EROSION OR SEDIMENT CONTROL OR A SIGNIFICANT REPAIR IS NEEDED, INSTALL THE NEW OR MODIFIED CONTROL OR COMPLETE THE REPAIR NO LATER THAN 7 CALENDAR DAYS FROM THE TIME OF DISCOVERY. "IMMEDIATELY" MEANS THE CONTRACTOR SHALL TAKE ALL REASONABLE MEASURES TO MINIMIZE OR PREVENT DISCHARGE OF POLLUTANTS UNTIL A PERMANENT SOLUTION IS INSTALLED AND MADE OPERATIONAL. IF A PROBLEM IS IDENTIFIED AT A TIME IN THE DAY IN WHICH IT IS TOO LATE TO INITIATE REPAIR, INITIATION OF REPAIR SHALL BEGIN ON THE FOLLOWING WORK DAY.
- 4. REMOVE BUILT-UP SEDIMENT FROM THE SILT FENCE WHEN IT HAS REACHED ONE-THIRD THE HEIGHT OF THE FENCE. REMOVE SEDIMENT FROM THE OTHER PERIMETER SEDIMENT CONTROL DEVICES WHEN IT HAS REACHED ONE-HALF THE HEIGHT OF THE DEVICE.
- 5. INSPECT SILT SCREEN OR FENCE FOR DEPTH OF SEDIMENT, TEARS, TO VERIFY THAT THE FABRIC IS SECURELY ATTACHED TO THE FENCE POSTS OR CONCRETE SLAB AND TO VERIFY THAT THE FENCE POSTS ARE FIRMLY IN THE GROUND. INSPECT AND VERIFY THE BOTTOM OF THE SILT SCREEN IS BURIED A MINIMUM OF 6 INCHES BELOW THE EXISTING GROUND.
- 6. INSPECT TEMPORARY AND PERMANENT SEEDING AND PLANTING FOR BARE SPOTS, WASHOUTS AND HEALTHY GROWTH.
- 7. COMPLETE AND SUBMIT TO THE ENGINEER A MAINTENANCE INSPECTION REPORT WITHIN 24 HOURS AFTER EACH INSPECTION.
- 8. PROVIDE A STABILIZED CONSTRUCTION ENTRANCE AT ALL POINTS OF EXIT ONTO PAVED ROADS TO REDUCE VEHICLE TRACKING OF SEDIMENTS. INCLUDE STABILIZED CONSTRUCTION ENTRANCE IN THE WATER POLLUTION, DUST, AND EROSION CONTROL SUBMITTALS. MINIMUM LENGTH SHOULD BE 50 FEET. MINIMUM WIDTH SHOULD BE 30 FEET. MINIMUM DEPTH SHOULD BE 12 INCHES OR AS RECOMMENDED BY THE SOILS ENGINEER AND UNDERLAIN WITH GEO-TEXTILE FABRIC. IF MINIMUM DIMENSIONS CANNOT BE MET, PROVIDE OTHER STABILIZATION TECHNIQUES THAT REMOVE SEDIMENT PRIOR TO EXIT. CLEAN THE PAVED STREET ADJACENT TO THE SITE ENTRANCE DAILY OR AS REQUIRED TO REMOVE ANY EXCESS MUD, COLD-PLANED MATERIALS, DIRT OR ROCK TRACKED FROM THE SITE. DO NOT HOSE DOWN THE STREET WITHOUT CONTAINING OR VACUUMING WASH WATER. COVER DUMP TRUCKS HAULING MATERIAL FROM THE CONSTRUCTION SITE WITH A TARP/AULIN. REMOVE SEDIMENT TRACKED ONTO THE STREET, SIDEWALK, OR OTHER PAVED AREA BY THE END OF THE DAY IN WHICH THE TRACK-OUT OCCURS.
- 9. INCLUDE DESIGNATED CONCRETE WASHOUT AREA(S) IN THE WATER POLLUTION, DUST, AND EROSION CONTROL SUBMITTALS.
- 10. SUBMIT THE NAME OF A SPECIFIC INDIVIDUAL DESIGNATED RESPONSIBLE FOR INSPECTIONS, MAINTENANCE AND REPAIR ACTIVITIES AND FILLING OUT THE INSPECTION AND MAINTENANCE REPORT.

- 11. PERSONNEL SELECTED FOR THE INSPECTION AND MAINTENANCE RESPONSIBILITIES SHALL RECEIVE TRAINING FROM THE CONTRACTOR. THEY SHALL BE TRAINED IN ALL THE INSPECTION AND MAINTENANCE PRACTICES NECESSARY FOR KEEPING THE EROSION AND SEDIMENT CONTROLS USED ONSITE IN GOOD WORKING ORDER.
- 12. CONTAIN, REMOVE, AND DISPOSE SLURRY GENERATED FROM SAW CUTTING OF PAVEMENT IN ACCORDANCE WITH APPROVED BMP PRACTICES. DO NOT ALLOW DISCHARGE INTO THE DRAINAGE SYSTEM OR STATE WATERS.
- 13. FOR PROJECTS WITH AN NPDES PERMIT FOR CONSTRUCTION ACTIVITIES, IMMEDIATELY INITIATE STABILIZING EXPOSED SOIL AREAS UPON COMPLETION OF EARTH-DISTURBING ACTIVITIES FOR AREAS WHERE EARTH-DISTURBING ACTIVITIES HAVE PERMANENTLY OR TEMPORARILY CEASED. EARTH-DISTURBING ACTIVITIES HAVE PERMANENTLY CEASED WHEN CLEARING AND EXCAVATION WITHIN ANY AREA OF THE CONSTRUCTION SITE THAT WILL NOT INCLUDE PERMANENT STRUCTURES HAS BEEN COMPLETED. EARTH-DISTURBING ACTIVITIES HAVE TEMPORARILY CEASED WHEN CLEARING, GRADING, AND EXCAVATION WITHIN ANY AREA OF THE SITE THAT WILL NOT INCLUDE PERMANENT STRUCTURES WILL NOT RESUME (I.E., THE LAND WILL BE IDLE) FOR A PERIOD OF 14 OR MORE CALENDAR DAYS, BUT SUCH ACTIVITIES WILL RESUME IN THE FUTURE. FOR CONSTRUCTION AREAS DISCHARGING INTO WATERS NOT IMPAIRED FOR NUTRIENTS SEDIMENTS, COMPLETE INITIAL STABILIZATION WITHIN 14 CALENDAR DAYS AFTER THE TEMPORARY OR PERMANENT CESSATION OF EARTH-DISTURBING ACTIVITIES. FOR CONSTRUCTION AREAS DISCHARGING INTO NUTRIENT OR SEDIMENT IMPAIRED WATERS, COMPLETE INITIAL STABILIZATION WITHIN 7 CALENDAR DAYS AFTER THE TEMPORARY OR PERMANENT CESSATION OF EARTH-DISTURBING ACTIVITIES. CLASSIFICATION OF WATER AT THE DISCHARGE POINT MAY BE FOUND IN THE SWPPP.
- 14. FOR PROJECTS WITHOUT AN NPDES PERMIT FOR CONSTRUCTION ACTIVITIES, COMPLETE INITIAL STABILIZATION WITHIN 14 CALENDAR DAYS AFTER THE TEMPORARY OR PERMANENT CESSATION OF EARTH-DISTURBING ACTIVITIES.

**D. GOOD HOUSEKEEPING, BEST MANAGEMENT PRACTICES:**

- 1. MATERIALS POLLUTION PREVENTION PLAN
  - A. APPLICABLE MATERIALS OR SUBSTANCES LISTED BELOW ARE EXPECTED TO BE PRESENT ONSITE DURING CONSTRUCTION. OTHER MATERIALS AND SUBSTANCES NOT LISTED BELOW SHALL BE ADDED TO THE INVENTORY.
 

CONCRETE	CLEANING SOLVENTS
DETERGENTS	WOOD
PAINTS (ENAMEL AND LATEX)	MASONRY BLOCK
METAL STUDS	HERBICIDES AND PESTICIDES
TAR	CURING COMPOUNDS
FERTILIZERS	ADHESIVES
PETROLEUM BASED PRODUCTS	

- B. USE MATERIAL MANAGEMENT PRACTICES TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURE OF MATERIALS AND SUBSTANCES TO STORM WATER RUNOFF. MAKE AN EFFORT TO STORE ONLY ENOUGH PRODUCT AS IS REQUIRED TO DO THE JOB.
- C. STORE ALL MATERIALS STORED ONSITE IN A NEAT, ORDERLY MANNER IN THEIR APPROPRIATE CONTAINERS AND IF POSSIBLE, UNDER A ROOF OR OTHER ENCLOSURE.
- D. KEEP PRODUCTS IN THEIR ORIGINAL CONTAINERS WITH THE ORIGINAL MANUFACTURER'S LABEL.
- E. DO NOT MIX SUBSTANCES WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER.
- F. WHENEVER POSSIBLE, USE A PRODUCT UP COMPLETELY BEFORE DISPOSING OF THE CONTAINER.
- G. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL.
- H. CONDUCT A DAILY INSPECTION TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS ONSITE.

- HAZARDOUS MATERIAL POLLUTION PREVENTION PLAN
  - A. KEEP PRODUCTS IN ORIGINAL CONTAINERS UNLESS THEY ARE NOT RESEALABLE.
  - B. RETAIN ORIGINAL LABELS AND MATERIAL SAFETY DATA SHEETS (SDS) FORMERLY MATERIAL SAFETY DATA SHEETS (MSDS).
  - C. DISPOSE OF SURPLUS PRODUCTS ACCORDING TO MANUFACTURER'S INSTRUCTIONS AND LOCAL AND STATE REGULATIONS.

- 3. ONSITE AND OFFSITE PRODUCT SPECIFIC PLAN
  - THE FOLLOWING PRODUCT SPECIFIC PRACTICES SHALL BE FOLLOWED ONSITE:
    - A) PETROLEUM BASED PRODUCTS:
      - MONITOR ALL ONSITE VEHICLES FOR LEAKS AND PERFORM REGULAR PREVENTIVE MAINTENANCE TO REDUCE THE CHANCE OF LEAKAGE. STORE PETROLEUM PRODUCTS IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED. APPLY ASPHALT SUBSTANCES USED ONSITE ACCORDING TO THE MANUFACTURER'S RECOMMENDATION.
    - B) FERTILIZERS:
      - APPLY FERTILIZERS USED ONLY IN THE MINIMUM AMOUNTS RECOMMENDED BY THE MANUFACTURER AND FEDERAL, STATE, AND LOCAL REQUIREMENTS. AVOID APPLYING JUST BEFORE A HEAVY RAIN EVENT. APPLY AT THE APPROPRIATE TIME OF YEAR FOR THE LOCATION, AND PREFERABLY TIMED TO COINCIDE AS CLOSELY AS POSSIBLE TO THE PERIOD OF MAXIMUM VEGETATION UPTAKE AND GROWTH. ONCE APPLIED, WORK FERTILIZER INTO THE SOIL TO LIMIT EXPOSURE TO STORM WATER. DO NOT APPLY TO STORM CONVEYANCE CHANNELS WITH FLOWING WATER. STORAGE SHALL BE IN A COVERED SHED OR IN AN AREA WHERE FERTILIZER WILL NOT COME INTO CONTACT WITH PRECIPITATION OR STORMWATER. TRANSFER THE CONTENTS OF ANY PARTIALLY USED BAGS OF FERTILIZER TO A SEALABLE PLASTIC BIN TO AVOID SPILLS.

- C) PAINTS:
  - SEAL AND STORE ALL CONTAINERS WHEN NOT REQUIRED FOR USE. DO NOT DISCHARGE EXCESS PAINT TO THE DRAINAGE SYSTEM, SANITARY SEWER SYSTEM, OR STATE WATERS. DISPOSE PROPERLY ACCORDING TO MANUFACTURERS' INSTRUCTIONS AND STATE AND LOCAL REGULATIONS.
- D) CONCRETE TRUCKS:
  - WASHOUT OR DISCHARGE CONCRETE TRUCK DRUM WASH WATER ONLY AT A DESIGNATED SITE AS FAR AS PRACTICABLE FROM STORM DRAIN INLETS OR STATE WATERS. DO NOT DISCHARGE WATER IN THE DRAINAGE SYSTEM OR STATE WATERS. CLEAN DISPOSAL SITE AS REQUIRED OR AS REQUESTED BY THE ENGINEER.

- 4. SPILL CONTROL PLAN
  - A. POST A SPILL PREVENTION PLAN TO INCLUDE MEASURES TO PREVENT AND CLEAN UP EACH SPILL.
  - B. THE CONTRACTOR SHALL BE THE SPILL PREVENTION AND CLEANUP COORDINATOR. DESIGNATE AT LEAST THREE SITE PERSONNEL WHO SHALL RECEIVE SPILL PREVENTION AND CLEANUP TRAINING. THESE INDIVIDUALS SHALL EACH BECOME RESPONSIBLE FOR A PARTICULAR PHASE OF PREVENTION AND CLEANUP. POST THE NAMES OF RESPONSIBLE SPILL PERSONNEL IN THE MATERIAL STORAGE AREA ON A WEATHERPROOF BULLETIN BOARD OR OTHER ACCESSIBLE LOCATION ACCEPTABLE TO THE ENGINEER AND IN THE OFFICE TRAILER ONSITE.

REVISION DATE	DESCRIPTION	MADE BY	APPROVED
<b>Community Planning and Engineering, Inc.</b> Engineering Design   Construction Management   Infrastructure Planning 1286 Queen Emma Street, Third Floor Honolulu, Hawaii			
<b>CONSOLIDATION / RE-SUBDIVISION</b> <b>KEOKEA-WAIOHULI DEVELOPMENT</b> <b>PHASE 1A</b> KEOKEA & WAIOHULI, MAKAWAO, MAUI OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS TAX MAP KEYS: (2) 2-2-033; 021 to 038, & 058-074 AND (2) 2-2-34; 001 TO 016, 026 & 029			
<b>GENERAL NOTES - 2</b>			
DRAWN BY: KWNW	ENGINEER: KWNW/MFC	CHECKED BY: RYS	
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. LICENSE EXPIRATION DATE: 04/30/16			

**WATER POLLUTION AND EROSION CONTROL NOTES : CONT.**

- C. CLEARLY POST MANUFACTURERS' RECOMMENDED METHODS FOR SPILL CLEANUP. MAKE SITE PERSONNEL AWARE OF THE PROCEDURES AND THE LOCATION OF THE INFORMATION AND CLEANUP SUPPLIES.
  - D. KEEP AMPLE MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP IN THE MATERIAL STORAGE AREA ONSITE.
  - E. CLEAN UP ALL SPILLS IMMEDIATELY AFTER DISCOVERY.
  - F. KEEP THE SPILL AREA WELL VENTILATED. PERSONNEL SHALL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH A HAZARDOUS SUBSTANCE.
  - G. REPORT SPILLS OF TOXIC HAZARDOUS MATERIAL TO THE APPROPRIATE STATE OR LOCAL GOVERNMENT AGENCY, REGARDLESS OF THE SIZE. WHERE A LEAK, SPILL, OR OTHER RELEASE CONTAINING A HAZARDOUS SUBSTANCE OR OIL IN AN AMOUNT EQUAL TO OR IN EXCESS OF A REPORTABLE QUANTITY ESTABLISHED UNDER EITHER 40 CFR PART 110, 40 CFR PART 117, OR 40 CFR PART 302 OCCURS DURING A 24-HOUR PERIOD, THE CONTRACTOR SHALL NOTIFY THE ENGINEER AS SOON AS THE CONTRACTOR HAS KNOWLEDGE OF THE DISCHARGE. THE ENGINEER SHALL NOTIFY THE NATIONAL RESPONSE CENTER (NRC) AT (800) 424-8802, THE CLEAN WATER BRANCH DURING REGULAR BUSINESS HOURS AT 586-4309, AND THE HAWAII STATE HOSPITAL OPERATOR AT 247-2191 AND THE CLEAN WATER BRANCH (DOH-CWB) VIA EMAIL AT [cleanwaterbranch@doh.hawaii.gov](mailto:cleanwaterbranch@doh.hawaii.gov) DURING NON-BUSINESS HOURS IMMEDIATELY. THE CONTRACTOR SHALL ALSO PROVIDE TO THE ENGINEER, WITHIN 7 CALENDAR DAYS OF KNOWLEDGE OF THE RELEASE, A DESCRIPTION OF THE RELEASE, THE CIRCUMSTANCES LEADING TO THE RELEASE, AND DATE OF THE RELEASE. THE ENGINEER WILL PROVIDE THIS INFORMATION TO THE DOH-CWB. THE ENGINEER WILL PROVIDE INFORMATION TO THE NRC IF REQUESTED.
- 5. CONTAIN POLLUTANTS WITHIN THE CONSTRUCTION STAGING/STORAGE AREA BMP WITH APPLICABLE PERIMETER SEDIMENT CONTROLS AND SITE MANAGEMENT BMP. INCLUDE A STABILIZED CONSTRUCTION ENTRANCE/EXIT (EC-2) FOR ALL AREAS WHICH EXIT ONTO A PAVED STREET. RESTRICT VEHICLE ACCESS TO THESE POINTS.
  - 6. MANAGE CONCRETE WASTE INCLUDING INSTALLING A CONCRETE WASHOUT AREA (SM-5) AND PROPERLY DISPOSING OF CONCRETE CURING WATER (CALIFORNIA STORMWATER BMP HANDBOOK NS-12 CONCRETE CURING.)
  - 7. REMOVE SAW CUT SLURRY AND HYDRODEMOLITION WATER FROM THE SITE BY VACUUMING. PROVIDE STORM DRAIN PROTECTION AND/OR PERIMETER SEDIMENT CONTROLS DURING SAW CUTTING AND HYDRODEMOLITION WORK.

**E. PERMIT REQUIREMENTS:**

- 1. A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FOR CONSTRUCTION ACTIVITIES OF ONE ACRE OR MORE OF DISTURBED AREA IS REQUIRED FOR THIS PROJECT. IF THE CONTRACTOR REQUIRES EXTRA LAND DISTURBANCE, INCLUDING STAGING AND STORAGE AREAS, THAT IS NOT COVERED BY THE NPDES PERMIT OBTAINED BY THE STATE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE REQUIRED NPDES CONSTRUCTION ACTIVITIES PERMIT TO COVER THIS ADDITIONAL DISTURBED AREA. SEE HAWAII ADMINISTRATIVE RULES CHAPTER 11-55, APPENDIX C FOR DEFINITION OF LAND DISTURBANCE. THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE APPLICABLE NPDES PERMIT DOCUMENTS ON THE BID PACKAGE COMPACT DISC.
- 2. COMPLY WITH ALL APPLICABLE STATE AND FEDERAL PERMIT CONDITIONS. PERMITS MAY INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING:
  - A. NPDES PERMIT FOR CONSTRUCTION ACTIVITIES
  - B. NPDES PERMIT FOR CONSTRUCTION DEWATERING
  - C. NPDES PERMIT FOR HYDROTESTING WATERS
  - D. WATER QUALITY CERTIFICATION
  - E. STREAM CHANNEL ALTERATION PERMIT
  - F. SECTION 404 ARMY CORPS OF ENGINEER PERMIT

**F. SITE-SPECIFIC BMP REQUIREMENTS:**

EACH BMP BELOW IS REFERENCED TO THE CORRESPONDING SECTION OF THE CURRENT HDOT CONSTRUCTION BEST MANAGEMENT PRACTICES FIELD MANUAL AND APPROPRIATE SUPPLEMENTAL SHEETS. THE MANUAL MAY BE OBTAINED FROM THE HDOT STATEWIDE STORMWATER MANAGEMENT PROGRAM WEBSITE AT <http://www.stormwaterhawaii.com/resources> UNDER CONSTRUCTION BEST MANAGEMENT PRACTICES FIELD MANUAL. SUPPLEMENTAL BMP SHEETS ARE LOCATED AT [http://stormwaterhawaii.com/resources/contractors/contractors\\_BMPmanual.aspx](http://stormwaterhawaii.com/resources/contractors/contractors_BMPmanual.aspx) UNDER CONCRETE CURING AND IRRIGATION WATER.

THE REQUIREMENTS FOR WATER POLLUTION, DUST, AND EROSION CONTROL SUBMITTALS ARE INCLUDED IN SECTION 209 OF THE HAWAII STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION DATED 2005 AND APPLICABLE SPECIAL PROVISIONS. A LIST OF POLLUTANT SOURCES AND CORRESPONDING BMP USED TO MITIGATE THE POLLUTANTS ARE INCLUDED IN SECTION 209 OF THE SPECIAL PROVISIONS UNDER APPENDIX A.

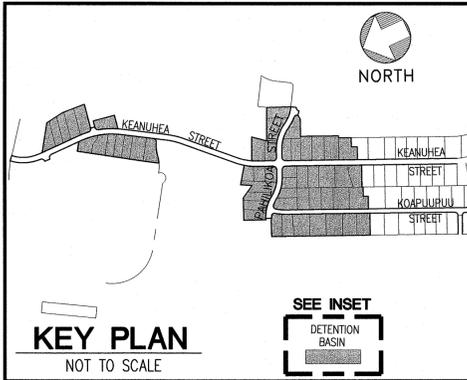
FOLLOW THE REQUIREMENTS BELOW:

- 1. PROTECT ALL DRAINAGE INLETS RECEIVING RUNOFF FROM DISTURBED AREAS (SC-2).
- 2. CONTAIN ON-SITE RUNOFF USING PERIMETER SEDIMENT CONTROLS
  - A. SC-1 SILT FENCE
  - B. SC-5 VEGETATED FILTER STRIPS AND BUFFERS
  - C. SC-8 COMPOST FILTER BERM
  - D. SC-13 SANDBAG BARRIER
  - E. SC-14 BRUSH OR ROCK FILTER
- 3. CONTROL OFFSITE RUNOFF FROM ENTERING CONSTRUCTION AREA
  - A. EC-8 RUN-ON DIVERSION
  - B. SC-6 EARTH DIKE
  - C. SC-7 TEMPORARY DRAINS AND SWALES
- 4. INCORPORATE APPLICABLE SITE MANAGEMENT BMP
  - A. SM-1 EMPLOYEE TRAINING
  - B. SM-2 MATERIAL DELIVERY AND STORAGE
  - C. SM-3 MATERIAL USE
  - D. SM-4 PROTECTION OF STOCKPILES
  - E. SM-6 SOLID WASTE MANAGEMENT
  - F. SM-7 SANITARY/SEPTIC WASTE MANAGEMENT
  - G. SM-9 HAZARDOUS WASTE MANAGEMENT
  - H. SM-10 SPILL PREVENTION AND CONTROL
  - I. SM-11 VEHICLE AND EQUIPMENT CLEANING
  - J. SM-12 VEHICLE AND EQUIPMENT MAINTENANCE
  - K. SM-13 VEHICLE AND EQUIPMENT REFUELING
  - L. SM-14 SCHEDULING
  - M. SM-15 LOCATION OF POTENTIAL SOURCES OF SEDIMENT
  - N. SM-16 PRESERVATION OF EXISTING VEGETATION
  - O. SM-18 DUST CONTROL

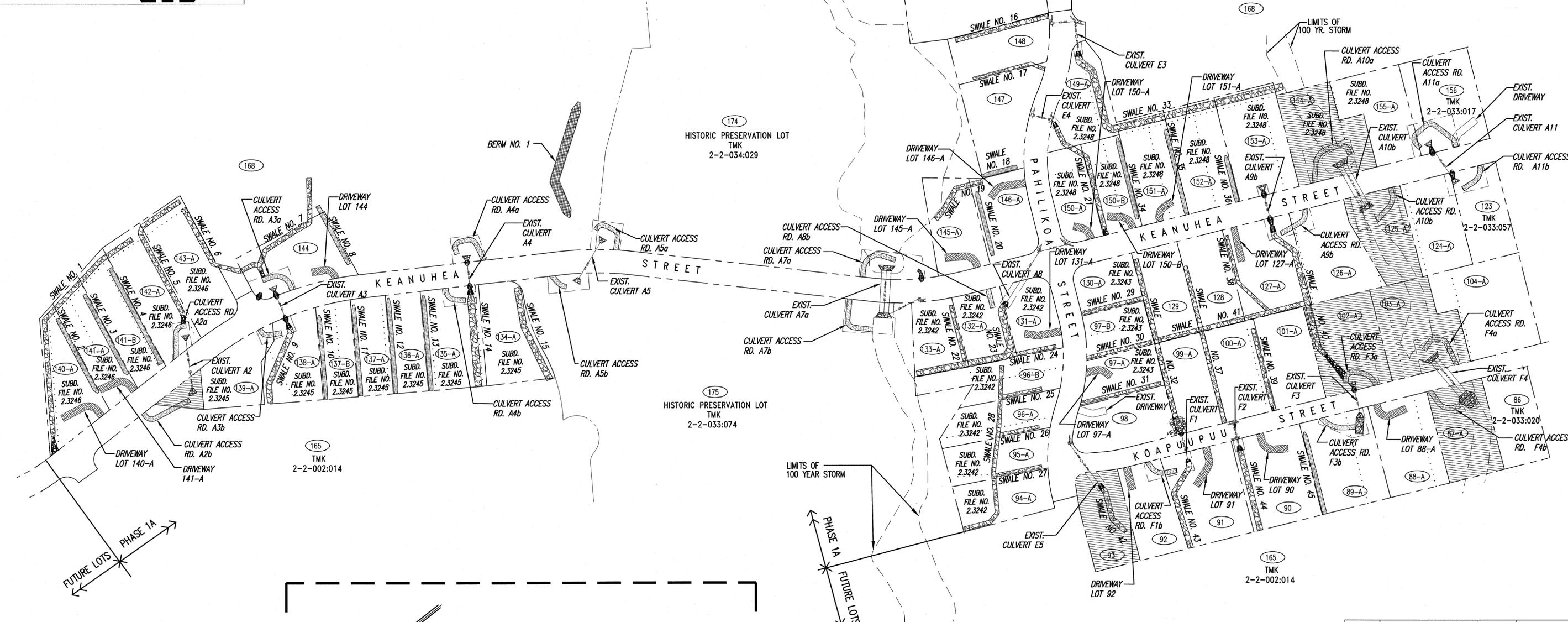


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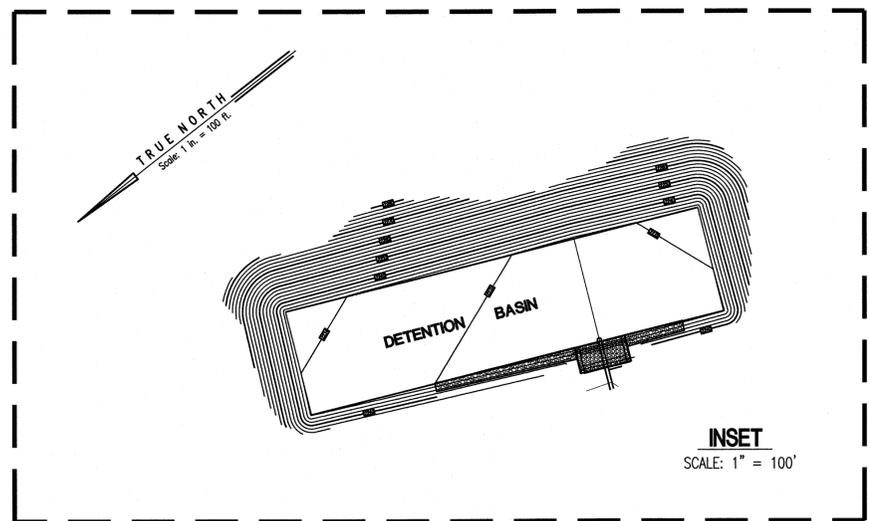
REVISION DATE	DESCRIPTION	MADE BY	APPROVED
<b>Community Planning and Engineering, Inc.</b> Engineering Design   Construction Management   Infrastructure Planning 1286 Queen Emma Street, Third Floor Honolulu, Hawaii			
<b>CONSOLIDATION / RE-SUBDIVISION                  KEOKEA-WAIOHULI DEVELOPMENT                  PHASE 1A</b> KEOKEA & WAIOHULI, MAKAWAO, MAUI OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS TAX MAP KEYS: (2) 2-2-033: 021 TO 038, & 058-074 AND (2) 2-2-34: 001 TO 016, 026 & 029			
<b>GENERAL NOTES - 3</b>			
DRAWN BY: KWNW	ENGINEER: KWNW/MFC	CHECKED BY: RYS	



SEE INSET  
DETENTION BASIN

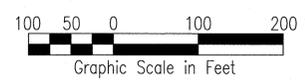


- LEGEND**
- PROPERTY LINE
  - OLD PROPERTY LINE
  - GRP SWALE
  - GRASS SWALE
  - CULVERT ACCESS ROAD
  - DRIVEWAY
  - BERM
  - DRAIN LOT



**GENERAL LAYOUT PLAN**

SCALE: 1" = 100'



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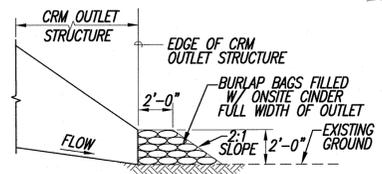
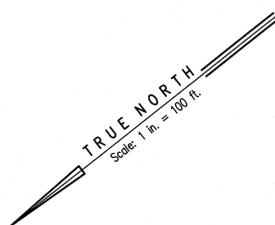
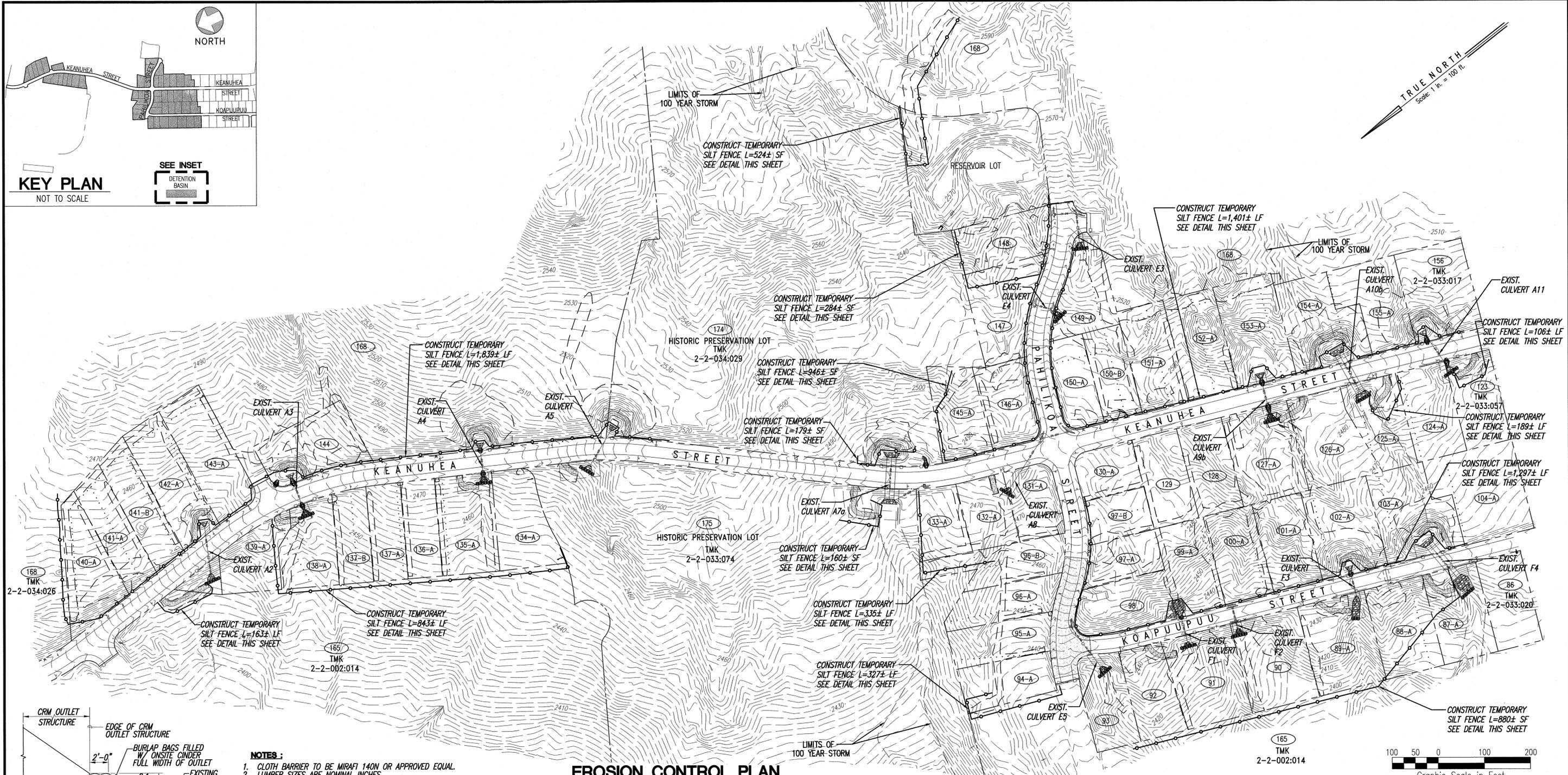
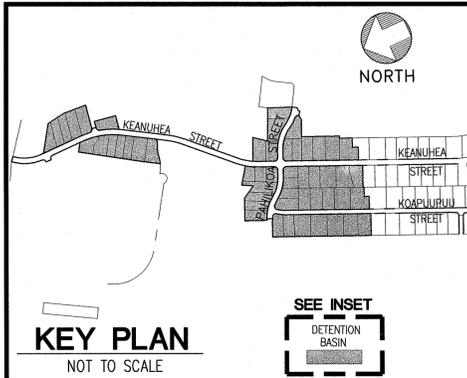
REVISION DATE	DESCRIPTION	MADE BY	APPROVED

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 Engineering Design | Construction Management | Infrastructure Planning  
 1286 Queen Emma Street, Third Floor Honolulu, Hawaii

**CONSOLIDATION / RE-SUBDIVISION  
 KEOKEA-WAIOHULI DEVELOPMENT  
 PHASE 1A**  
 KEOKEA & WAIOHULI, MAKAWAO, MAUI  
 OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
 TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074  
 AND (2) 2-2-34: 001 TO 016, 026 & 029

**GENERAL LAYOUT PLAN**

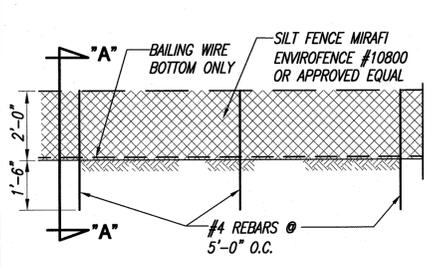
DRAWN BY: KWNW	ENGINEER: KWNW/MFC	CHECKED BY: RYS
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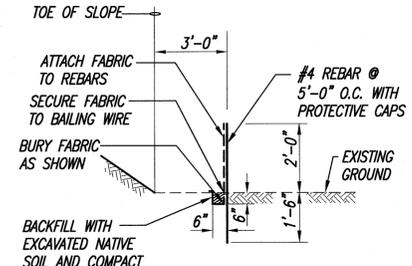
**TYPICAL SECTION**  
**TEMPORARY EROSION CONTROL @ CULVERT OUTLETS**  
 NOT TO SCALE

- NOTES:**
1. CLOTH BARRIER TO BE MIRAFI 140N OR APPROVED EQUAL.
  2. LUMBER SIZES ARE NOMINAL INCHES.
  3. 1 X 2 CLOTH BARRIER CAPS TO BE NAILED 12" O.C.
  4. BURLAP IS NOT ACCEPTABLE AS THE CLOTH BARRIER.
  5. CLOTH TO HAVE NO HORIZONTAL SEAMS.
  6. VERTICAL SEAMS TO BE MADE OVER UPRIGHTS ONLY.
  7. ALL SEAMS TO BE CAPPED WITH MINIMUM 1 X 2.
  8. ALL JOINTS TO BE SECURELY FASTENED BY MECHANICAL MEANS.

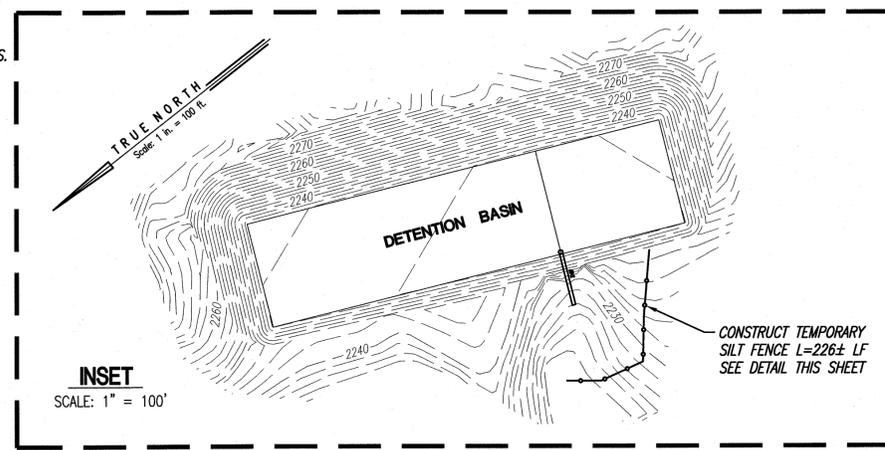
**EROSION CONTROL PLAN**  
 SCALE: 1" = 100'



**ELEVATION**  
**TEMPORARY SILT FENCE**  
 NOT TO SCALE



**SECTION "A - A"**



**INSET**  
 SCALE: 1" = 100'

- LEGEND**
- LIMITS OF GRADING
  - EXISTING GROUND CONTOUR
  - FINISH GRADE CONTOUR
  - PROPERTY LINE
  - OLD PROPERTY LINE
  - SILT FENCE
  - 100 YEAR STREAM FLOOD LIMIT
  - TEMPORARY EROSION CONTROL @ CULVERT OUTLET
  - LOT NUMBER
  - EXISTING LOT NUMBER



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 Engineering Design | Construction Management | Infrastructure Planning  
 2888 Queen Emma Street, Third Floor Honolulu, Hawaii

**CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A**  
 KEOKEA & WAIOHULI, MAKAWAO, MAUI  
 OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
 TAX MAP KEYS: (2) 2-2-033: 021 to 038 & 058-074 AND (2) 2-2-34: 001 to 016, 026 & 029

**EROSION CONTROL PLAN & DETAILS**

DRAWN BY: KWNW    ENGINEER: KWNW/MFC    CHECKED BY: RYS

BORING LOCATION: See Suite Plan		DRILLER: PSC		BORING NO. TP-45							
BORING ELEVATION:		LOGGED BY: JGN									
DATE (S) DRILLED: 7/07		TYPE RIG: Backhoe									
OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.O.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION	
							1			Clayey SILT with trace gravel, sand and rootlets, dark brown, moist	
							2				
							3				
							4		MH		
							5				
							6			Gravelly SILT with angular to sub-angular basaltic boulders, trace of clay and rootlets, brown to dark brown, moist (volcanic ash)	
							7		MH		
							8			BASALT, dark gray, moderately weathered, strong	
							9			Test pit terminated at about 8.5 ft. Groundwater was not encountered	
							10				
SAMPLE TYPE			OTHER LABORATORY TESTS								
MC - Modified California SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression									
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity								
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis								
<b>LOG OF BORING</b>											
RSC Geotechnical & Environmental Consultants Construction Management, Testing & Inspection		Keokea/Waiohuli Development Kula, Makawao, Maui, Hawaii									
DATE: March 2005		PROJECT NO.: 24304.10									
PLATE NO. 47											

BORING LOCATION: See Site Plan		DRILLER: PSC		BORING TP-59							
BORING ELEVATION:		LOGGED BY: JGN									
DATE (S) DRILLED: 5/21/05		TYPE RIG:									
OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.O.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION	
							1			SILT, with some gravel and scattered cobbles, brown, soft to medium stiff, moist.	
							2				
							3				
							4		MH		
							5				
							6				
							7			BASALT, slightly weathered to fresh, strong, occasionally fractured, hard, massive.	
							8			Test pit terminated at about 8.25 feet at the soil rock-interface. Groundwater was not encountered.	
							9				
SAMPLE TYPE			OTHER LABORATORY TESTS								
MC - Modified California SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression									
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity								
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis								
<b>LOG OF BORING</b>											
RSC Geotechnical & Environmental Consultants Construction Management, Testing & Inspection		NEW WAIHOULI ROAD ALIGNMENT AND BRIDGE ABUTMENT Keokea-Waiohuli Agricultural Lots Subdivision Waiohuli, Kula, Maui, Hawaii									
DATE: August 2005		PROJECT NO.: 24304.14									
PLATE NO. 6											

BORING LOCATION: See Site Plan		DRILLER: PSC		BORING NO. TP-46							
BORING ELEVATION:		LOGGED BY: JGN									
DATE (S) DRILLED: 7/07		TYPE RIG: Backhoe									
OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.O.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION	
							1			SILT with some gravels, cobbles and boulders, trace rootlets, brown, moist	
							2				
							3				
							4		MH		
							5				
							6				
							7				
							8			BASALT, dark gray, moderately weathered, strong	
							9			Test pit terminated at about 8.0 ft. Groundwater was not encountered.	
SAMPLE TYPE			OTHER LABORATORY TESTS								
MC - Modified California SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression									
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity								
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis								
<b>LOG OF BORING</b>											
RSC Geotechnical & Environmental Consultants Construction Management, Testing & Inspection		Keokea/Waiohuli Development Kula, Makawao, Maui, Hawaii									
DATE: March 2005		PROJECT NO.: 24304.10									
PLATE NO. 48											

**NOTE :**  
BORING AND TEST PIT LOGS TAKEN FROM "PRELIMINARY GEOTECHNICAL EXPLORATION REPORT KEOKEA-WAIHOULI DEVELOPMENT PROJECT"  
PREPARED BY PCS CONSULTANTS, LLC  
DATED MARCH 31, 2005

REVISION DATE	DESCRIPTION	MADE BY	APPROVED
<b>Community Planning and Engineering, Inc.</b>			
Engineering Design   Construction Management   Infrastructure Planning			
1288 Queen Emma Street, Third Floor Honolulu, Hawaii			
<b>CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIHOULI DEVELOPMENT PHASE 1A</b>			
KEOKEA & WAIHOULI, MAKAWAO, MAUI			
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS			
TAX MAP KEYS: (2) 2-2-033; 021 TO 038 & 058-074 AND (2) 2-2-34; 001 TO 016, 026 & 029			
<b>BORING LOGS - 1</b>			
DRAWN BY: KWNW	ENGINEER: KWNW/MFC	CHECKED BY: RYS	
APPROVED:			
 THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. LICENSE EXPIRATION DATE: 04/30/16			
CHIEF, ENGINEERING DIVISION, D.P.W. & E.M. DATE			
FILE	POCKET	FOLDER	NO.
SHEET 8	OF 84	SHEETS	



BORING LOCATION: See Site Plan		DRILLER: PSC		BORING NO. TP-34							
BORING ELEVATION:		LOGGED BY: JGN									
DATE (S) DRILLED: 7/04		TYPE RIG: Backhoe									
OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.O.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION	
						BS-34				SILT, with basalt boulders, traces of clay and rootlets, brown, moist (volcanic ash)	
							1				
							2			grades with more basaltic boulders	
							3				
							4			BASALT, dark gray, moderately weathered to fresh, strong	
							5				
							6			Test pit excavation terminated at about 5.0 ft. Groundwater was not encountered.	
SAMPLE TYPE			OTHER LABORATORY TESTS								
MC - Modified California SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression									
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity								
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis								
<b>LOG OF BORING</b>											
		Geotechnical & Environmental Consultants		Keokea/Waiohuli Development							
		Construction Management, Testing & Inspection		Kula, Makawao, Maui, Hawaii							
		DATE: March 2005		PROJECT NO.: 24304.10							
PLATE NO. 36											

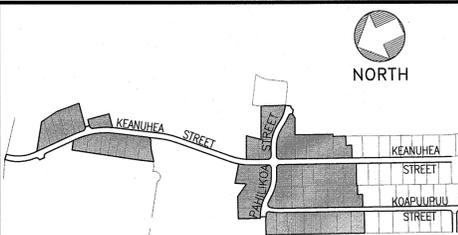
BORING LOCATION: See Site Plan		DRILLER: PSC		BORING NO. TP-35							
BORING ELEVATION:		LOGGED BY: JGN									
DATE (S) DRILLED: 7/2/04		TYPE RIG:									
OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.O.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION	
						BS-35				Silty GRAVEL, gray tuffaceous gravels, cobbles and boulders with silt matrix, trace rootlets, brown, moist	
							1				
							2				
							3			BASALT, dark gray, slightly to moderately weathered, strong.	
							4			Test pit terminated at about 3.5 ft. Groundwater was not encountered.	
SAMPLE TYPE			OTHER LABORATORY TESTS								
MC - Modified California SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression									
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity								
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis								
<b>LOG OF BORING</b>											
		Geotechnical & Environmental Consultants		Keokea/Waiohuli Development							
		Construction Management, Testing & Inspection		Kula, Makawao, Maui, Hawaii							
		DATE: March 2005		PROJECT NO.: 24304.10							
PLATE NO. 37											

**NOTE :**  
 BORING AND TEST PIT LOGS TAKEN FROM "PRELIMINARY GEOTECHNICAL EXPLORATION REPORT KEOKEA-WAIOHULI DEVELOPMENT PROJECT"  
 PREPARED BY PCS CONSULTANTS, LLC  
 DATED MARCH 31, 2005

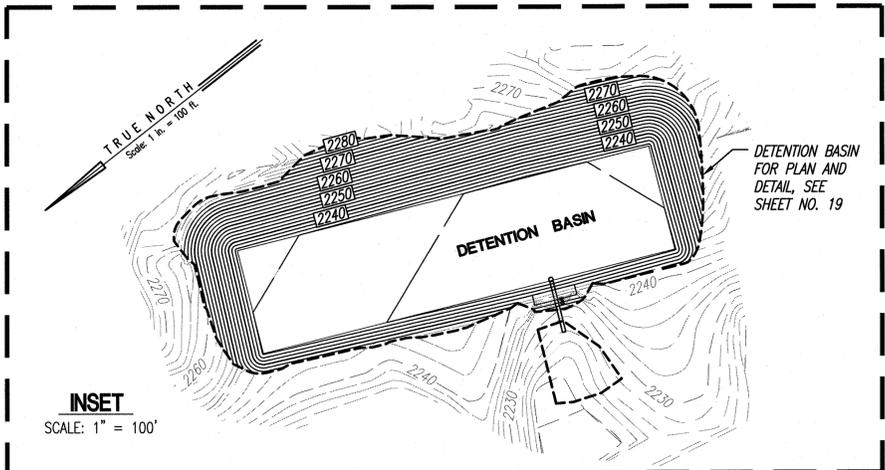
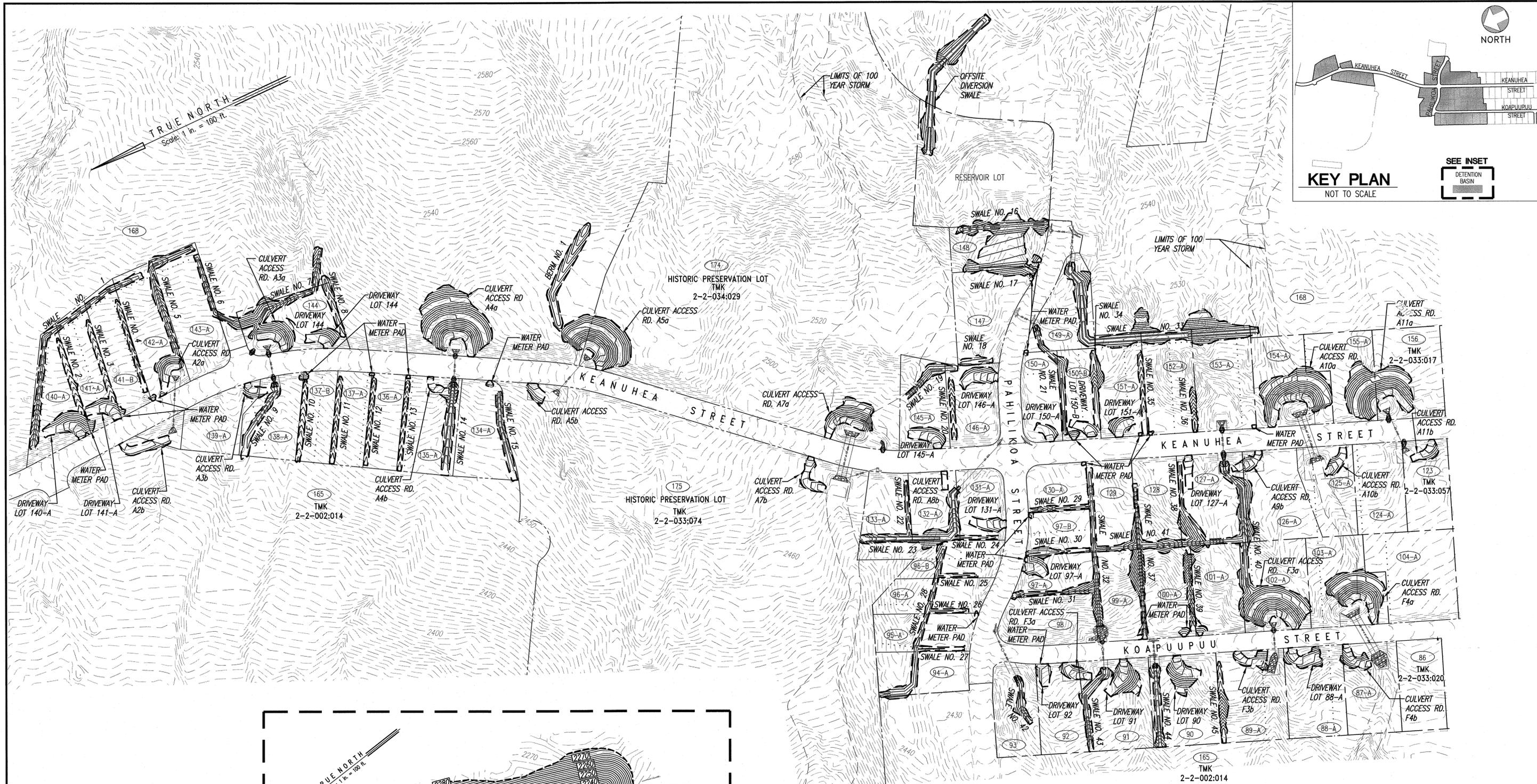
REVISION DATE	DESCRIPTION	MADE BY	APPROVED
<b>Community Planning and Engineering, Inc.</b>			
Engineering Design   Construction Management   Infrastructure Planning			
1288 Queen Emma Street, Third Floor Honolulu, Hawaii			
<b>CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A</b>			
KEOKEA & WAIOHULI, MAKAWAO, MAUI			
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS			
TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074 AND (2) 2-2-34: 001 TO 016, 026 & 029			
<b>BORING LOG - 2</b>			
DRAWN BY: KWNW	ENGINEER: KWNW/MFC	CHECKED BY: RYS	
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FILE	POCKET	FOLDER	NO.
SHEET 9 OF 84 SHEETS			



*Richard Y. Sand*  
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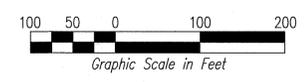
KEY PLAN  
NOT TO SCALE



- LEGEND**
- LIMITS OF GRADING
  - - - - - EXISTING GROUND CONTOUR
  - 2450 FINISH GRADE CONTOUR
  - PROPERTY LINE
  - OLD PROPERTY LINE
  - LIMITS OF 100 YEAR STORM
  - 140-A LOT NUMBER
  - 165 EXISTING LOT NUMBER
  - TMK 2-2-002:014
  - ⊕ BORING LOCATION

- NOTES :**
1. FOR WATER METER PAD GRADING PLAN AND DETAILS, SEE SHEET NOS. 77-81.
  2. MAINTENANCE OF THE SWALES/CULVERT ACCESS ROADS DURING CONSTRUCTION SHALL BE MAINTAINED BY THE CONTRACTOR.
  3. MAINTENANCE OF THE SWALES AFTER CONSTRUCTION SHALL BE MAINTAINED BY THE LESSEE OR DEPARTMENT OF HAWAIIAN HOMESTEAD.
  4. MAINTENANCE OF THE CULVERT ACCESS ROADS AFTER CONSTRUCTION SHALL BE MAINTAINED BY THE COUNTY OF MAUI.

**GENERAL GRADING PLAN**  
SCALE: 1"=100'



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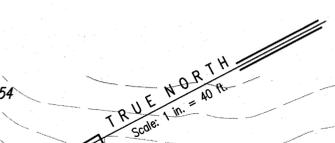
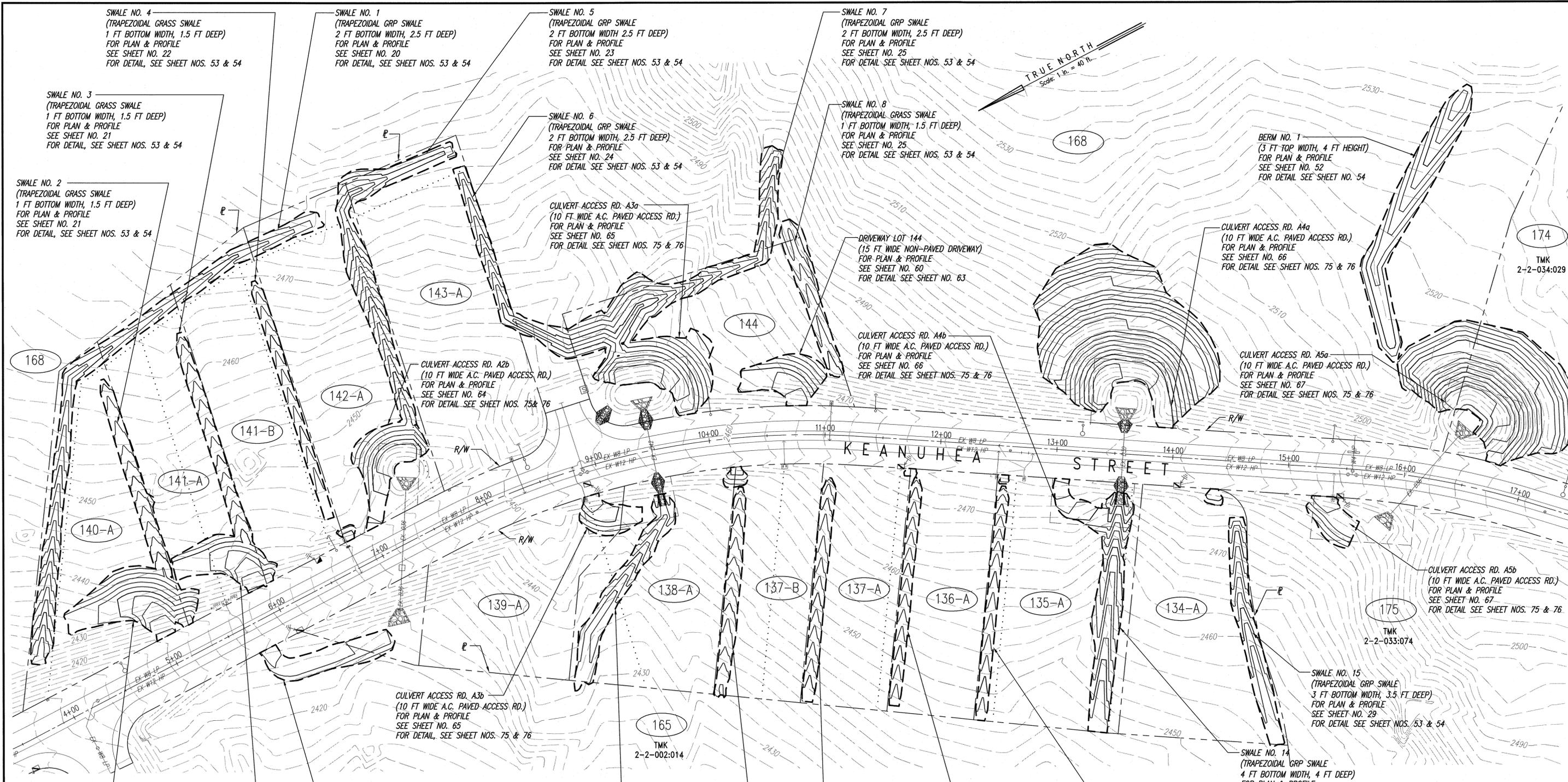
**Community Planning and Engineering, Inc.**  
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 1288 Queen Emma Street, Third Floor, Honolulu, Hawaii

**CONSOLIDATION / RE-SUBDIVISION  
 KEOKEA-WAIOHULI DEVELOPMENT  
 PHASE 1A**  
 KEOKEA & WAIOHULI, MAKAWAO, MAUI  
 OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
 TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074  
 AND (2) 2-2-34: 001 TO 016, 026 & 029

**GENERAL GRADING PLAN**

DRAWN BY: MFC	ENGINEER: KWN/MFC	CHECKED BY: RYS
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P:\Land Projects\DHHL Koekea Ph 1, 2 & 4\DWG\Increment 1\Current\10 General Grading Plan.dwg, 11/14/2014 1:44:34 PM, 1:1



SWALE NO. 4  
(TRAPEZOIDAL GRASS SWALE)  
1 FT BOTTOM WIDTH, 1.5 FT DEEP  
FOR PLAN & PROFILE  
SEE SHEET NO. 22  
FOR DETAIL, SEE SHEET NOS. 53 & 54

SWALE NO. 1  
(TRAPEZOIDAL GRP SWALE)  
2 FT BOTTOM WIDTH, 2.5 FT DEEP  
FOR PLAN & PROFILE  
SEE SHEET NO. 20  
FOR DETAIL, SEE SHEET NOS. 53 & 54

SWALE NO. 5  
(TRAPEZOIDAL GRP SWALE)  
2 FT BOTTOM WIDTH, 2.5 FT DEEP  
FOR PLAN & PROFILE  
SEE SHEET NO. 23  
FOR DETAIL SEE SHEET NOS. 53 & 54

SWALE NO. 7  
(TRAPEZOIDAL GRP SWALE)  
2 FT BOTTOM WIDTH, 2.5 FT DEEP  
FOR PLAN & PROFILE  
SEE SHEET NO. 25  
FOR DETAIL SEE SHEET NOS. 53 & 54

SWALE NO. 3  
(TRAPEZOIDAL GRASS SWALE)  
1 FT BOTTOM WIDTH, 1.5 FT DEEP  
FOR PLAN & PROFILE  
SEE SHEET NO. 21  
FOR DETAIL, SEE SHEET NOS. 53 & 54

SWALE NO. 6  
(TRAPEZOIDAL GRP SWALE)  
2 FT BOTTOM WIDTH, 2.5 FT DEEP  
FOR PLAN & PROFILE  
SEE SHEET NO. 24  
FOR DETAIL SEE SHEET NOS. 53 & 54

SWALE NO. 8  
(TRAPEZOIDAL GRASS SWALE)  
1 FT BOTTOM WIDTH, 1.5 FT DEEP  
FOR PLAN & PROFILE  
SEE SHEET NO. 25  
FOR DETAIL SEE SHEET NOS. 53 & 54

SWALE NO. 2  
(TRAPEZOIDAL GRASS SWALE)  
1 FT BOTTOM WIDTH, 1.5 FT DEEP  
FOR PLAN & PROFILE  
SEE SHEET NO. 21  
FOR DETAIL, SEE SHEET NOS. 53 & 54

CULVERT ACCESS RD. A3c  
(10 FT WIDE A.C. PAVED ACCESS RD.)  
FOR PLAN & PROFILE  
SEE SHEET NO. 65  
FOR DETAIL SEE SHEET NOS. 75 & 76

DRIVEWAY LOT 144  
(15 FT WIDE NON-PAVED DRIVEWAY)  
FOR PLAN & PROFILE  
SEE SHEET NO. 60  
FOR DETAIL SEE SHEET NO. 63

BERM NO. 1  
(3 FT TOP WIDTH, 4 FT HEIGHT)  
FOR PLAN & PROFILE  
SEE SHEET NO. 52  
FOR DETAIL SEE SHEET NO. 54

CULVERT ACCESS RD. A4a  
(10 FT WIDE A.C. PAVED ACCESS RD.)  
FOR PLAN & PROFILE  
SEE SHEET NO. 66  
FOR DETAIL SEE SHEET NOS. 75 & 76

CULVERT ACCESS RD. A5a  
(10 FT WIDE A.C. PAVED ACCESS RD.)  
FOR PLAN & PROFILE  
SEE SHEET NO. 67  
FOR DETAIL SEE SHEET NOS. 75 & 76

CULVERT ACCESS RD. A5b  
(10 FT WIDE A.C. PAVED ACCESS RD.)  
FOR PLAN & PROFILE  
SEE SHEET NO. 67  
FOR DETAIL SEE SHEET NOS. 75 & 76

SWALE NO. 15  
(TRAPEZOIDAL GRP SWALE)  
3 FT BOTTOM WIDTH, 3.5 FT DEEP  
FOR PLAN & PROFILE  
SEE SHEET NO. 29  
FOR DETAIL SEE SHEET NOS. 53 & 54

SWALE NO. 14  
(TRAPEZOIDAL GRP SWALE)  
4 FT BOTTOM WIDTH, 4 FT DEEP  
FOR PLAN & PROFILE  
SEE SHEET NO. 29  
FOR DETAIL SEE SHEET NOS. 53 & 54

SWALE NO. 13  
(TRAPEZOIDAL GRASS SWALE)  
1 FT BOTTOM WIDTH, 1.5 FT DEEP  
FOR PLAN & PROFILE  
SEE SHEET NO. 28  
FOR DETAIL SEE SHEET NOS. 53 & 54

SWALE NO. 11  
(TRAPEZOIDAL GRASS SWALE)  
1 FT BOTTOM WIDTH, 1.5 FT DEEP  
FOR PLAN & PROFILE  
SEE SHEET NO. 27  
FOR DETAIL SEE SHEET NOS. 53 & 54

SWALE NO. 12  
(TRAPEZOIDAL GRASS SWALE)  
1 FT BOTTOM WIDTH, 1.5 FT DEEP  
FOR PLAN & PROFILE  
SEE SHEET NO. 28  
FOR DETAIL SEE SHEET NOS. 53 & 54

SWALE NO. 10  
(TRAPEZOIDAL GRASS SWALE)  
1 FT BOTTOM WIDTH, 1.5 FT DEEP  
FOR PLAN & PROFILE  
SEE SHEET NO. 27  
FOR DETAIL SEE SHEET NOS. 53 & 54

SWALE NO. 9  
(TRAPEZOIDAL GRP SWALE)  
3 FT BOTTOM WIDTH, 3 FT DEEP  
FOR PLAN & PROFILE  
SEE SHEET NO. 26  
FOR DETAIL SEE SHEET NOS. 53 & 54

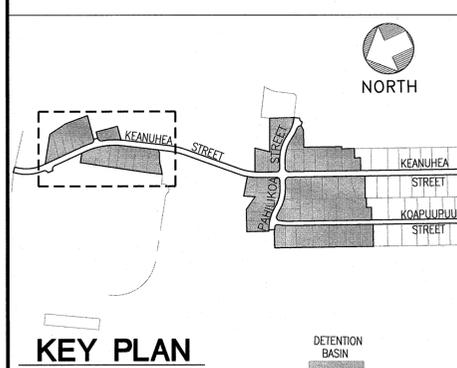
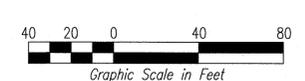
CULVERT ACCESS RD. A2b  
(10 FT WIDE A.C. PAVED ACCESS RD.)  
FOR PLAN & PROFILE  
SEE SHEET NO. 64  
FOR DETAIL SEE SHEET NOS. 75 & 76

DRIVEWAY LOT 141-A  
(15 FT WIDE NON-PAVED DRIVEWAY)  
FOR PLAN & PROFILE  
SEE SHEET NO. 59  
FOR DETAIL SEE SHEET NO. 63

DRIVEWAY LOT 140-A  
(15 FT WIDE NON-PAVED DRIVEWAY)  
FOR PLAN & PROFILE  
SEE SHEET NO. 59  
FOR DETAIL SEE SHEET NO. 63

- LEGEND**
- LIMITS OF GRADING
  - - - - - EXISTING GROUND CONTOUR
  - 2450 — FINISH GRADE CONTOUR
  - — — — — PROPERTY LINE
  - ..... OLD PROPERTY LINE
  - — — — — LIMITS OF 100 YEAR STORM
  - 140-A ○ LOT NUMBER
  - 165 ○ EXISTING LOT NUMBER
  - TMK 2-2-002:014
  - ⊕ BORING LOCATION

**GRADING PLAN - 1**  
SCALE 1" = 40'



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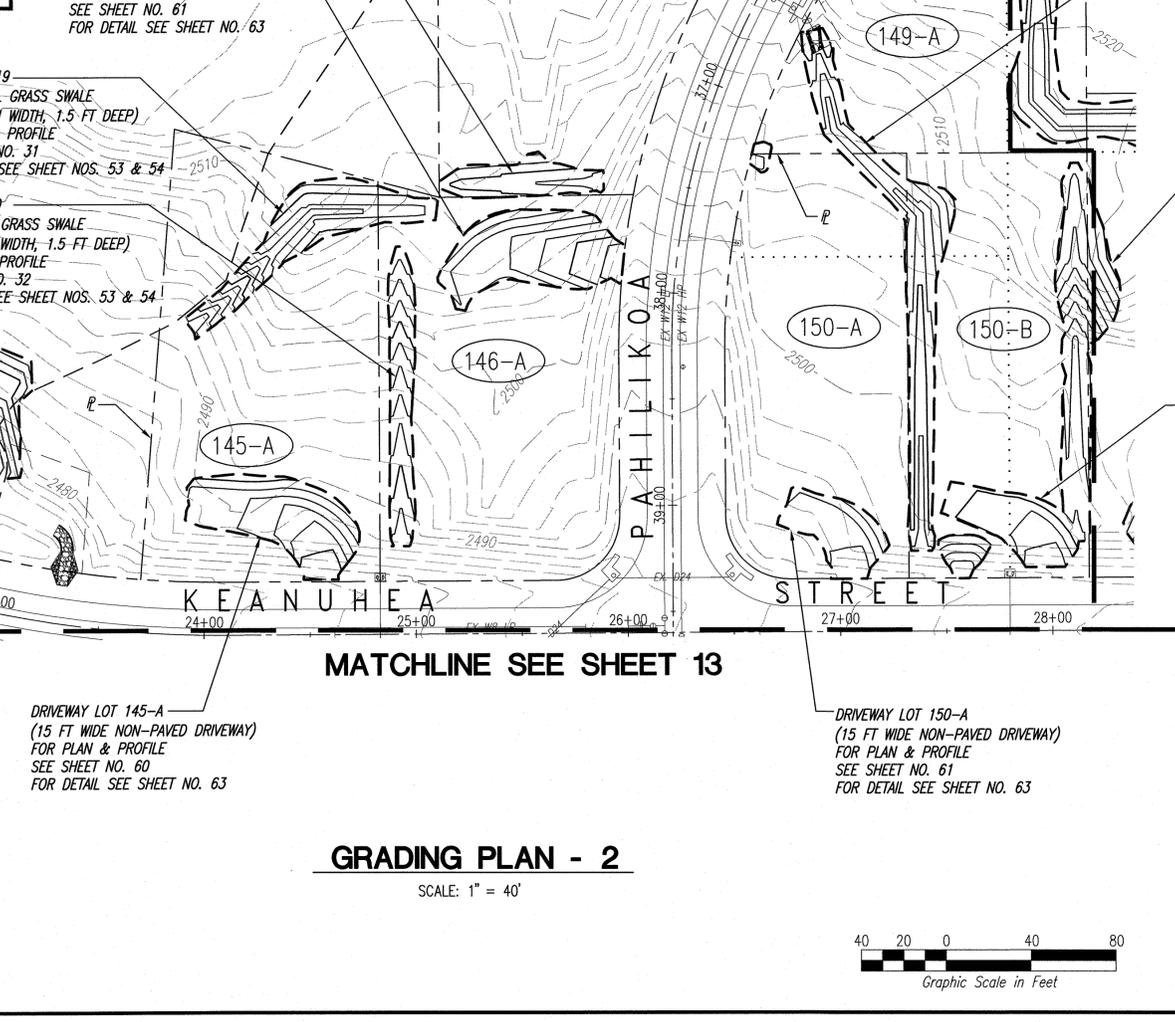
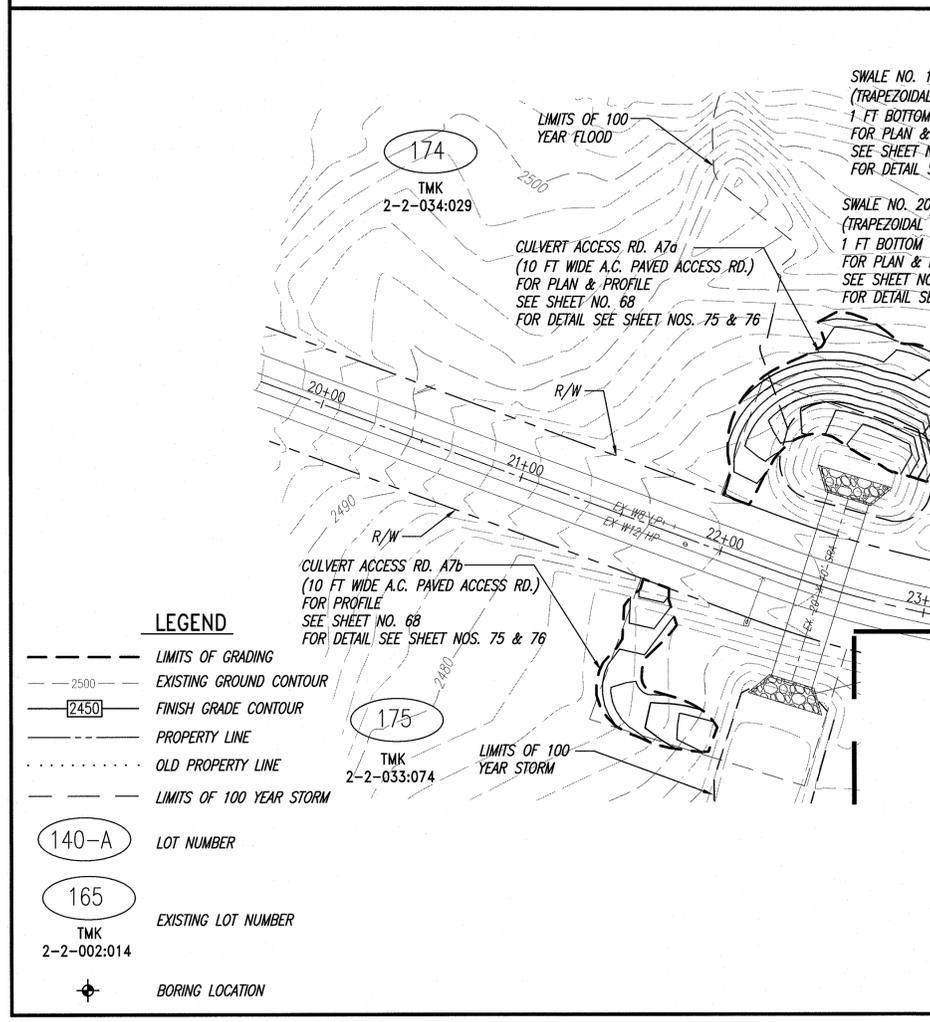
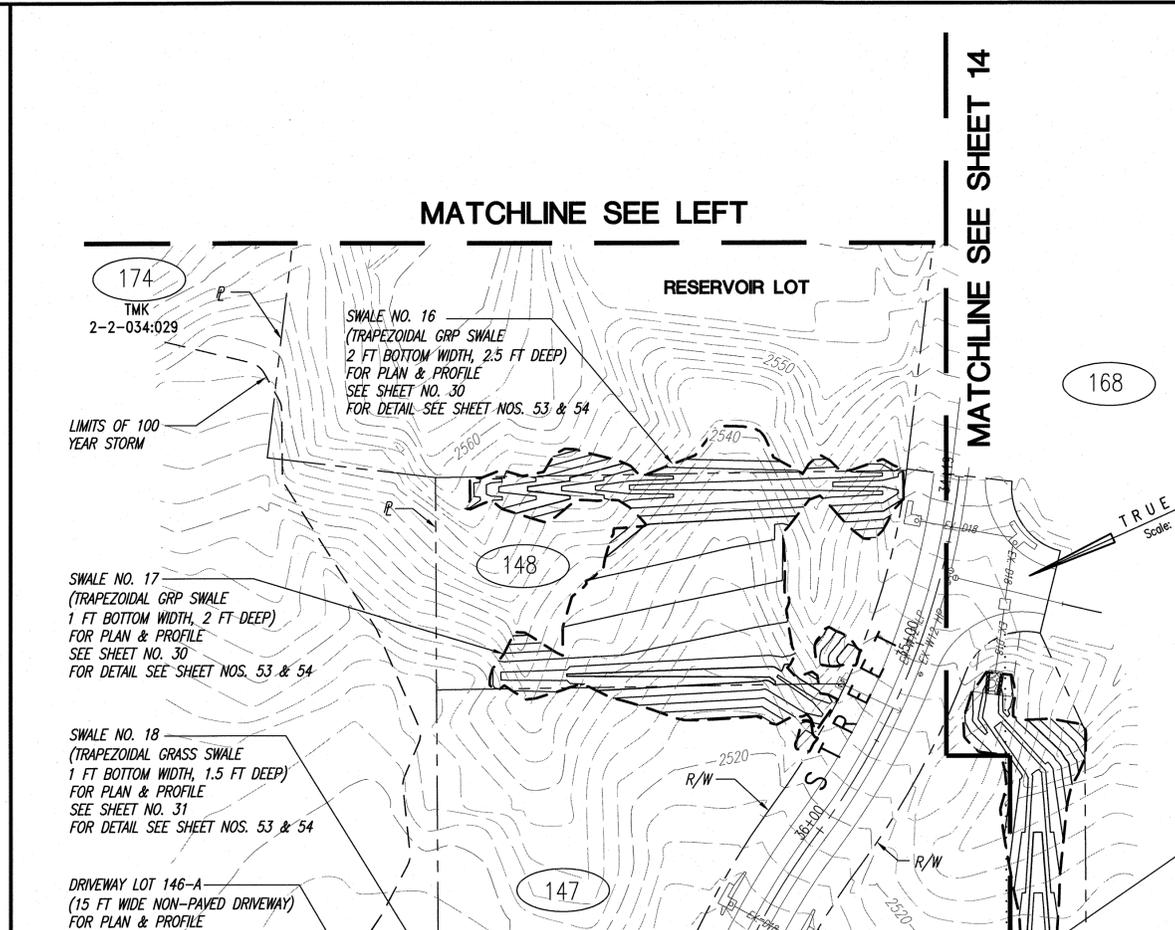
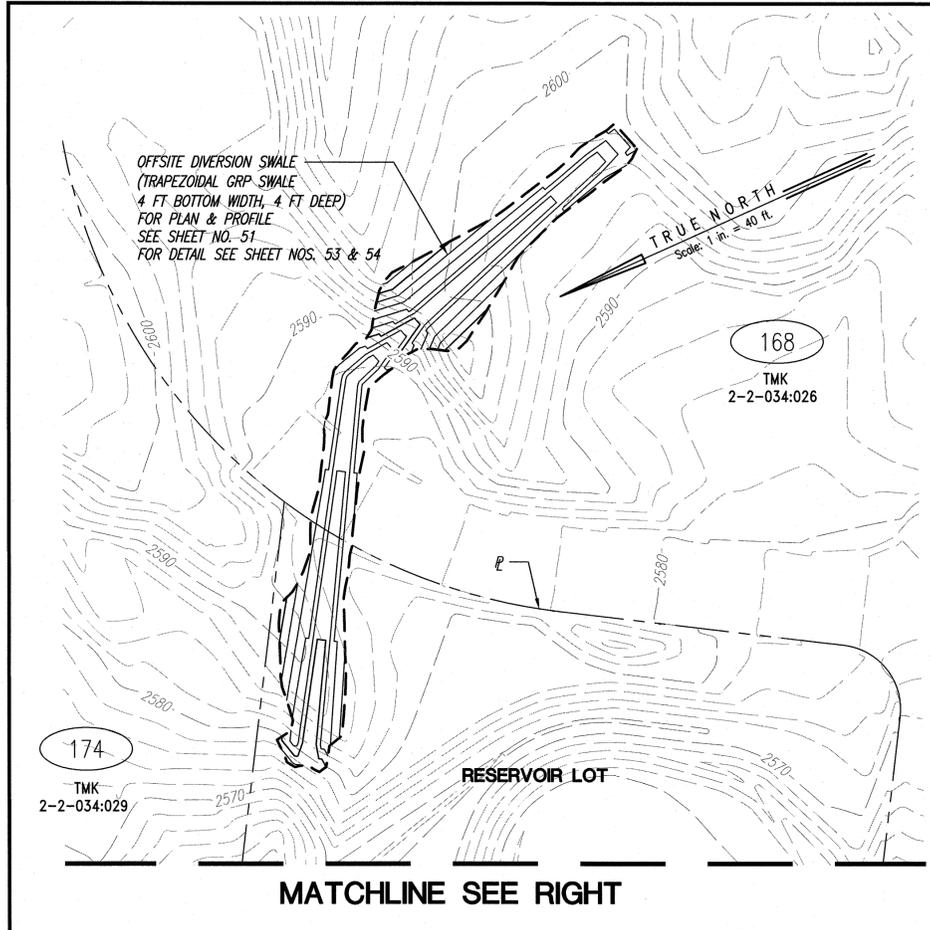
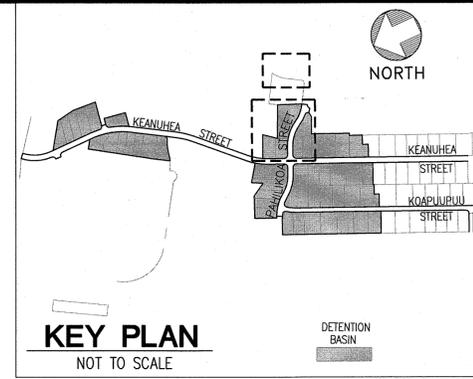
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1286 Queen Emma Street, Third Floor, Honolulu, Hawaii

**CONSOLIDATION / RE-SUBDIVISION  
KEOKEA-WAIOHULI DEVELOPMENT  
PHASE 1A**  
KEOKEA & WAIOHULI, MAKAWAO, MAUI  
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074  
AND (2) 2-2-34: 001 TO 016, 026 & 029

**GRADING PLAN - 1**

DRAWN BY: MFC	ENGINEER: KWN/MFC	CHECKED BY: RYS
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**LEGEND**

- LIMITS OF GRADING
- - - - - EXISTING GROUND CONTOUR
- ▭ FINISH GRADE CONTOUR
- PROPERTY LINE
- ⋯ OLD PROPERTY LINE
- - - - - LIMITS OF 100 YEAR STORM
- LOT NUMBER
- EXISTING LOT NUMBER
- ⊕ BORING LOCATION

**GRADING PLAN - 2**

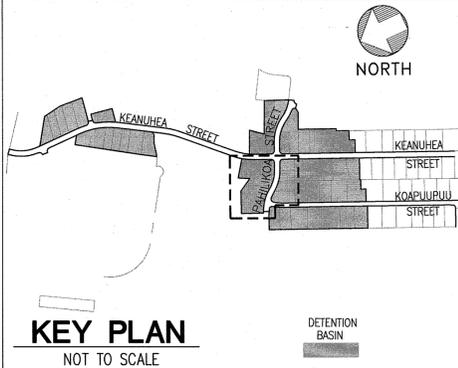
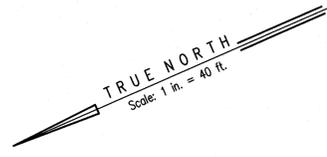
SCALE: 1" = 40'



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<b>CONSOLIDATION / RE-SUBDIVISION          KEOKEA-WAIOHULI DEVELOPMENT          PHASE 1A</b> KEOKEA & WAIOHULI, MAKAWAO, MAUI OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074 AND (2) 2-2-34: 001 TO 016, 026 & 029			
<b>GRADING PLAN - 2</b>			
DRAWN BY: MFC	ENGINEER: KWN/MFC	CHECKED BY: RYS	
FILE	PROJECT	FOLDER	NO.

P:\Land Projects\DHHL\Keokea Ph. 1, 2 & 4\DWG\Increment 1\Curren11-15 Grading Plan 1-5.dwg, 11/14/2014, 1:52:50 PM, 1:1



SWALE NO. 22  
(TRAPEZOIDAL GRP SWALE  
1 FT BOTTOM WIDTH, 1.5 FT DEEP)  
FOR PLAN & PROFILE  
SEE SHEET NO. 34  
FOR DETAIL SEE SHEET NOS. 53 & 54

CULVERT ACCESS RD. A8b  
(10 FT WIDE A.C. PAVED ACCESS RD.)  
FOR PLAN & PROFILE  
SEE SHEET NO. 69  
FOR DETAIL SEE SHEET NOS. 75 & 76

SWALE NO. 24  
(TRAPEZOIDAL GRP SWALE  
1 FT BOTTOM WIDTH, 1.5 FT DEEP)  
FOR PLAN & PROFILE  
SEE SHEET NO. 36  
FOR DETAIL SEE SHEET NOS. 53 & 54

DRIVEWAY LOT 131-A  
(15 FT WIDE NON-PAVED DRIVEWAY)  
FOR PROFILE  
SEE SHEET NO. 58  
FOR DETAIL SEE SHEET NO. 63

SWALE NO. 23  
(TRAPEZOIDAL GRP SWALE  
4 FT BOTTOM WIDTH, 3.5 FT DEEP)  
FOR PLAN & PROFILE  
SEE SHEET NO. 35  
FOR DETAIL SEE SHEET NOS. 53 & 54

MATCHLINE  
SEE SHEET 12

SWALE NO. 29  
(TRAPEZOIDAL GRP SWALE  
1 FT BOTTOM WIDTH, 2 FT DEEP)  
FOR PLAN & PROFILE  
SEE SHEET NO. 39  
FOR DETAIL SEE SHEET NOS. 53 & 54

SWALE NO. 25  
(TRAPEZOIDAL GRP SWALE  
1 FT BOTTOM WIDTH, 1.5 FT DEEP)  
FOR PLAN & PROFILE  
SEE SHEET NO. 36  
FOR DETAIL SEE SHEET NOS. 53 & 54

SWALE NO. 30  
(TRAPEZOIDAL GRP SWALE  
1 FT BOTTOM WIDTH, 1.5 FT DEEP)  
FOR PLAN & PROFILE  
SEE SHEET NO. 39  
FOR DETAIL SEE SHEET NOS. 53 & 54

175  
TMK  
2-2-034:029

SWALE NO. 26  
(TRAPEZOIDAL GRP SWALE  
1 FT BOTTOM WIDTH, 1.5 FT DEEP)  
FOR PLAN & PROFILE  
SEE SHEET NO. 37  
FOR DETAIL SEE SHEET NOS. 53 & 54

DRIVEWAY LOT 97-A  
(15 FT WIDE NON-PAVED DRIVEWAY)  
FOR PROFILE  
SEE SHEET NO. 57  
FOR DETAIL SEE SHEET NO. 63

SWALE NO. 27  
(TRAPEZOIDAL GRP SWALE  
1 FT BOTTOM WIDTH, 1.5 FT DEEP)  
FOR PLAN & PROFILE  
SEE SHEET NO. 37  
FOR DETAIL SEE SHEET NOS. 53 & 54

SWALE NO. 31  
(TRAPEZOIDAL GRP SWALE  
1 FT BOTTOM WIDTH, 2 FT DEEP)  
FOR PLAN & PROFILE  
SEE SHEET NO. 40  
FOR DETAIL SEE SHEET NOS. 53 & 54

LIMITS OF 100  
YEAR STORM

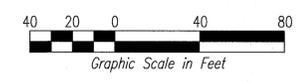
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(TRAPEZOIDAL GRP SWALE  
2 FT BOTTOM WIDTH, 2 FT DEEP)  
FOR PLAN & PROFILE  
SEE SHEET NO. 38  
FOR DETAIL SEE SHEET NOS. 53 & 54

MATCHLINE  
SEE SHEET 15

165  
TMK  
2-2-002:014

**GRADING PLAN - 3**  
SCALE 1" = 40'

- LEGEND**
- LIMITS OF GRADING
  - - - - - EXISTING GROUND CONTOUR
  - [2450]--- FINISH GRADE CONTOUR
  - PROPERTY LINE
  - OLD PROPERTY LINE
  - LIMITS OF 100 YEAR STORM
  - (140-A) LOT NUMBER
  - (165) EXISTING LOT NUMBER
  - TMK 2-2-002:014
  - ⊕ BORING LOCATION



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LICENSE EXPIRATION DATE: 04/30/16

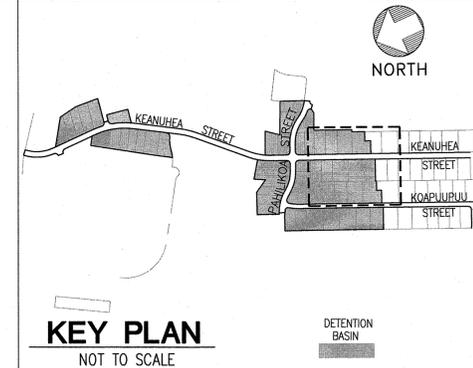
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**CONSOLIDATION / RE-SUBDIVISION  
KEOKEA-WAIOHULI DEVELOPMENT  
PHASE 1A**  
KEOKEA & WAIOHULI, MAKAWAO, MAUI  
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074  
AND (2) 2-2-34: 001 TO 016, 026 & 029

**GRADING PLAN - 3**

DRAWN BY: MFC	ENGINEER: KWN/MFC	CHECKED BY: RYS
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**KEY PLAN**  
NOT TO SCALE

**LEGEND**

- LIMITS OF GRADING
- - - - - EXISTING GROUND CONTOUR
- 2450 — FINISH GRADE CONTOUR
- — — — — PROPERTY LINE
- ..... OLD PROPERTY LINE
- LIMITS OF 100 YEAR STORM
- 140-A ○ LOT NUMBER
- 165 ○ EXISTING LOT NUMBER
- TMK 2-2-002:014
- ⊕ BORING LOCATION

**GRADING PLAN - 4**

SCALE 1" = 40'

REVISION DATE	DESCRIPTION	MADE BY	APPROVED

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1288 Queen Emma Street, Third Floor Honolulu, Hawaii

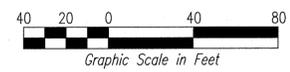
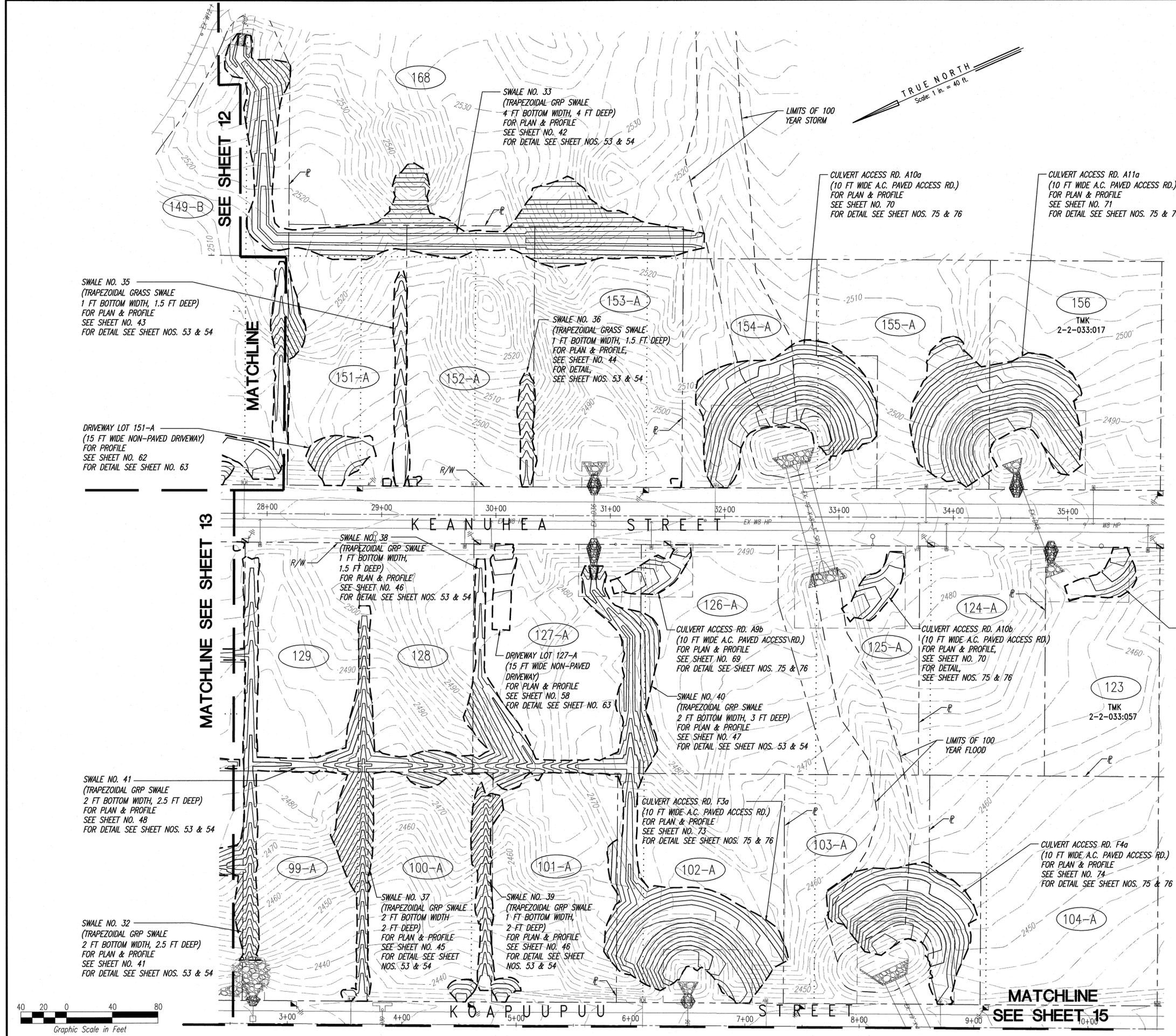
**CONSOLIDATION / RE-SUBDIVISION  
KEOKEA-WAIOHULI DEVELOPMENT  
PHASE 1A**  
KEOKEA & WAIOHULI, MAKAWAO, MAUI  
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074  
AND (2) 2-2-34: 001 TO 016, 026 & 029

**GRADING PLAN - 4**

DRAWN BY: MFC    ENGINEER: KWN/MFC    CHECKED BY: RYS



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LICENSE EXPIRATION DATE: 04/30/16



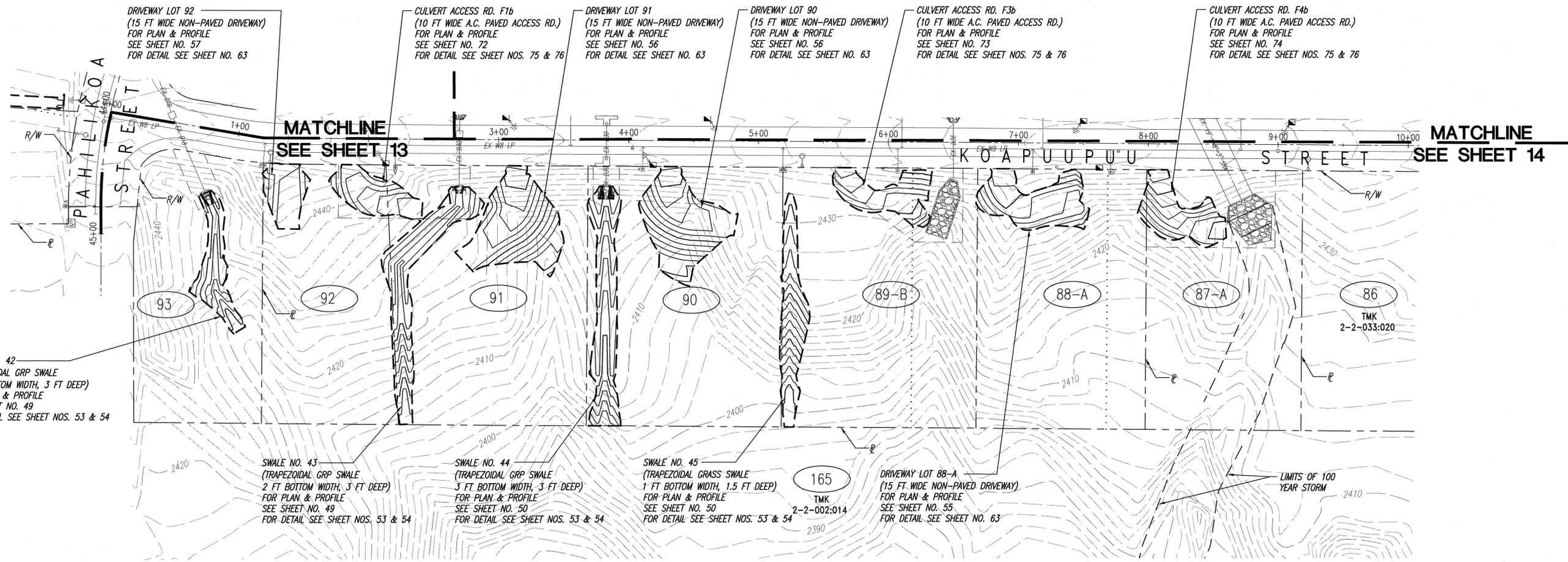
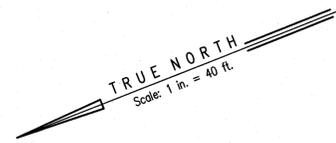
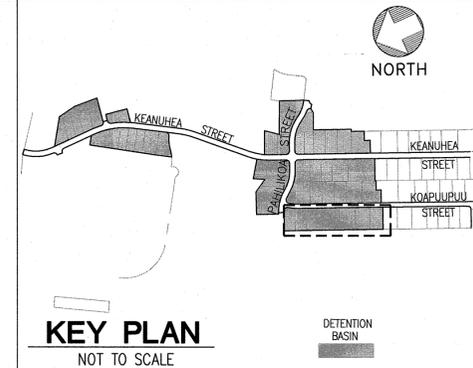
SEE SHEET 12

MATCHLINE SEE SHEET 13

MATCHLINE SEE SHEET 15



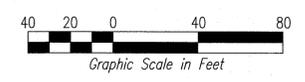
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- LEGEND**
- LIMITS OF GRADING
  - - - - - 2500 --- EXISTING GROUND CONTOUR
  - - - - - 2450 --- FINISH GRADE CONTOUR
  - PROPERTY LINE
  - ..... OLD PROPERTY LINE
  - LIMITS OF 100 YEAR STORM
  - (140-A) LOT NUMBER
  - (165) EXISTING LOT NUMBER
  - TMK 2-2-002:014
  - ⊕ BORING LOCATION



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REVISION DATE	DESCRIPTION	MADE BY	APPROVED

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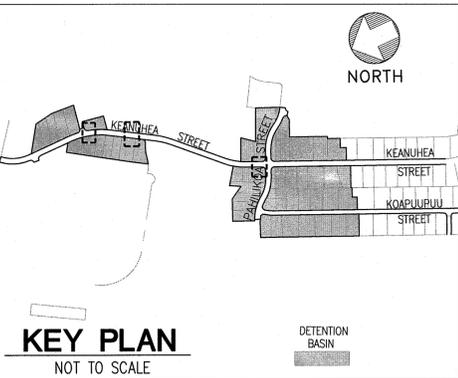
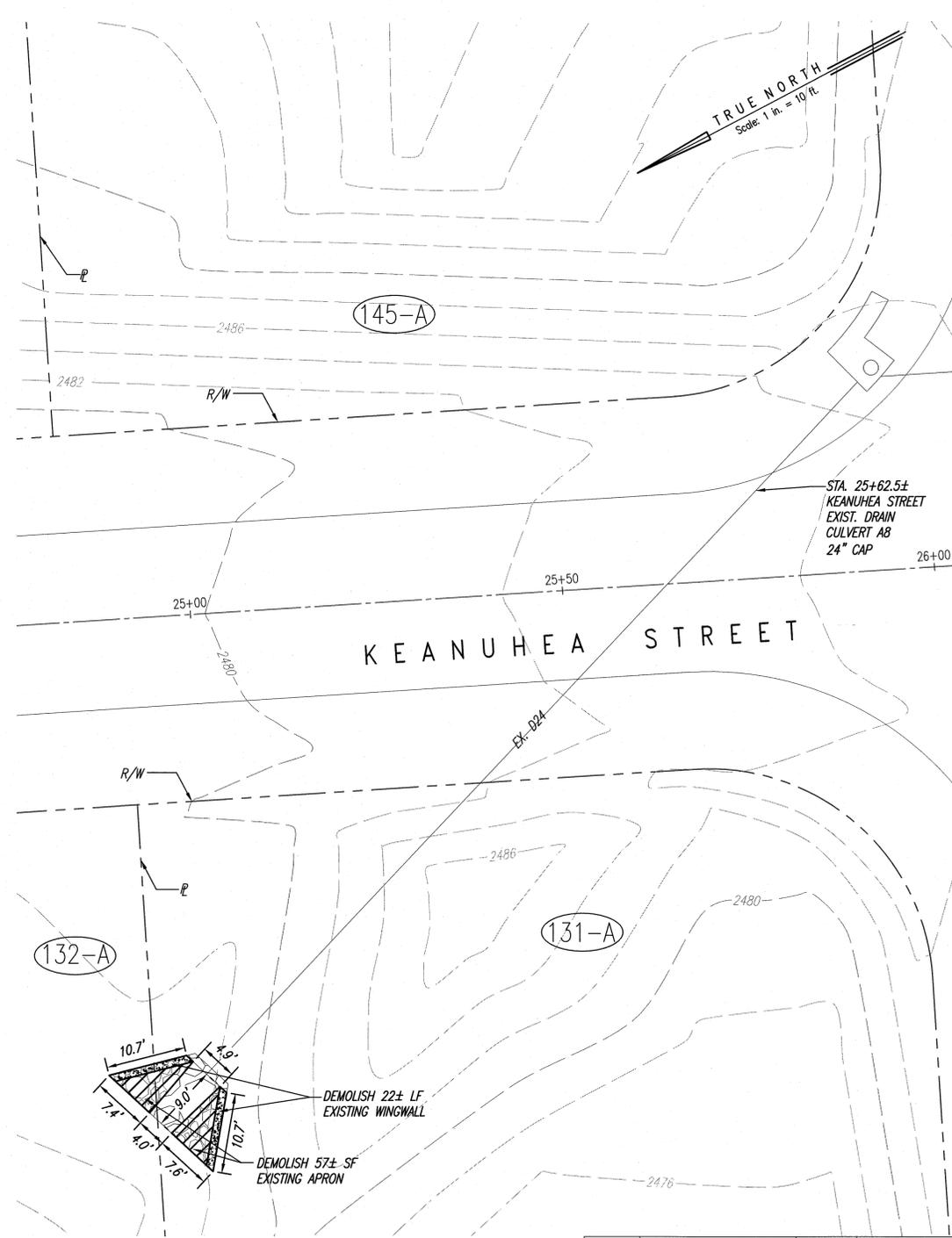
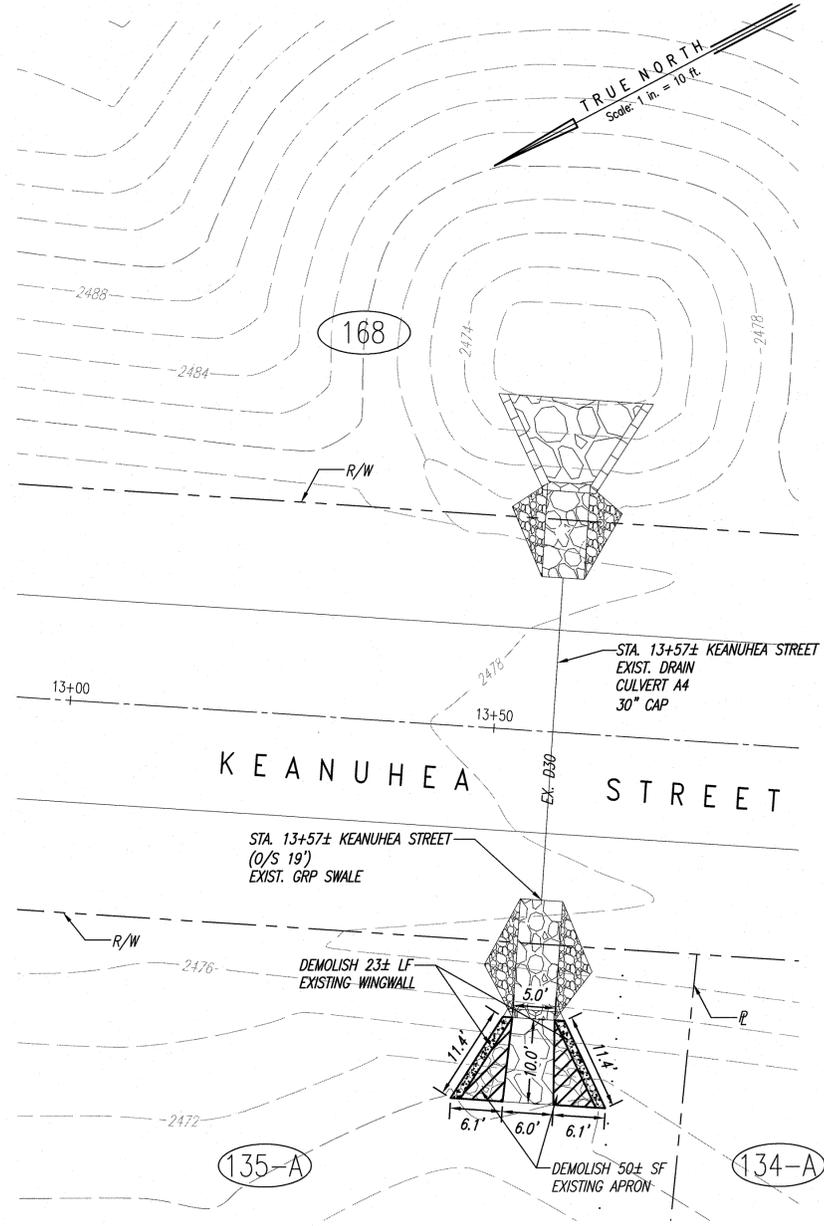
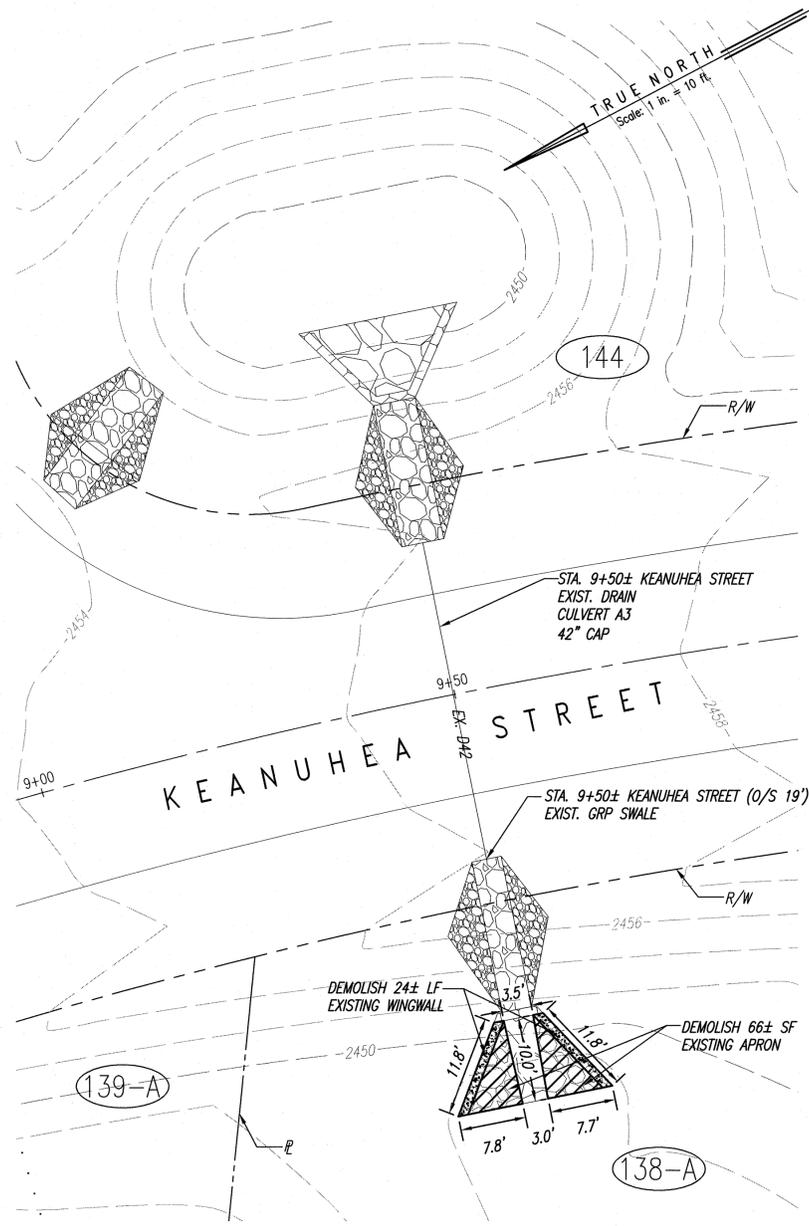
**CONSOLIDATION / RE-SUBDIVISION  
KEOKEA-WAIOHULI DEVELOPMENT  
PHASE 1A**  
KEOKEA & WAIOHULI, MAKAWAO, MAUI  
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074  
AND (2) 2-2-34: 001 TO 016, 026 & 029

**GRADING PLAN - 5**

DRAWN BY: MFC    ENGINEER: KWN/MFC    CHECKED BY: RYS

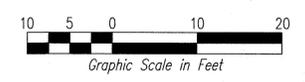
APPROVED: \_\_\_\_\_

P:\Land Projects\DHHL Keokea Ph. 1, 2 & 4\DWG\Increment 1\Cument11-15 Grading Plan - 5.dwg, 11/14/2014 2:02:47 PM, 1:1



- LEGEND**
- 2500 — EXISTING GROUND CONTOUR
  - DEMOLISH EXISTING WINGWALL
  - DEMOLISH EXISTING APRON
  - - - - - PROPERTY LINE
  - ..... OLD PROPERTY LINE
  - 140-A ○ LOT NUMBER

**DEMOLITION PLAN - 1**  
SCALE: 1" = 10'



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REVISION DATE	DESCRIPTION	MADE BY	APPROVED

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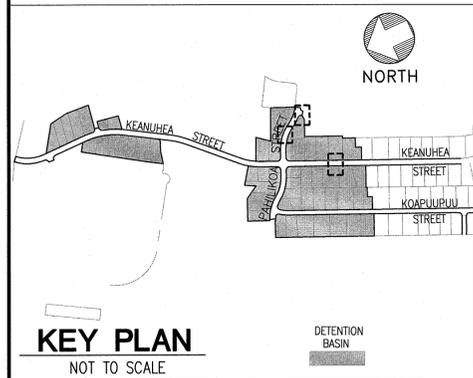
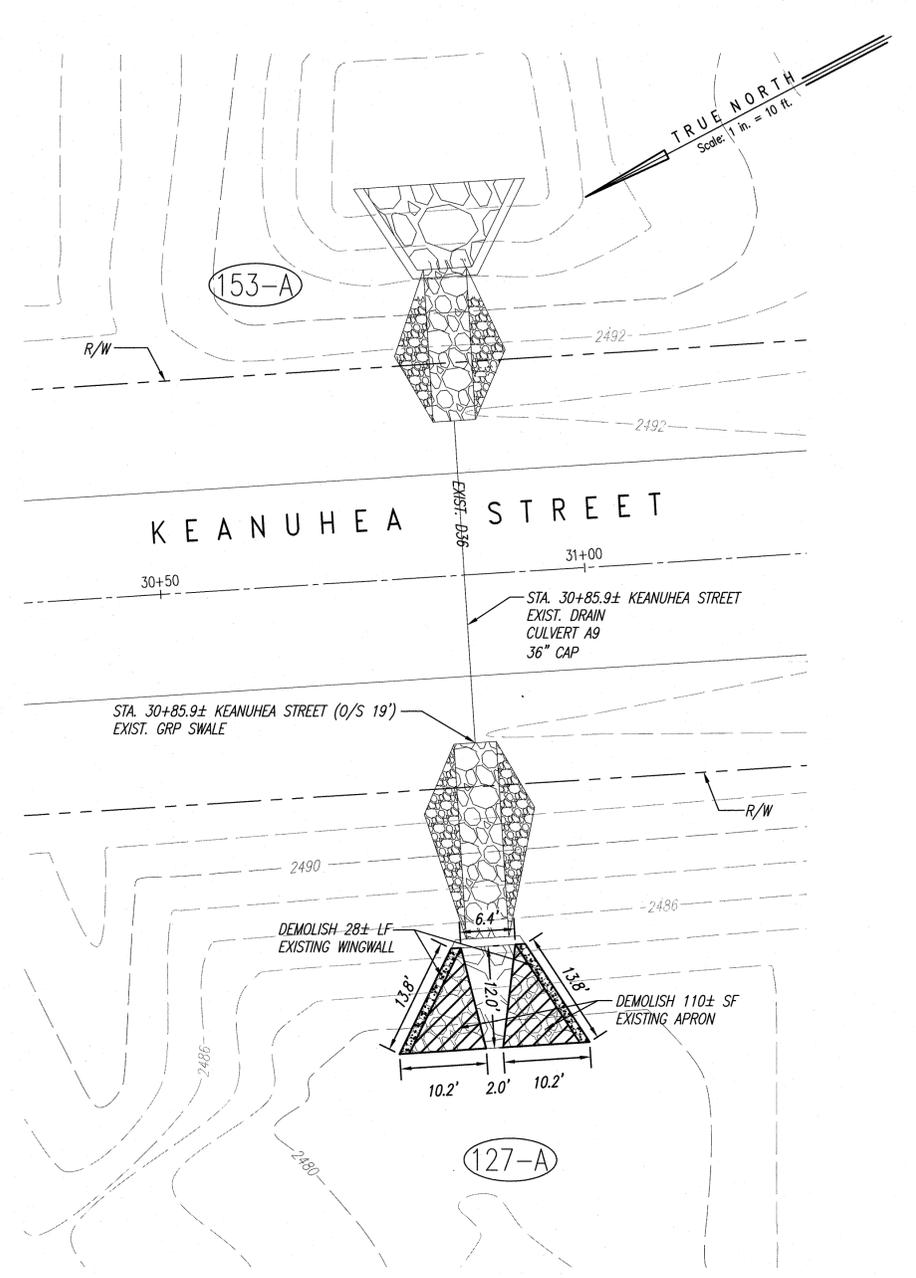
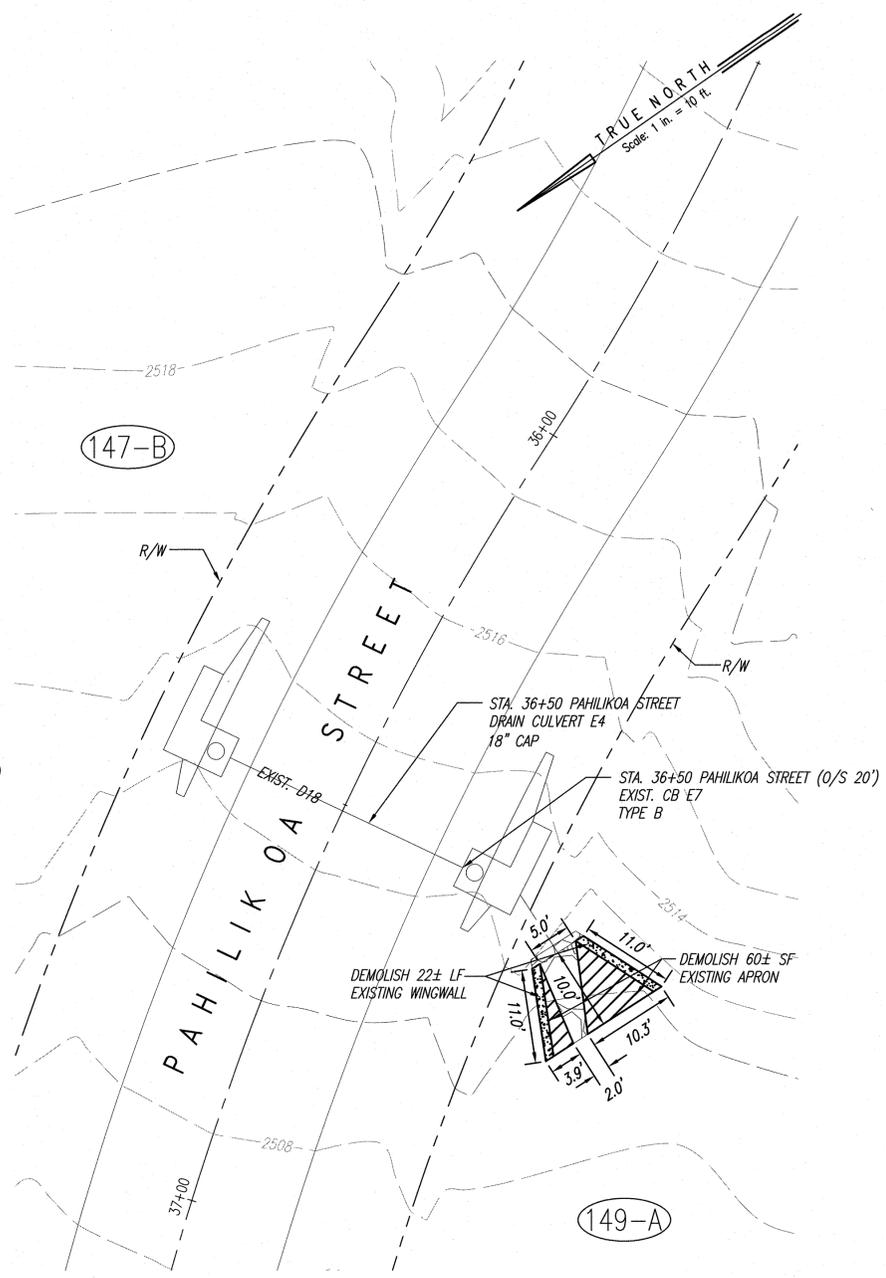
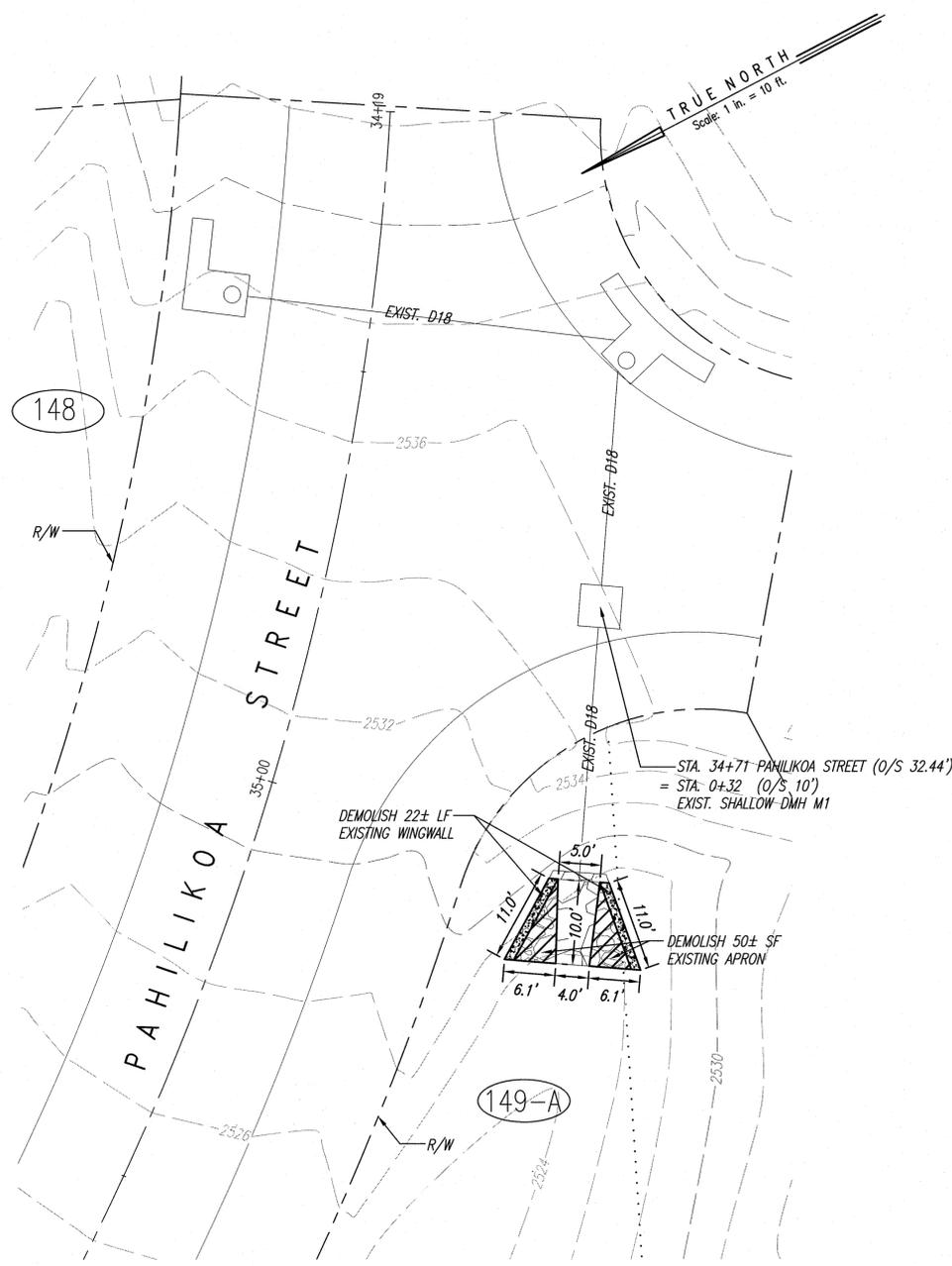
**CONSOLIDATION / RE-SUBDIVISION  
 KEOKEA-WAIOHULI DEVELOPMENT  
 PHASE 1A**  
 KEOKEA & WAIOHULI, MAKAWAO, MAUI  
 OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
 TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074  
 AND (2) 2-2-34: 001 TO 016, 026 & 029

**DEMOLITION PLAN - 1**

DRAWN BY: JSO	ENGINEER: KWNW/MFC	CHECKED BY: RYS
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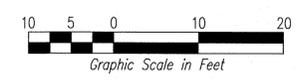
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- LEGEND**
- 2500 — EXISTING GROUND CONTOUR
  - DEMOLISH EXISTING WINGWALL
  - DEMOLISH EXISTING APRON
  - - - - - PROPERTY LINE
  - ..... OLD PROPERTY LINE
  - (140-A) LOT NUMBER

**DEMOLITION PLAN - 2**  
SCALE: 1" = 10'



**RICHARD Y. SANDOZ**  
LICENSED PROFESSIONAL ENGINEER  
No. 8955-C  
HAWAII, U.S.A.

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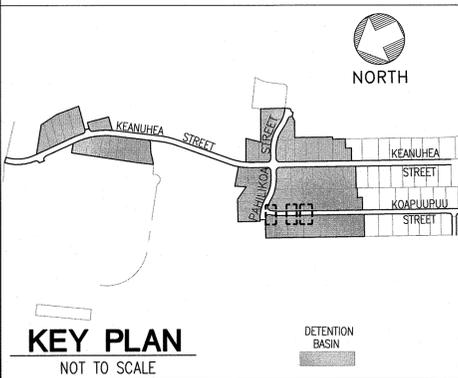
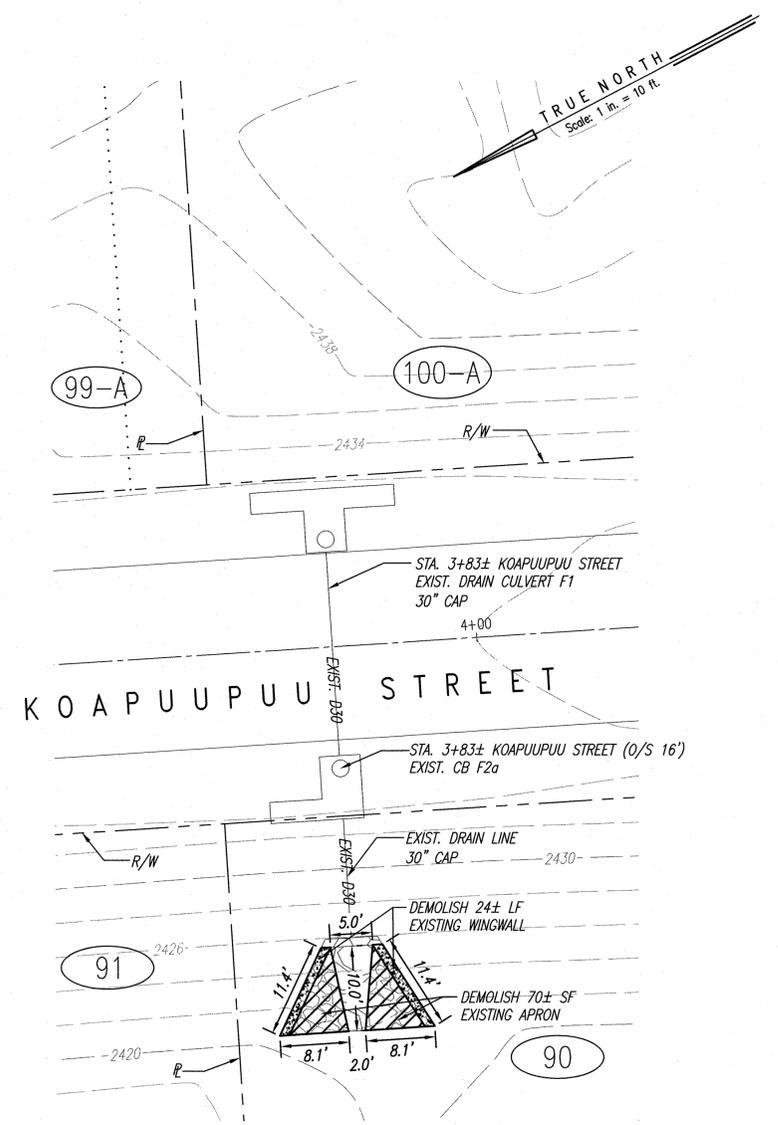
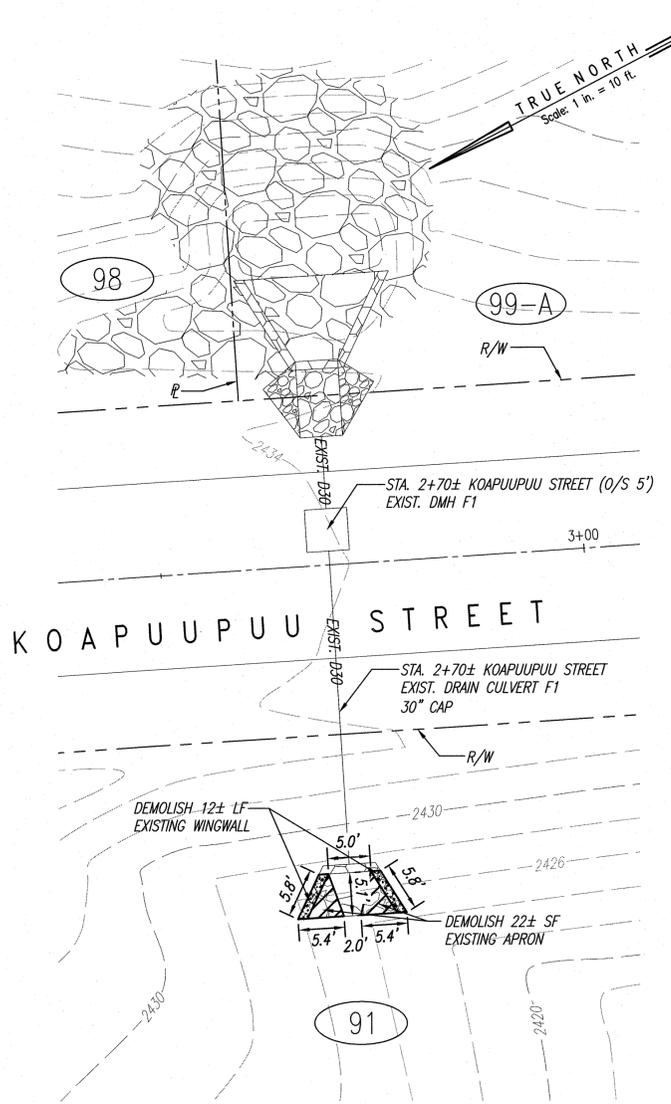
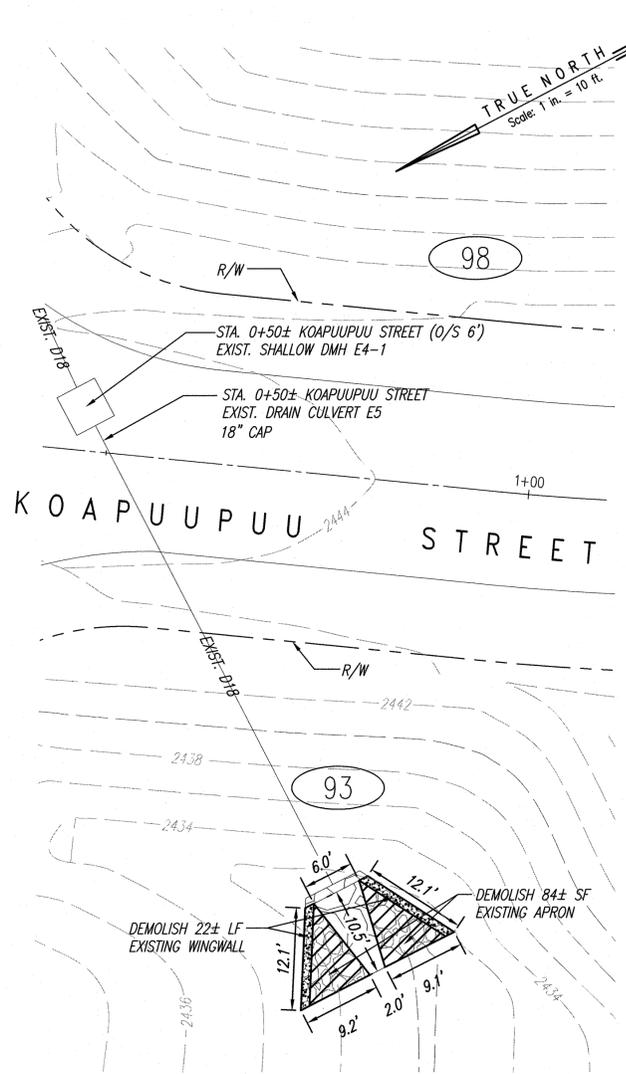
**Community Planning and Engineering, Inc.**  
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1288 Queen Emma Street, Third Floor Honolulu, Hawaii

**CONSOLIDATION / RE-SUBDIVISION  
KEOKEA-WAIOHULI DEVELOPMENT  
PHASE 1A**  
KEOKEA & WAIOHULI, MAKAWAO, MAUI  
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074  
AND (2) 2-2-34: 001 TO 016, 026 & 029

**DEMOLITION PLAN - 2**

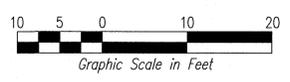
DRAWN BY: JSO	ENGINEER: KWN/MFC	CHECKED BY: RYS
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P:\Land Projects\DHHL Keokea Ph 1, 2 & 4\DWG\Increment 1\Current\16-18 Demolition Plan - 3.dwg, 11/14/2014 2:14:22 PM, 1:



- LEGEND**
- 2500 — EXISTING GROUND CONTOUR
  - DEMOLISH EXISTING WINGWALL
  - DEMOLISH EXISTING APRON
  - — PROPERTY LINE
  - — OLD PROPERTY LINE
  - (140-A) LOT NUMBER

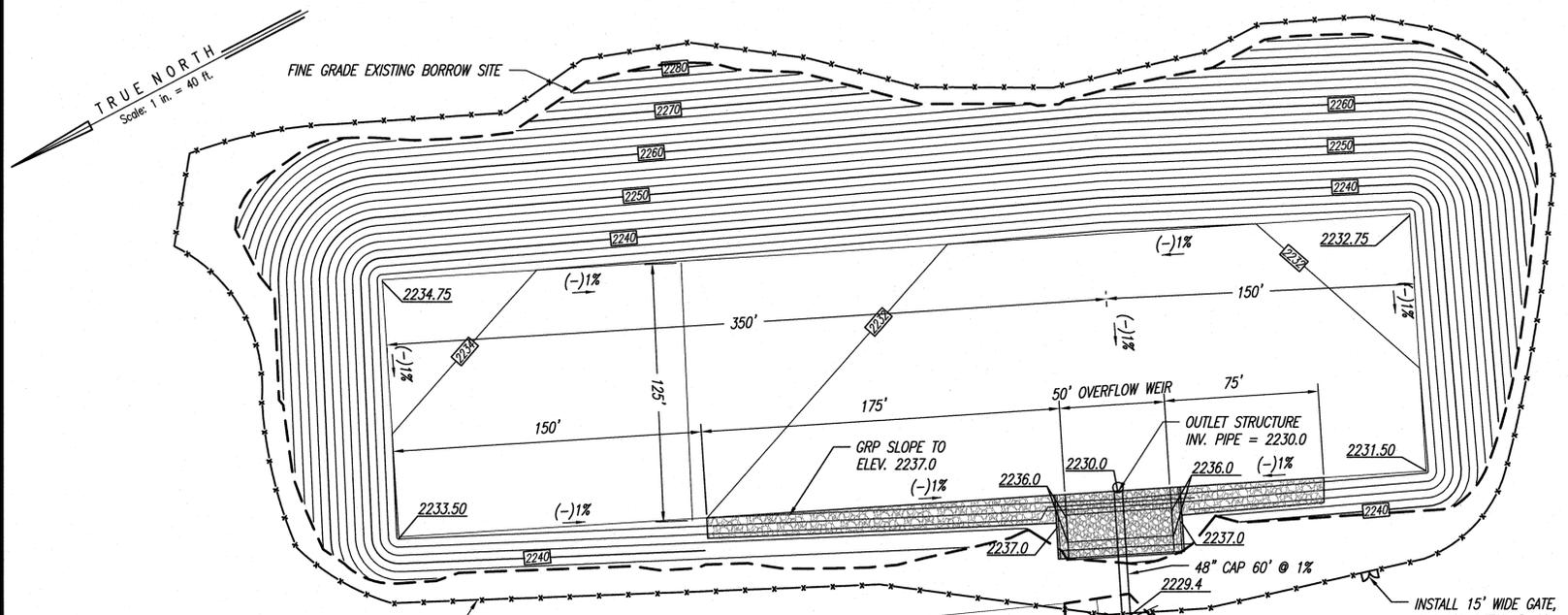
**DEMOLITION PLAN - 3**  
SCALE: 1" = 10'



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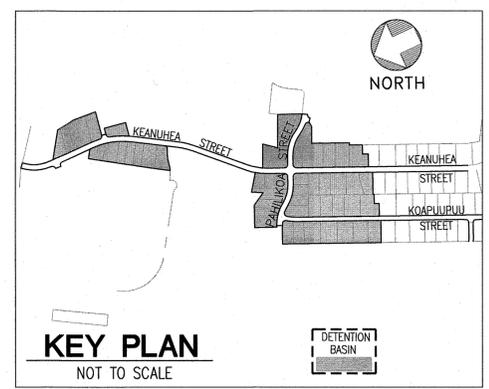
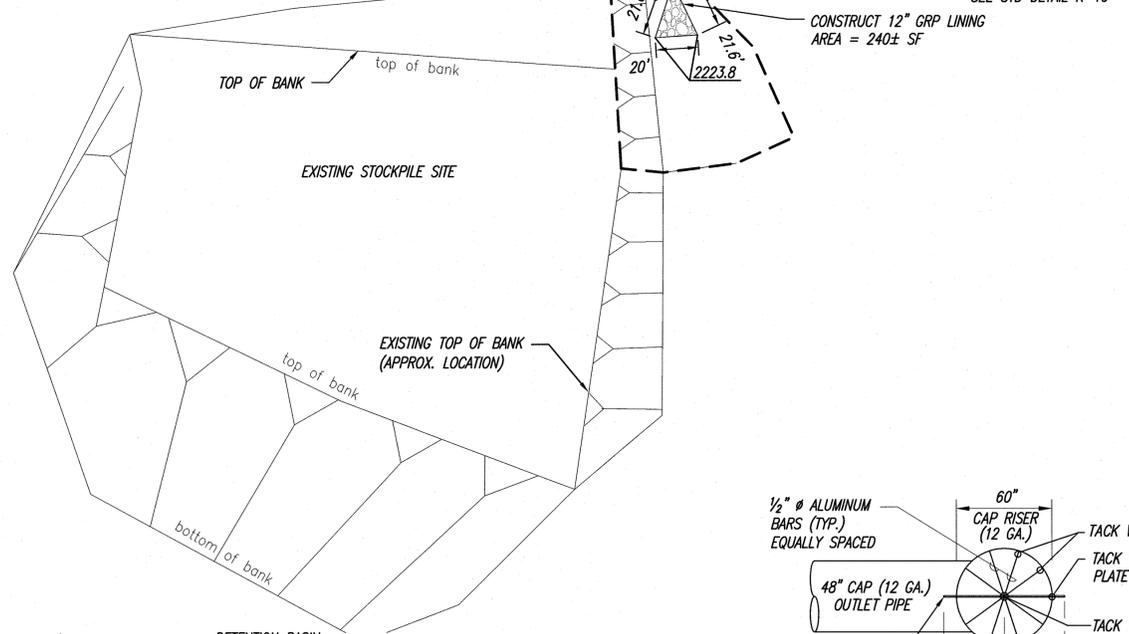
REVISION DATE	DESCRIPTION	MADE BY	APPROVED
<p><b>Community Planning and Engineering, Inc.</b> Engineering Design   Construction Management   Infrastructure Planning 1288 Queen Emma Street, Third Floor Honolulu, Hawaii</p> <p><b>CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A</b> KEOKEA &amp; WAIOHULI, MAKAWAO, MAUI OWNER &amp; DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS TAX MAP KEYS: (2) 2-2-033: 021 TO 038 &amp; 058-074 AND (2) 2-2-34: 001 TO 016, 026 &amp; 029</p> <p><b>DEMOLITION PLAN - 3</b></p>			
DRAWN BY: JSO	ENGINEER: KWNW/MFC	CHECKED BY: RYS	

P:\Land Projects\DHHL KEOKEA Ph 1, 2 & 4\DWG\Increment 1\Current\16-18 Demolition Plan 1-3.dwg, 11/14/2014 2:10:39 PM, 1:1



6' CHAIN LINK FENCE INSTALLED AROUND BASIN PERIMETER 10' FROM TOP OF SLOPE PER STD DETAIL R-19 FOR DETAIL SEE SHEET NO. 84

**TOPOGRAPHIC NOTE:**  
THE TOPOGRAPHIC INFORMATION UNDER THE BORROW SITE WAS OBTAINED FROM THE USGS QUAD ON PUU O' KALL, MAUI, HAWAII. SEE SPECIAL PROVISIONS.



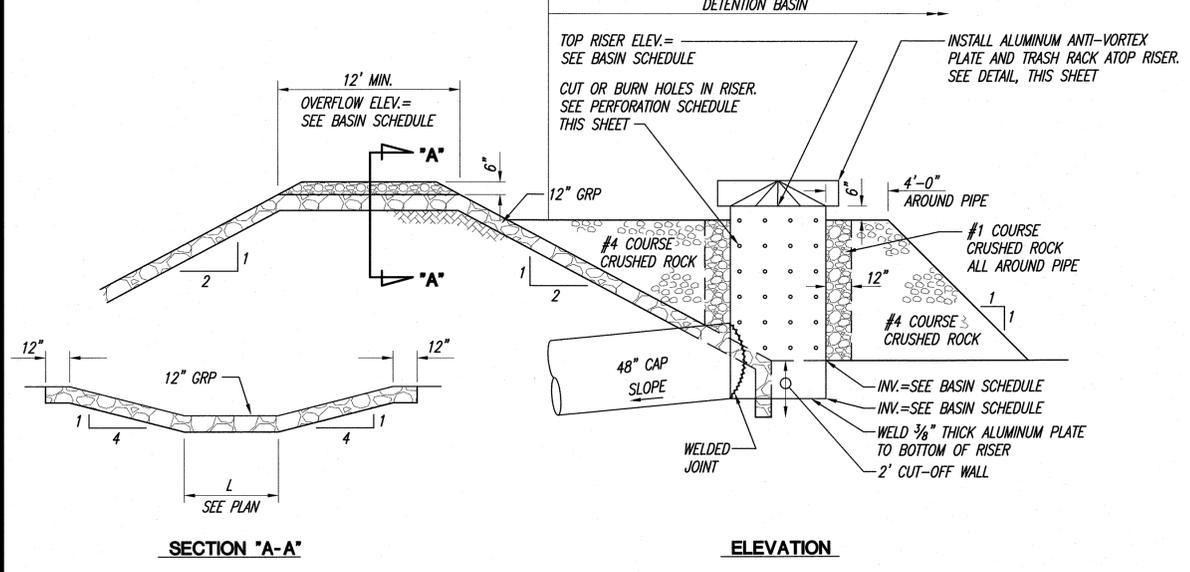
- FOUNDATION**
1. THE FOUNDATION DESIGN IS BASED ON THE RECOMMENDATIONS IN THE FOUNDATION INVESTIGATION REPORT BY PSC ASSOCIATES, INC. UNLESS OTHERWISE INDICATED, FOUNDATION WORK SHALL BE PERFORMED IN ACCORDANCE WITH THIS REPORT. THE REPORT IS PART OF THIS PLAN AND SHOULD BE KEPT ON THE JOB SITE AT ALL TIMES.
  2. ALL FOOTINGS SHALL BEAR ON WEATHERED BASALT OR STRUCTURALLY PREPARED FILL. BOTTOM OF ALL FOOTING EXCAVATIONS SHALL BE INSPECTED AND APPROVED BY A QUALIFIED FOUNDATION ENGINEER PRIOR TO PLACEMENT OF REINFORCING STEEL OR CONCRETE.
  3. ALL WATER, MUD AND DEBRIS SHALL BE REMOVED FROM THE BOTTOM OF FOOTING EXCAVATIONS PRIOR TO PLACEMENT OF CONCRETE.

- STRUCTURAL STEEL**
1. ALL STRUCTURAL AND MISCELLANEOUS STEEL SHALL CONFORM TO ASTM SPECIFICATION A-36 AND SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE A.I.S.C. SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS, LATEST EDITION.
  2. BOLTS SHALL CONFORM TO ASTM A307.
  3. WELDING: ALL WELDING IS TO COMPLY WITH A.W.S. SPECIFICATIONS AND IS TO BE DONE BY CERTIFIED WELDERS. ALL WELDING IS TO BE DONE BY ELECTRIC ARC PROCESS AND SHALL BE PERFORMED WITH APPROVED ELECTRODES AS REQUIRED PER CHAPTER 27 U.B.C. WELDS ARE DESIGNED AT FULL STRESS AND MUST BE DONE IN THE SHOP OF A LICENSED FABRICATOR.
  4. ALL WELDS NOT SHOWN SHALL BE FULL PENETRATION WELDS CAPABLE OF DEVELOPING THE FULL STRENGTH OF THE CONNECTING MEMBERS.
  5. THE CONTRACTOR SHALL DETAIL ALL MEMBERS AND CONNECTIONS NOT SHOWN AND SHALL SUBMIT THEM TO THE ENGINEER FOR REVIEW AND APPROVAL. COST OF THESE MEMBERS AND CONNECTIONS SHALL BE INCLUDED IN THE CONTRACTOR'S BID PRICE.
  6. GALVANIZE ALL STRUCTURAL STEEL SHAPES, PLATES, BOLTS AND ACCESSORIES EXPOSED TO WEATHER.

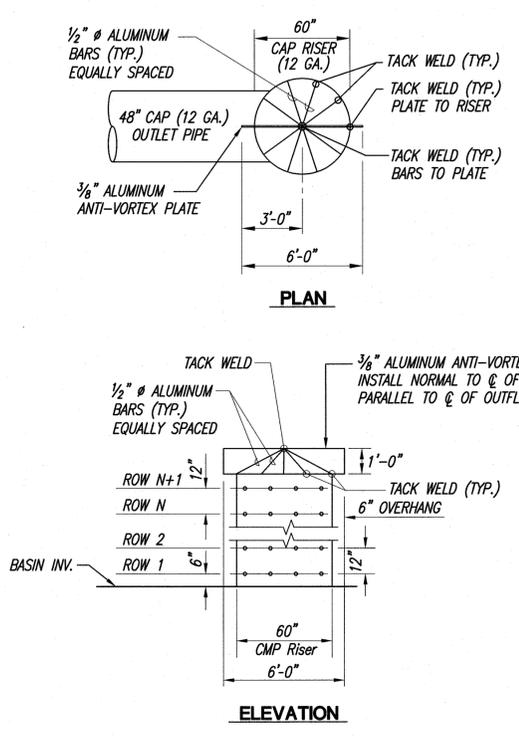
- DESIGN CRITERIA**
1. THE FOUNDATION DESIGN IS BASED ON THE RECOMMENDATIONS IN THE FOUNDATION INVESTIGATION REPORT BY PSC ASSOCIATES, INC., JOB NO. 24304.10/24304.11. BEARING CAPACITIES, ACTIVE AND PASSIVE PRESSURES AND COEFFICIENT OF FRICTION VARY WITH SITE CONDITIONS.
  2. REFER TO DETENTION BASIN BEST MANAGEMENT PRACTICE-OPERATION AND MAINTENANCE MANUAL FOR OPERATION AND MAINTENANCE PROCEDURES.

DETENTION BASIN		DETENTION BASIN SCHEDULE				
TOP OF BERM ELEV. (FT.)	2237.0					
OVERFLOW WEIR ELEV. (FT.)	2236.0					
INVERT ELEV. (FT.)	2230.0					
<b>OUTLET STRUCTURE</b>						
TYPE	CAP					
DIA. OF RISER (IN.)	60.0					
TOP RISER ELEV. (FT.)	2235.0					
DIA. OF OUTLET PIPE (IN.)	48.0					
INVERT OF OUTLET PIPE	2234.0					
SLOPE OF OUTLET PIPE (%)	1.0					
<b>PERFORATION SCHEDULE</b>						
ROW NUMBER		1	2	3	4	5
HOLE DIAMETER (IN.)		3	3	3	3	3
NUMBER OF HOLES		14	10	20	20	20

- LEGEND**
- LIMITS OF GRADING
  - CHAIN LINK FENCE
  - - - 2500 --- EXISTING GROUND CONTOUR
  - [2450] FINISH GRADE CONTOUR
  - PROPERTY LINE
  - ..... OLD PROPERTY LINE



**PERMANENT OUTLET FOR DETENTION BASIN**  
NOT TO SCALE



**ANTI-VORTEX PLATE AND TRASH RACK**  
NOT TO SCALE

**DETENTION BASIN SCHEDULE**

- NOTES :**
1. VERTICAL SPACING BETWEEN HOLES=12 INCHES OFFSET TO OFFSET.
  2. HOLES SHALL BE SPACED EVENLY AROUND THE CIRCUMFERENCE OF THE RISER.
  3. ROWS ARE NUMBERED FROM BOTTOM TO TOP.
  4. CENTER OF BOTTOM ROW IS 6 INCHES ABOVE INVERT OF BASIN.
  5. ALUMINUM PLATE SHALL MEET THE SPECIFICATIONS OF ASTM B-209.
  6. ALUMINUM RODS SHALL MEET THE SPECIFICATIONS OF ASTM B-211.



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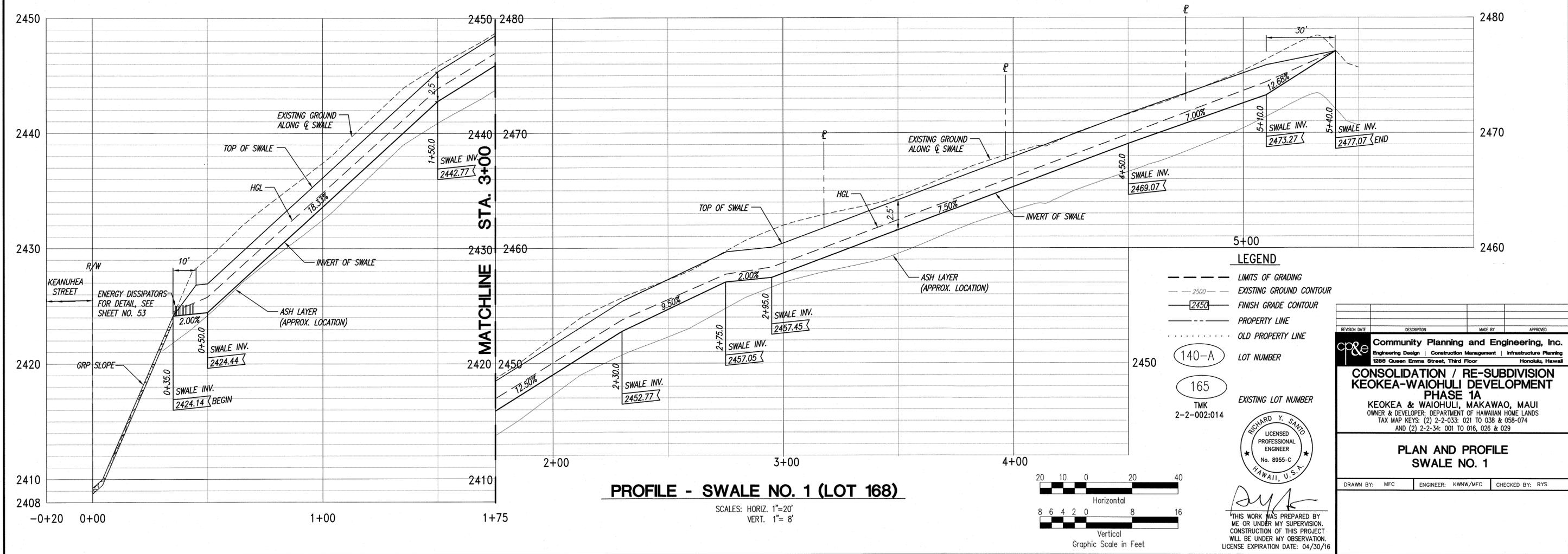
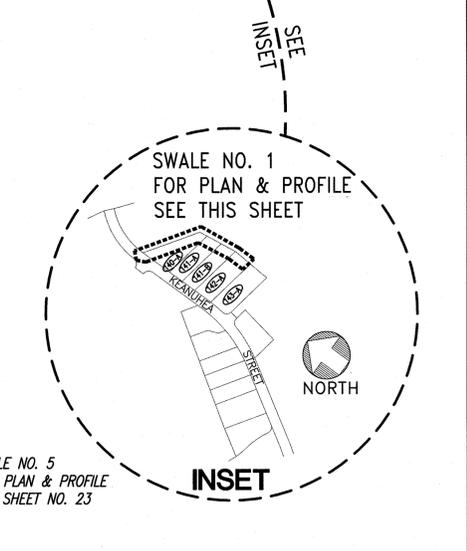
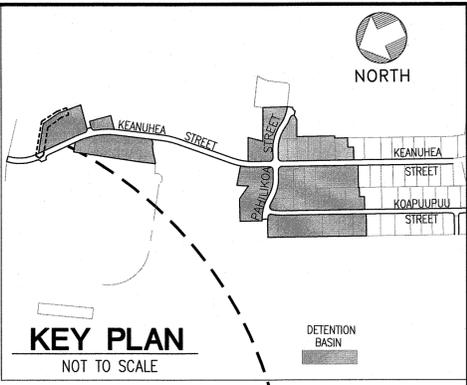
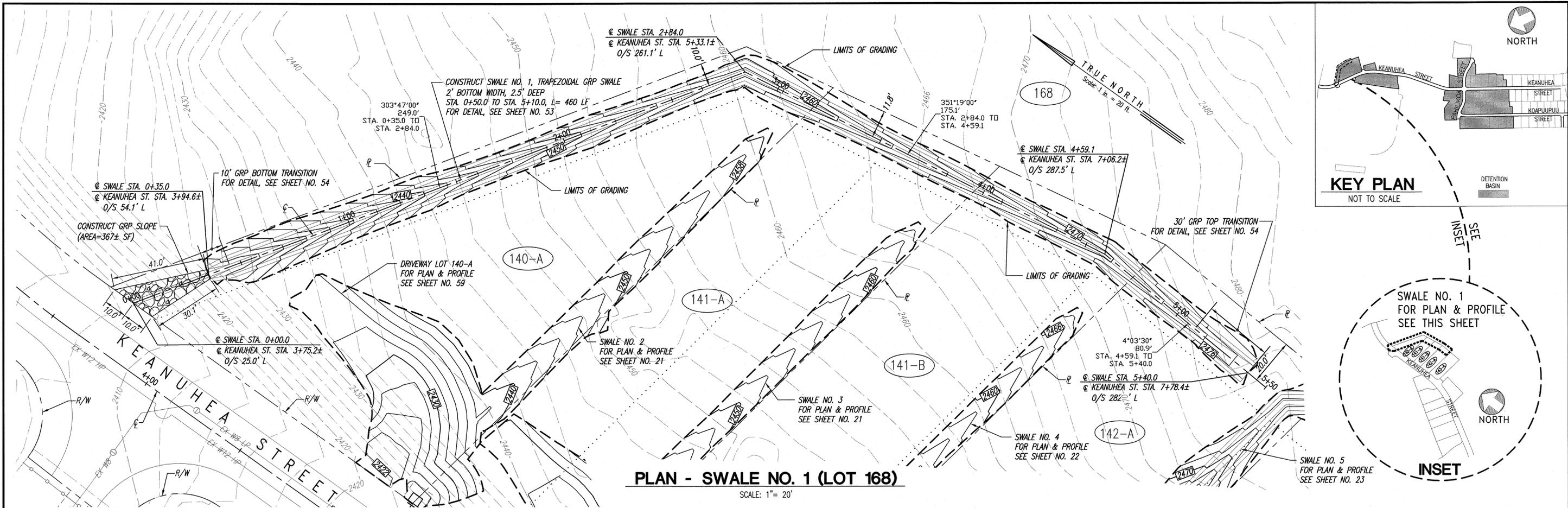
REVISION DATE DESCRIPTION MADE BY APPROVED

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**CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A**  
KEOKEA & WAIOHULI, MAKAWAO, MAUI  
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074 AND (2) 2-2-34: 001 TO 016, 026 & 029

**DETENTION BASIN PLANS AND DETAILS**

DRAWN BY: KWNW ENGINEER: KWNW/MFC CHECKED BY: RYS



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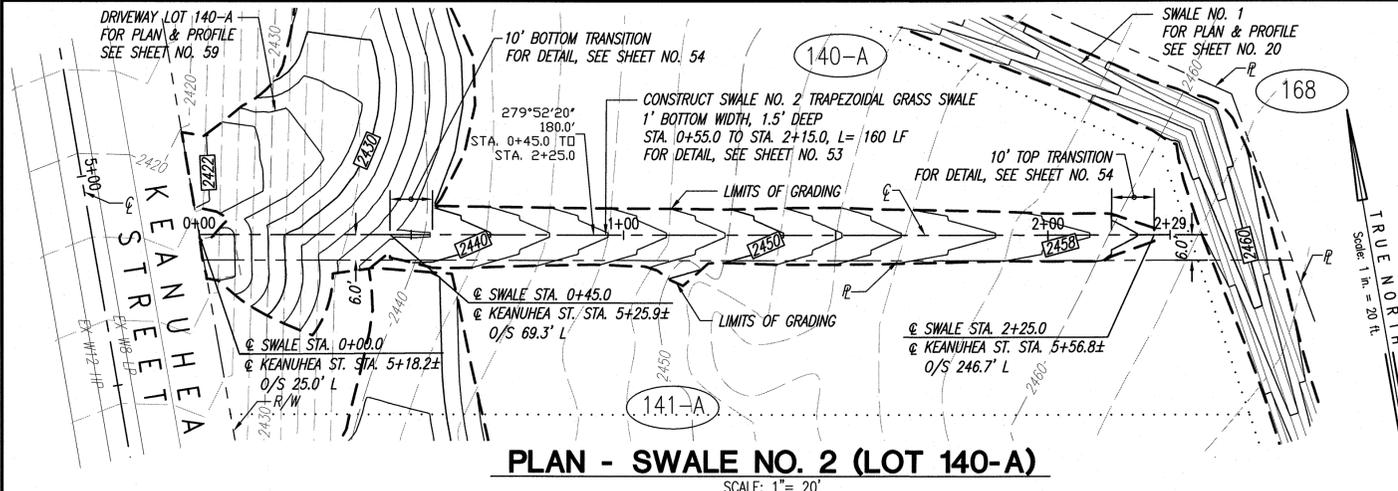
**CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A**  
 OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
 TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074 AND (2) 2-2-34: 001 TO 016, 026 & 029

**PLAN AND PROFILE SWALE NO. 1**

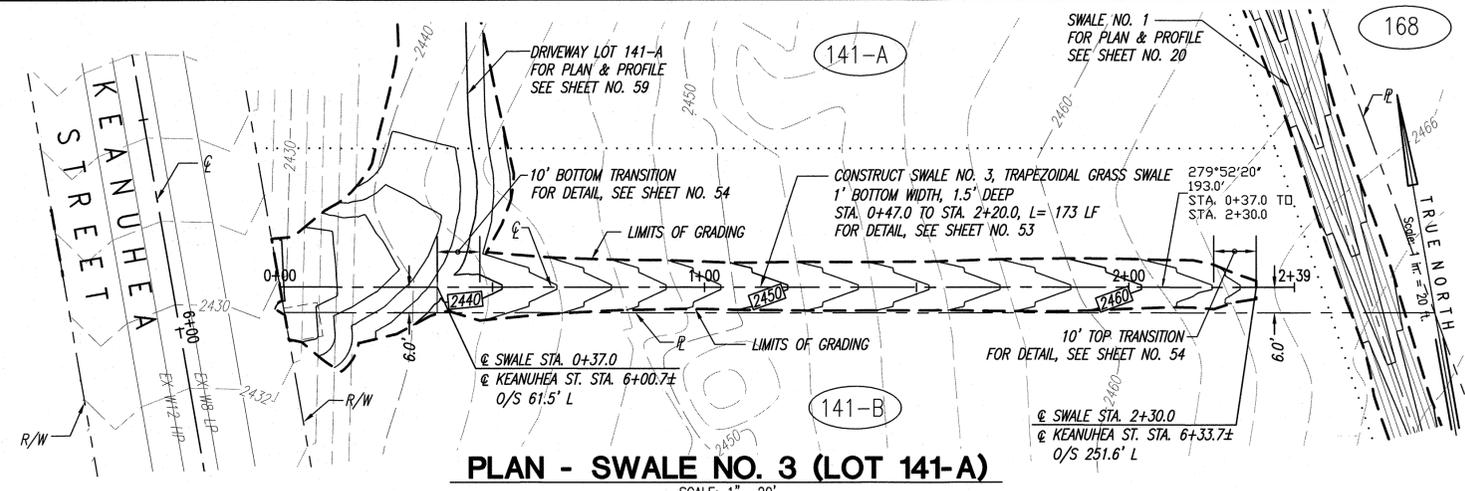
DRAWN BY: MFC ENGINEER: KWNW/MFC CHECKED BY: RYS

**Richard Y. Sando**  
 LICENSED PROFESSIONAL ENGINEER  
 No. 8955-C  
 HAWAII, U.S.A.

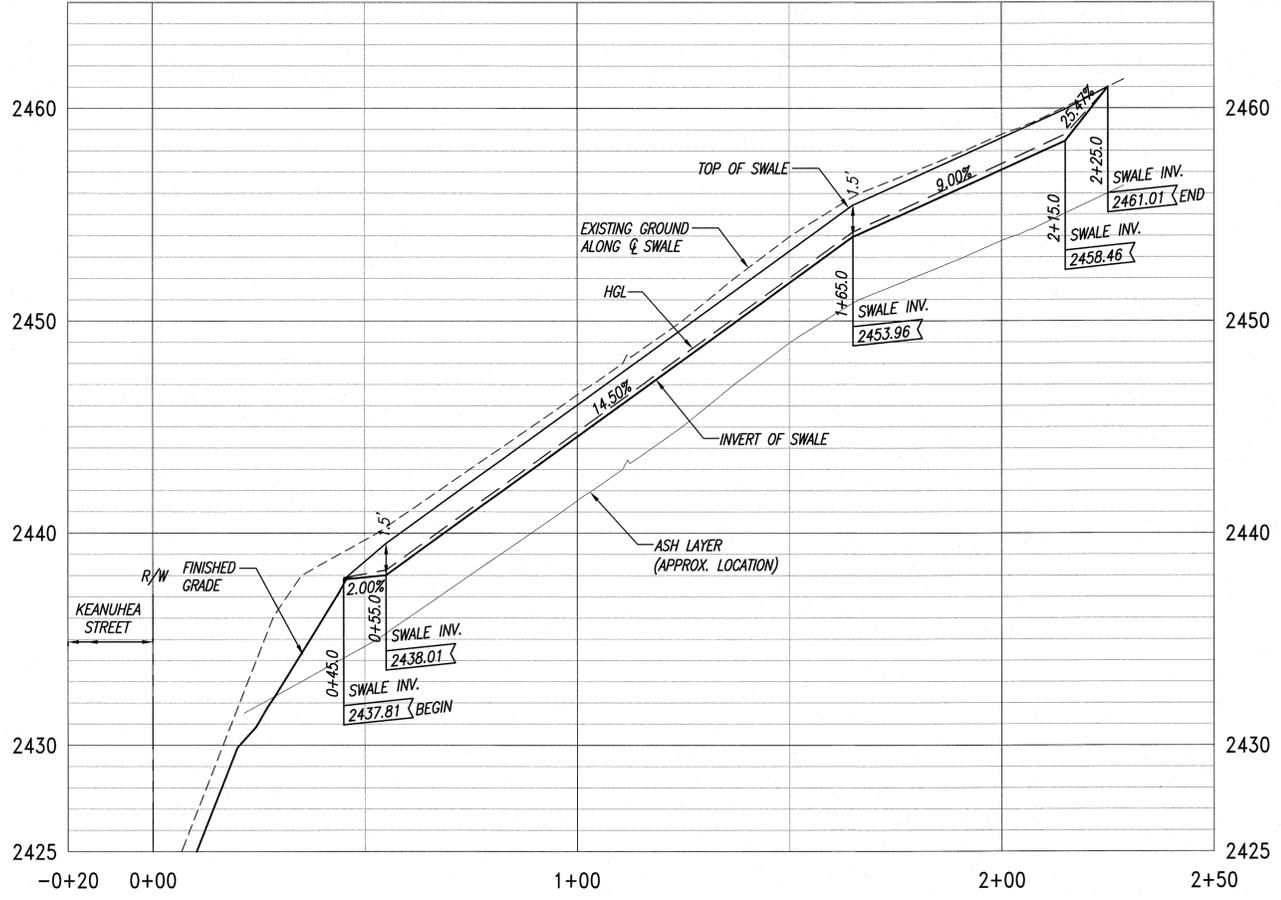
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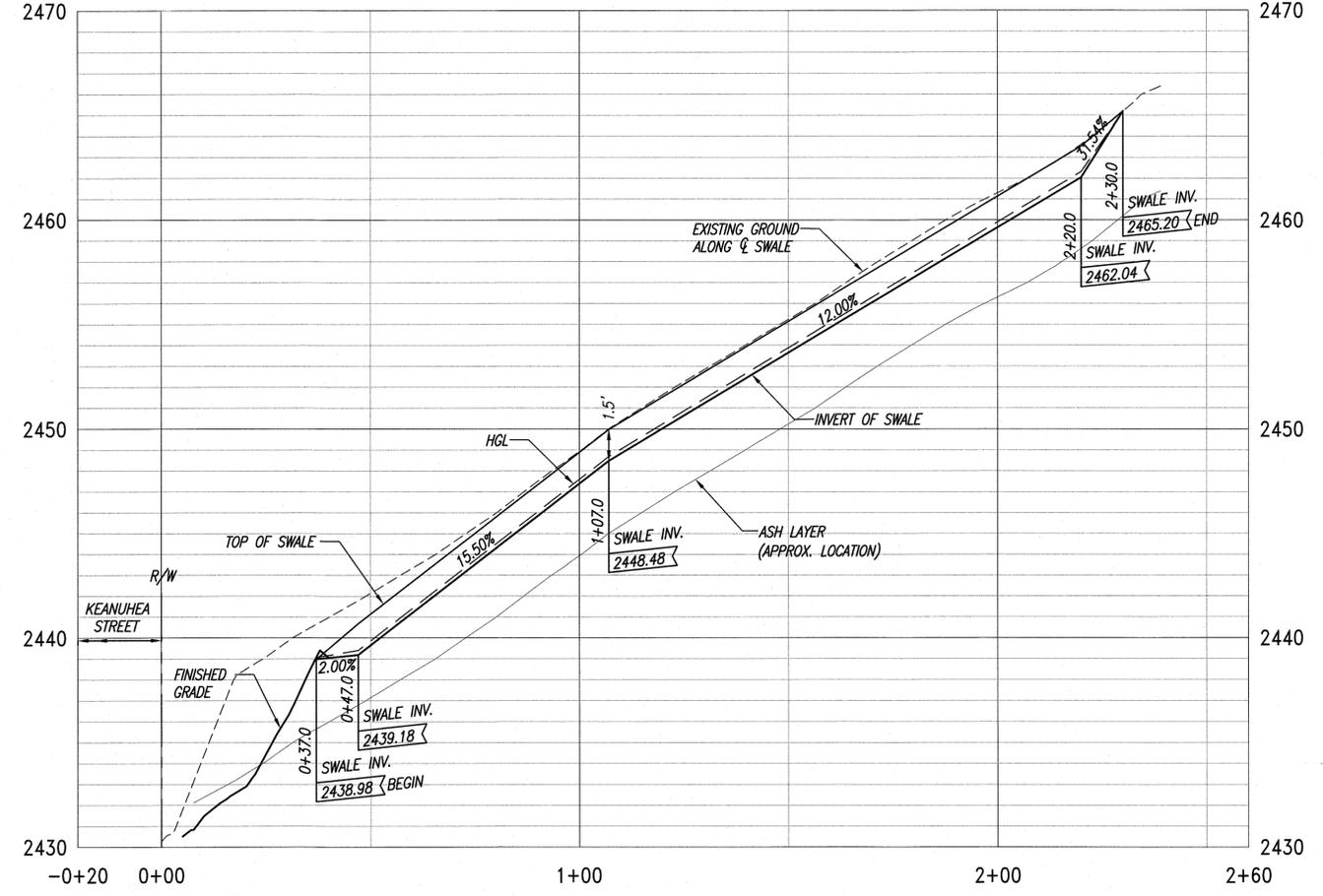
**PLAN - SWALE NO. 2 (LOT 140-A)**  
SCALE: 1" = 20'



**PLAN - SWALE NO. 3 (LOT 141-A)**  
SCALE: 1" = 20'

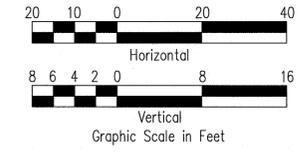
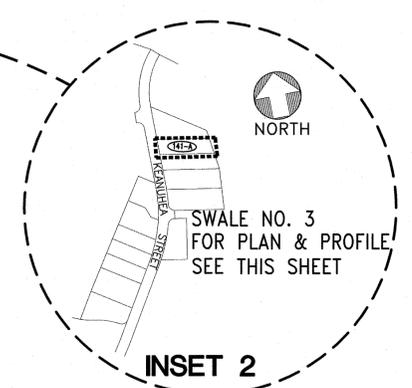
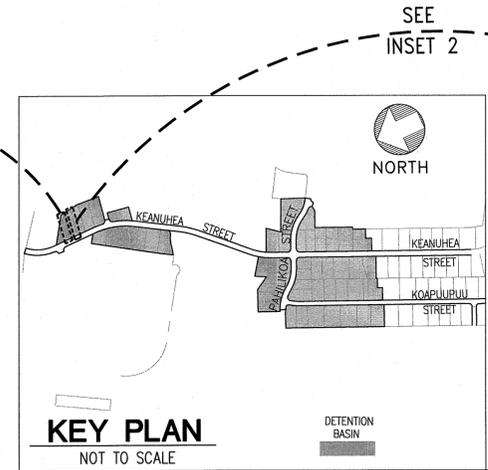
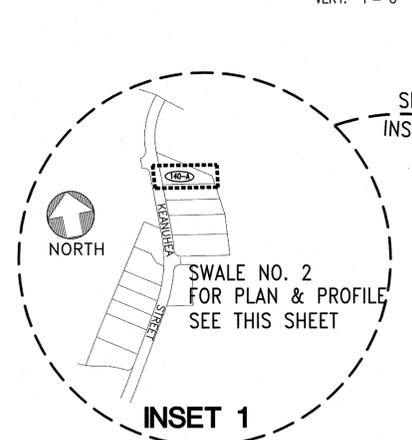


**PROFILE - SWALE NO. 2 (LOT 140-A)**  
SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'



**PROFILE - SWALE NO. 3 (LOT 141-A)**  
SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'

- LEGEND**
- LIMITS OF GRADING
  - - - - - EXISTING GROUND CONTOUR
  - 2450 — FINISH GRADE CONTOUR
  - PROPERTY LINE
  - OLD PROPERTY LINE
  - 140-A LOT NUMBER
  - 165 EXISTING LOT NUMBER
  - TMK 2-2-002:014



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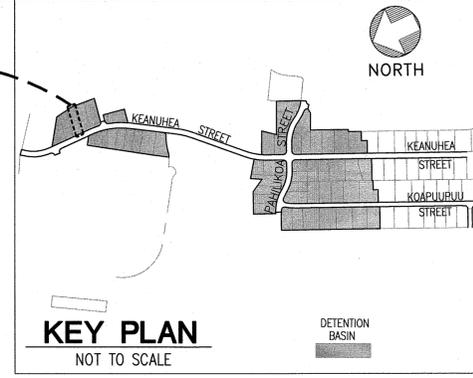
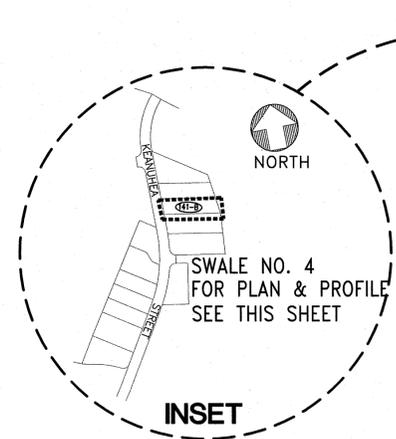
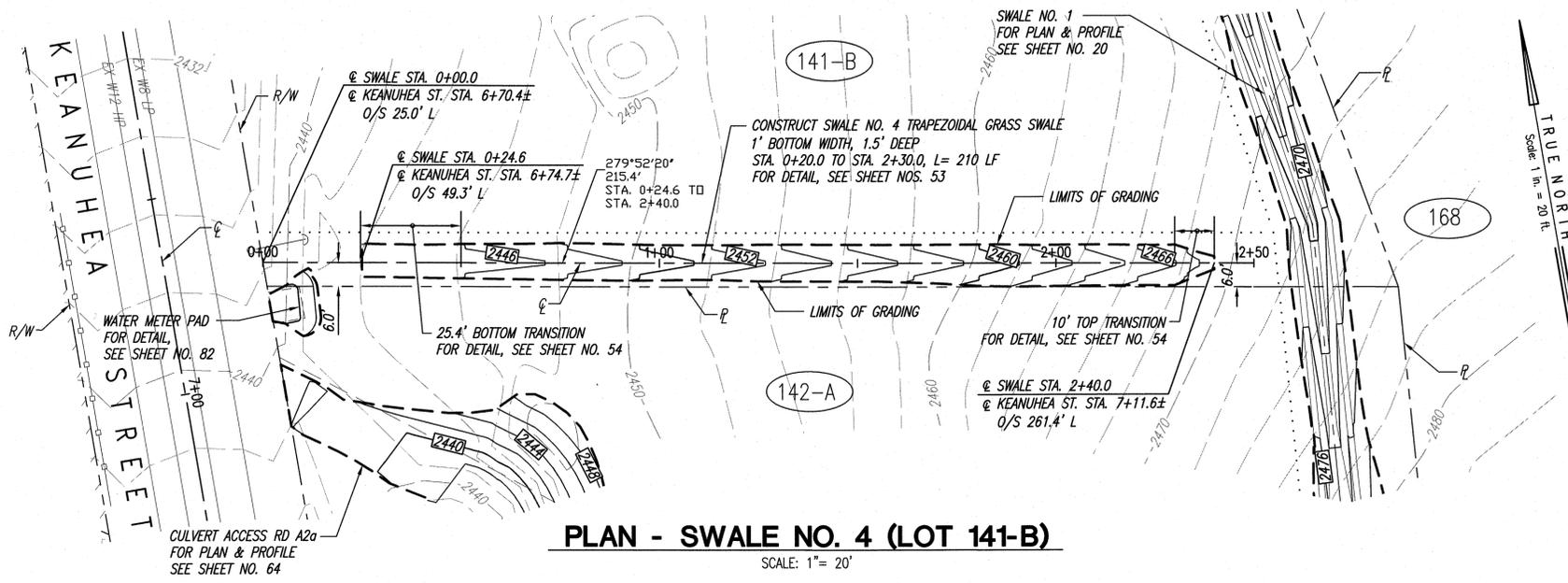
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**CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A**  
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OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074 AND (2) 2-2-34: 001 TO 016, 026 & 029

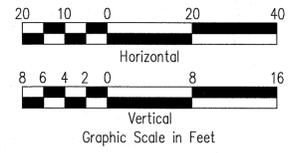
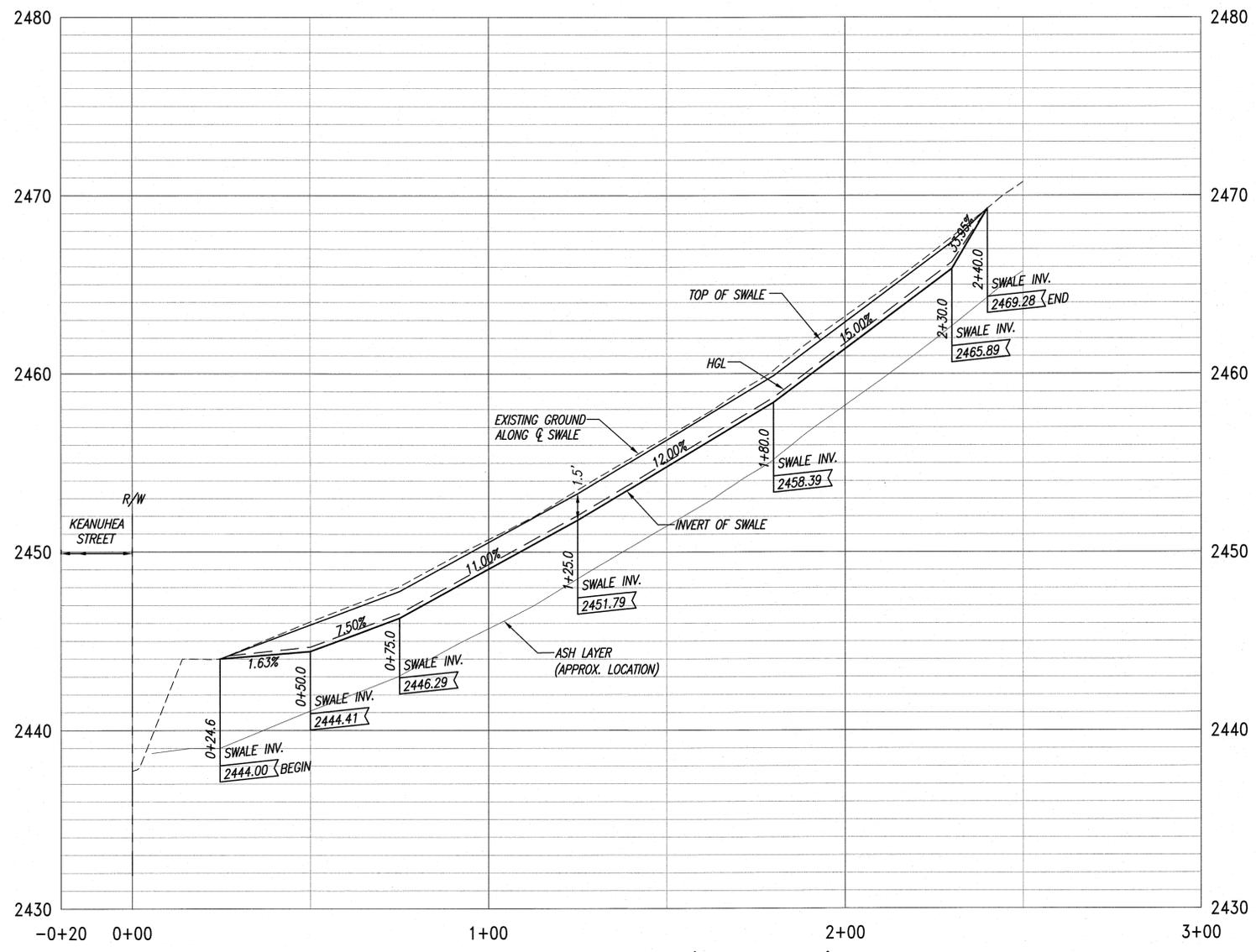
**PLAN AND PROFILE SWALE NO. 2 AND SWALE NO. 3**

DRAWN BY: KWNW ENGINEER: KWNW/MFC CHECKED BY: RYS

FILE \_\_\_\_\_ FOLDER \_\_\_\_\_ NO. \_\_\_\_\_



- LEGEND**
- LIMITS OF GRADING
  - - - 2500 --- EXISTING GROUND CONTOUR
  - 2450 --- FINISH GRADE CONTOUR
  - PROPERTY LINE
  - OLD PROPERTY LINE
  - (140-A) LOT NUMBER
  - (165) EXISTING LOT NUMBER
  - TMK 2-2-002:014



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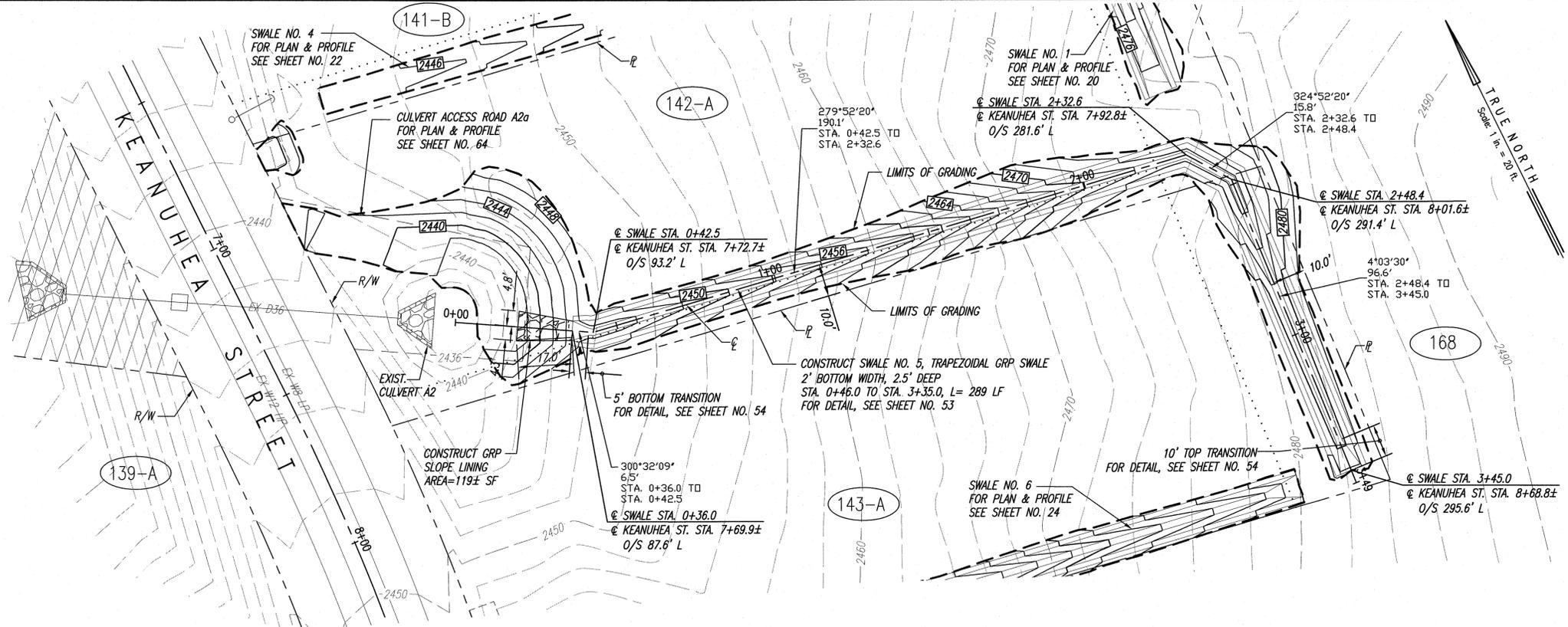
REVISION DATE	DESCRIPTION	MADE BY	APPROVED

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**CONSOLIDATION / RE-SUBDIVISION  
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AND (2) 2-2-34: 001 TO 016, 026 & 029

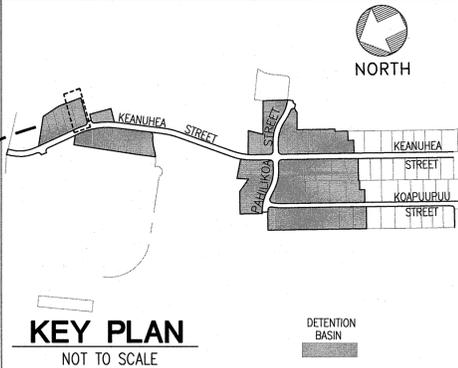
**PLAN AND PROFILE  
SWALE NO. 4**

DRAWN BY: KWNW    ENGINEER: KWNW/MFC    CHECKED BY: RYS

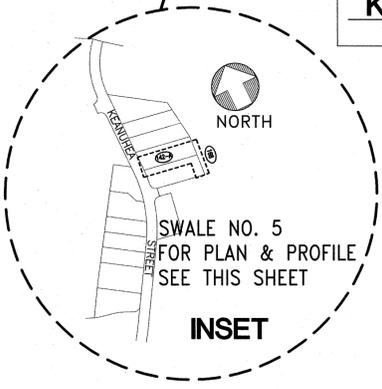


**PLAN - SWALE NO. 5 (LOTS 142-A & 168)**

SCALE: 1" = 20'



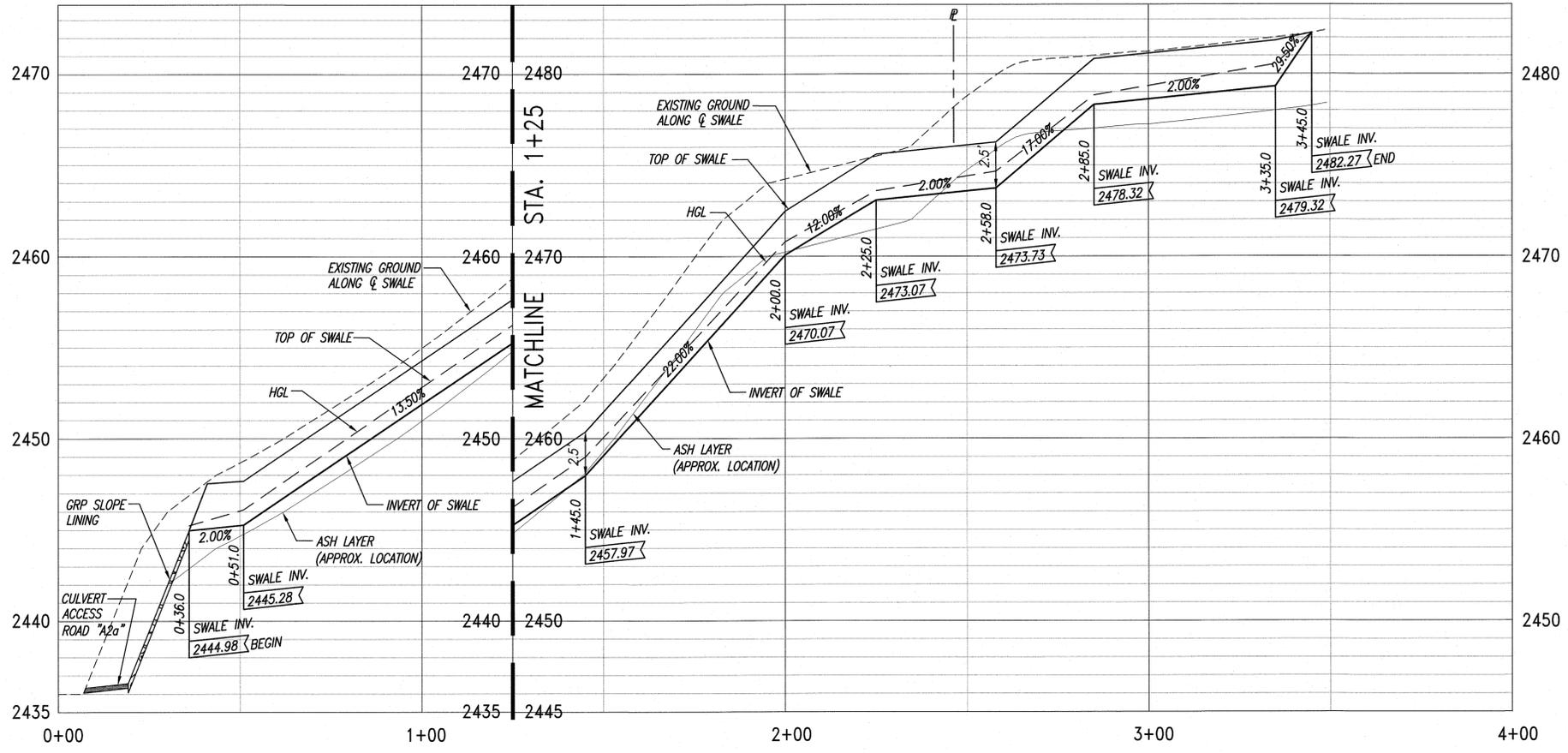
**KEY PLAN**  
NOT TO SCALE



**SWALE NO. 5  
FOR PLAN & PROFILE  
SEE THIS SHEET**

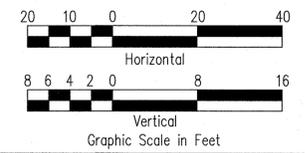
**INSET**

- LEGEND**
- LIMITS OF GRADING
  - - - - - EXISTING GROUND CONTOUR
  - 2450 — FINISH GRADE CONTOUR
  - — — — — PROPERTY LINE
  - ..... OLD PROPERTY LINE
  - (140-A) LOT NUMBER
  - (165) EXISTING LOT NUMBER
  - TMK 2-2-002:014



**PROFILE - SWALE NO. 5 (LOTS 142-A & 168)**

SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'



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REVISION DATE	DESCRIPTION	MADE BY	APPROVED

**Community Planning and Engineering, Inc.**  
 Engineering Design | Construction Management | Infrastructure Planning  
 1286 Queen Emma Street, Third Floor Honolulu, Hawaii

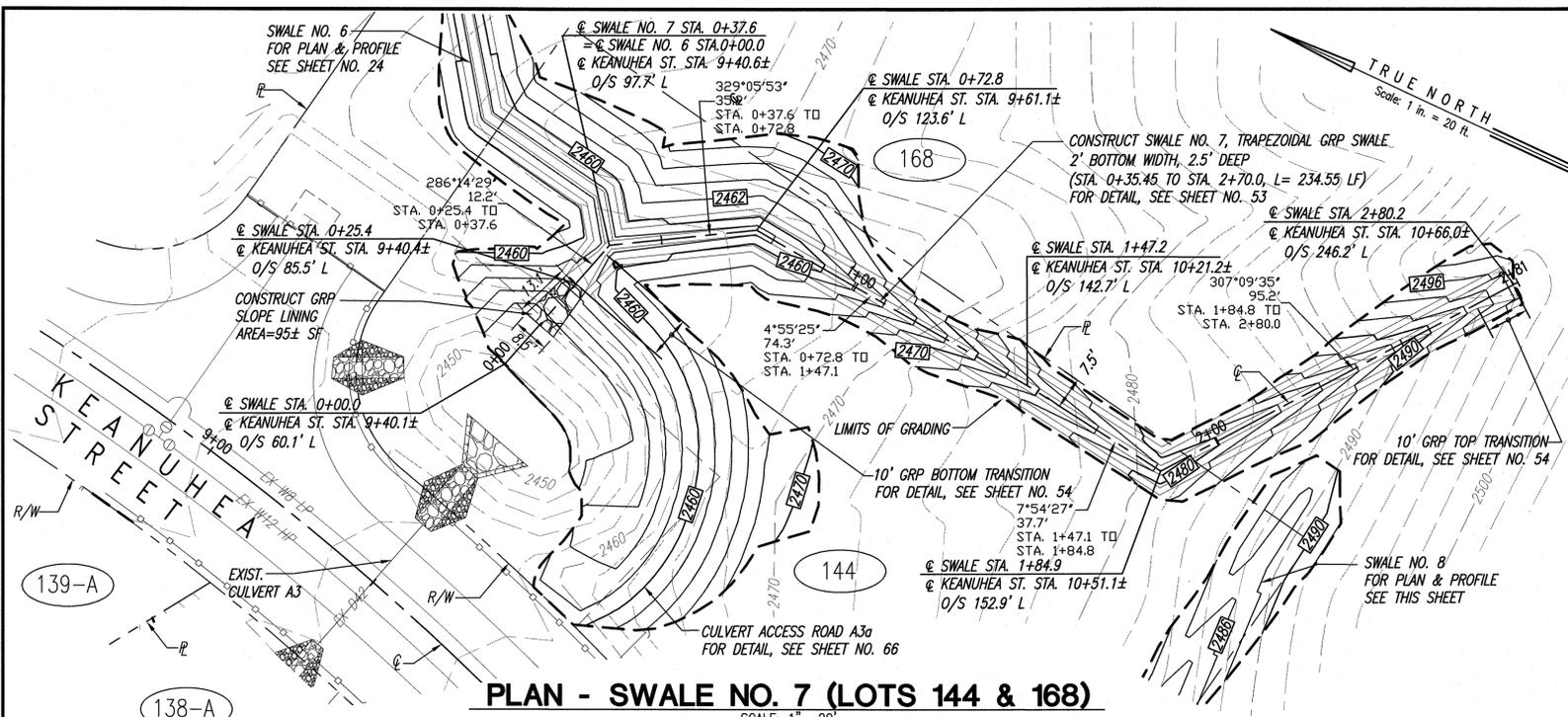
**CONSOLIDATION / RE-SUBDIVISION  
 KEOKEA-WAIOHULI DEVELOPMENT  
 PHASE 1A**  
 KEOKEA & WAIOHULI, MAKAWAO, MAUI  
 OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
 TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074  
 AND (2) 2-2-34: 001 TO 016, 026 & 029

**PLAN AND PROFILE  
 SWALE NO. 5**

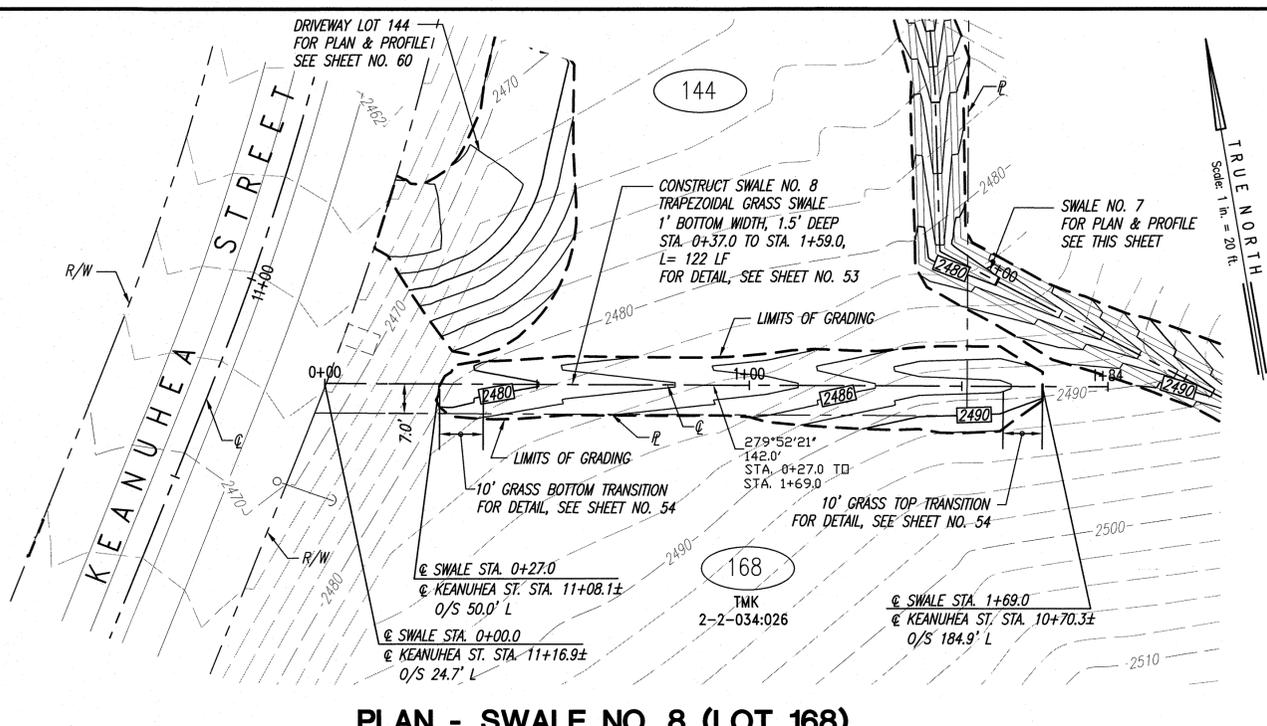
DRAWN BY: JSO	ENGINEER: KNNW/MFC	CHECKED BY: RYS
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P:\Land Projects\DHLL Koekea Ph 1, 2 & 4\DWG\Increment 1\Current\20-25 P&P Swale 1-8.dwg, 11/14/2014 2:37:46 PM, 1:1

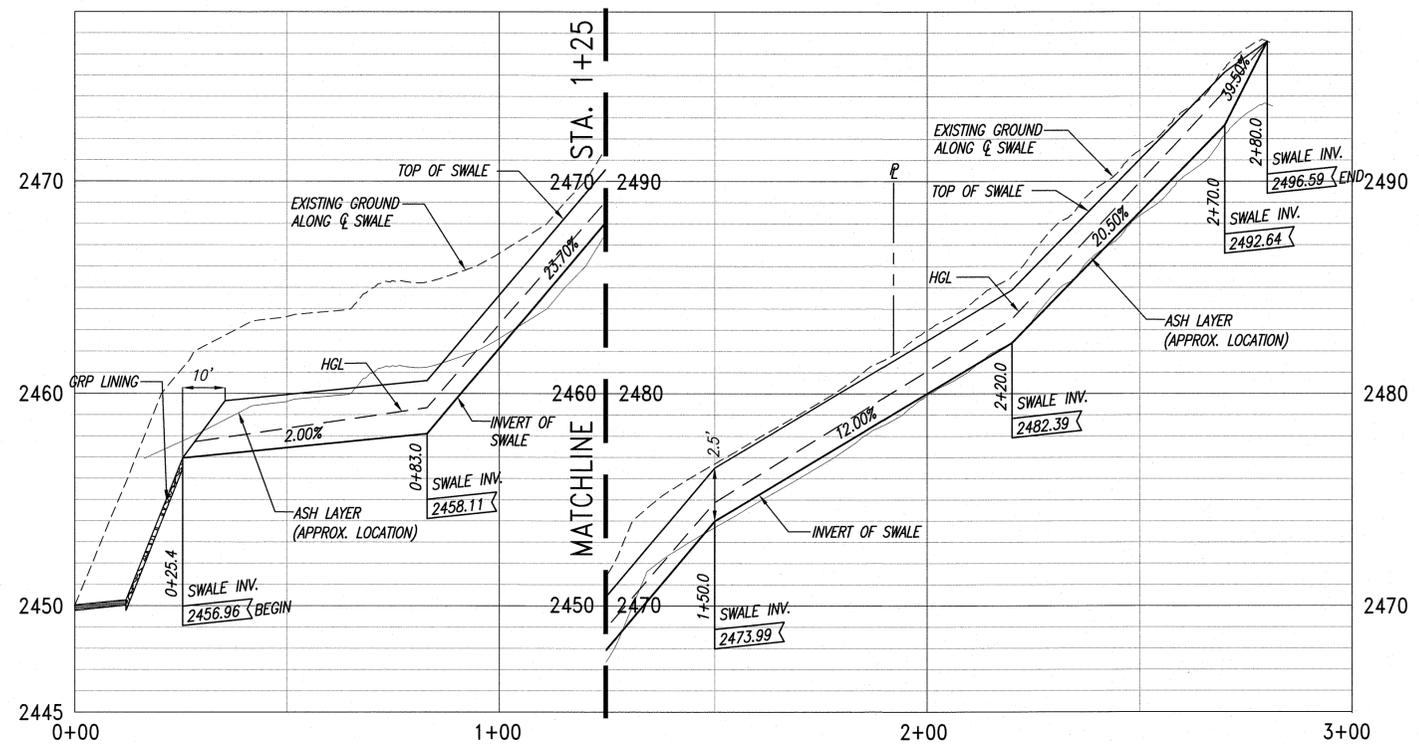




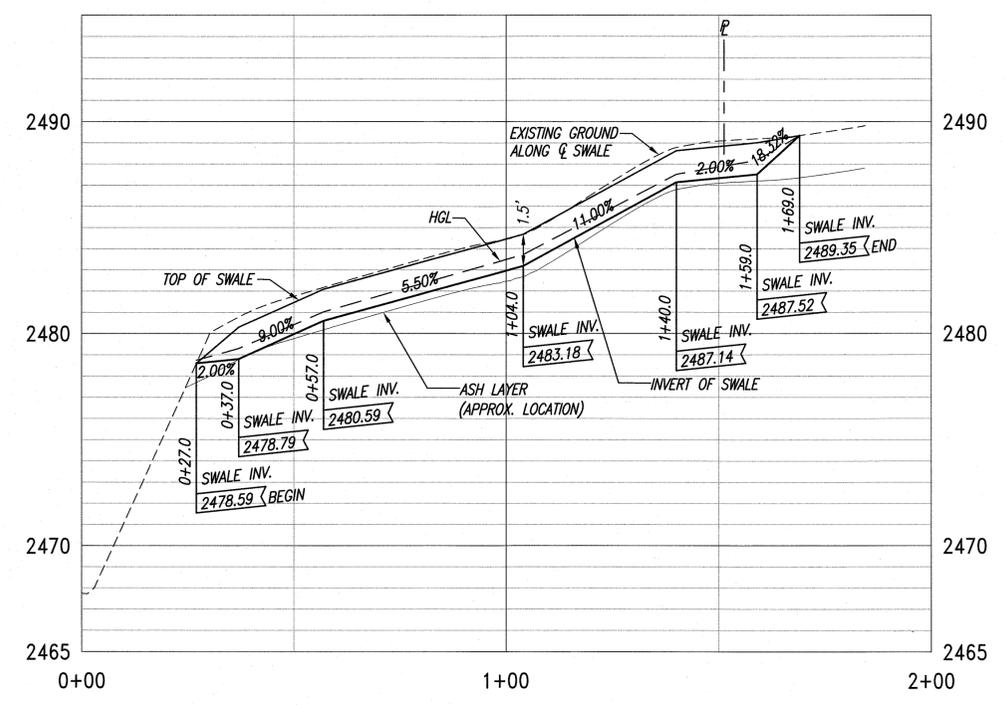
**PLAN - SWALE NO. 7 (LOTS 144 & 168)**  
SCALE: 1" = 20'



**PLAN - SWALE NO. 8 (LOT 168)**  
SCALE: 1" = 20'

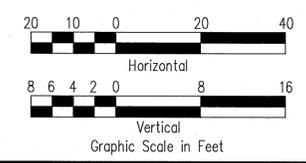
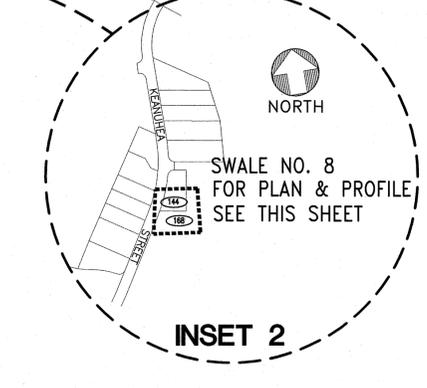
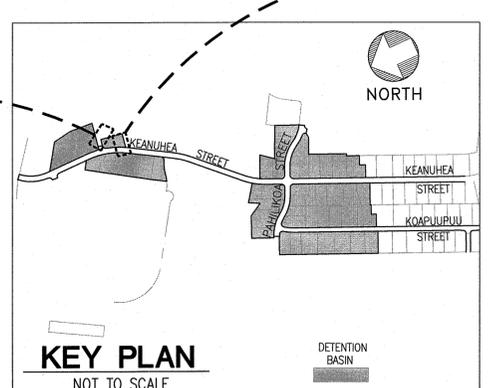
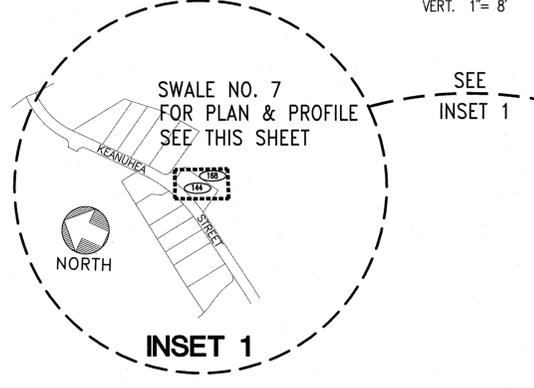


**PROFILE - SWALE NO. 7 (LOTS 144 & 168)**  
SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'



**PROFILE - SWALE NO. 8 (LOT 168)**  
SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'

- LEGEND**
- LIMITS OF GRADING
  - - - EXISTING GROUND CONTOUR
  - FINISH GRADE CONTOUR
  - PROPERTY LINE
  - OLD PROPERTY LINE
  - (140-A) LOT NUMBER
  - (165) EXISTING LOT NUMBER
  - TMK 2-2-002:014



**RICHARD Y. SAND**  
LICENSED PROFESSIONAL ENGINEER  
No. 8955-C  
HAWAII, U.S.A.

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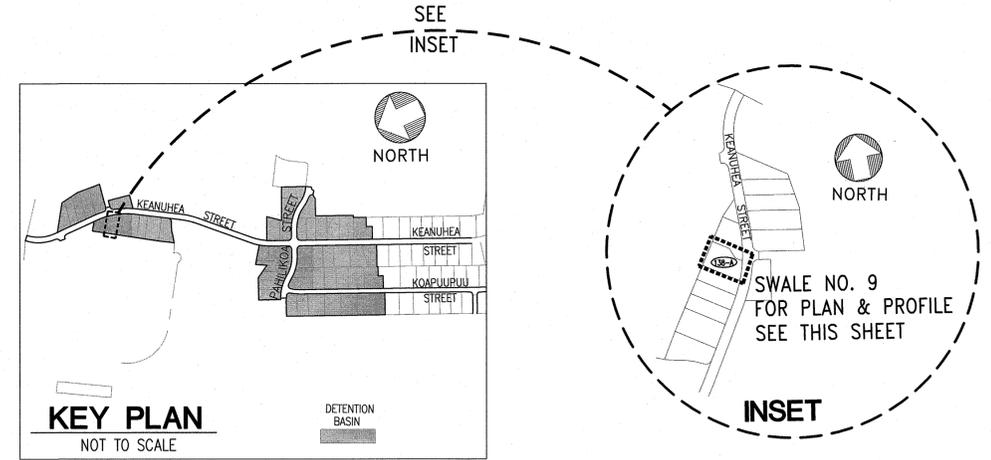
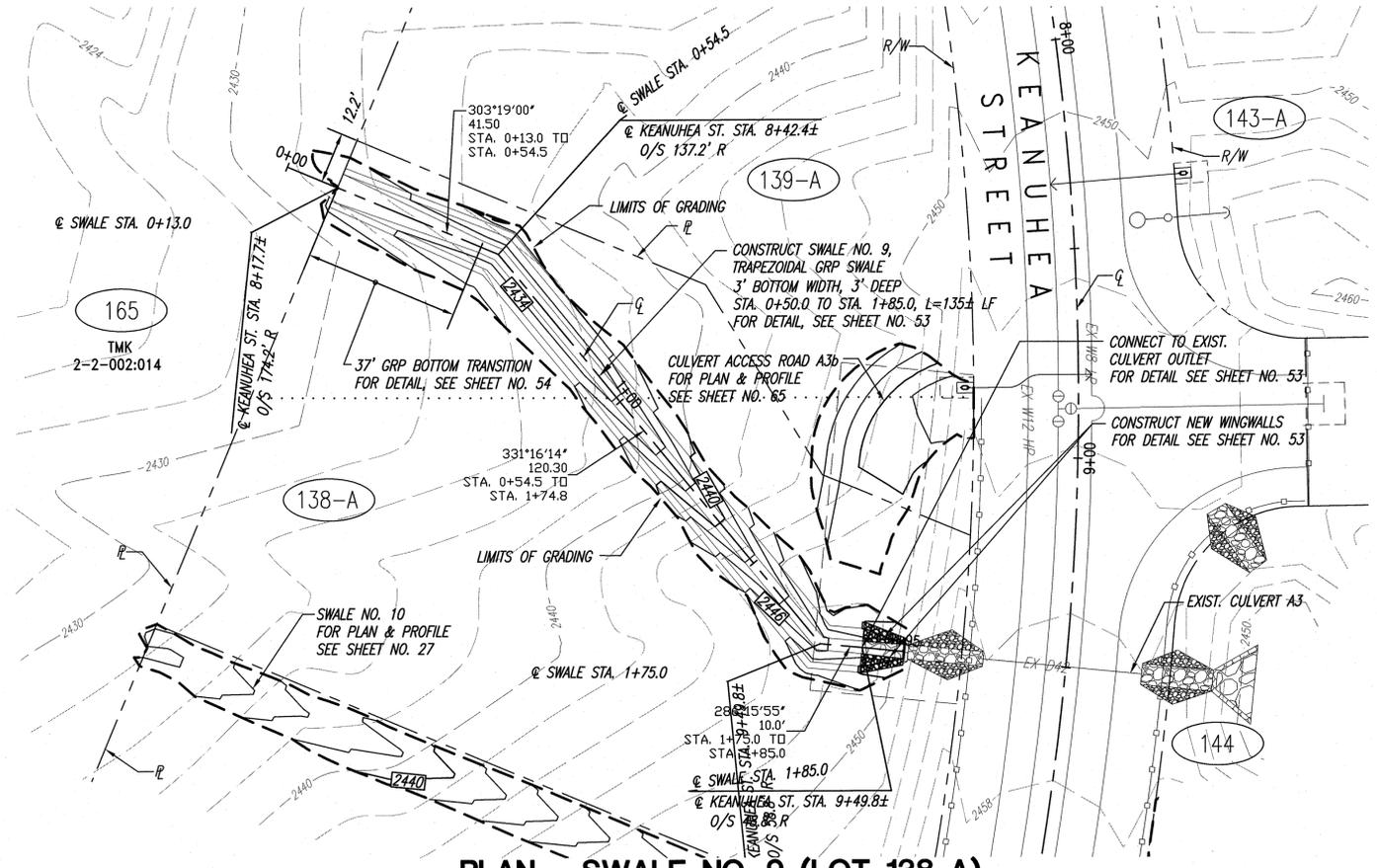
REVISION DATE	DESCRIPTION	MADE BY	APPROVED

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1286 Queen Emma Street, Third Floor Honolulu, Hawaii

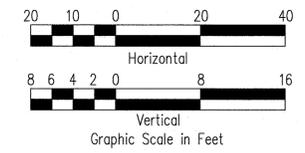
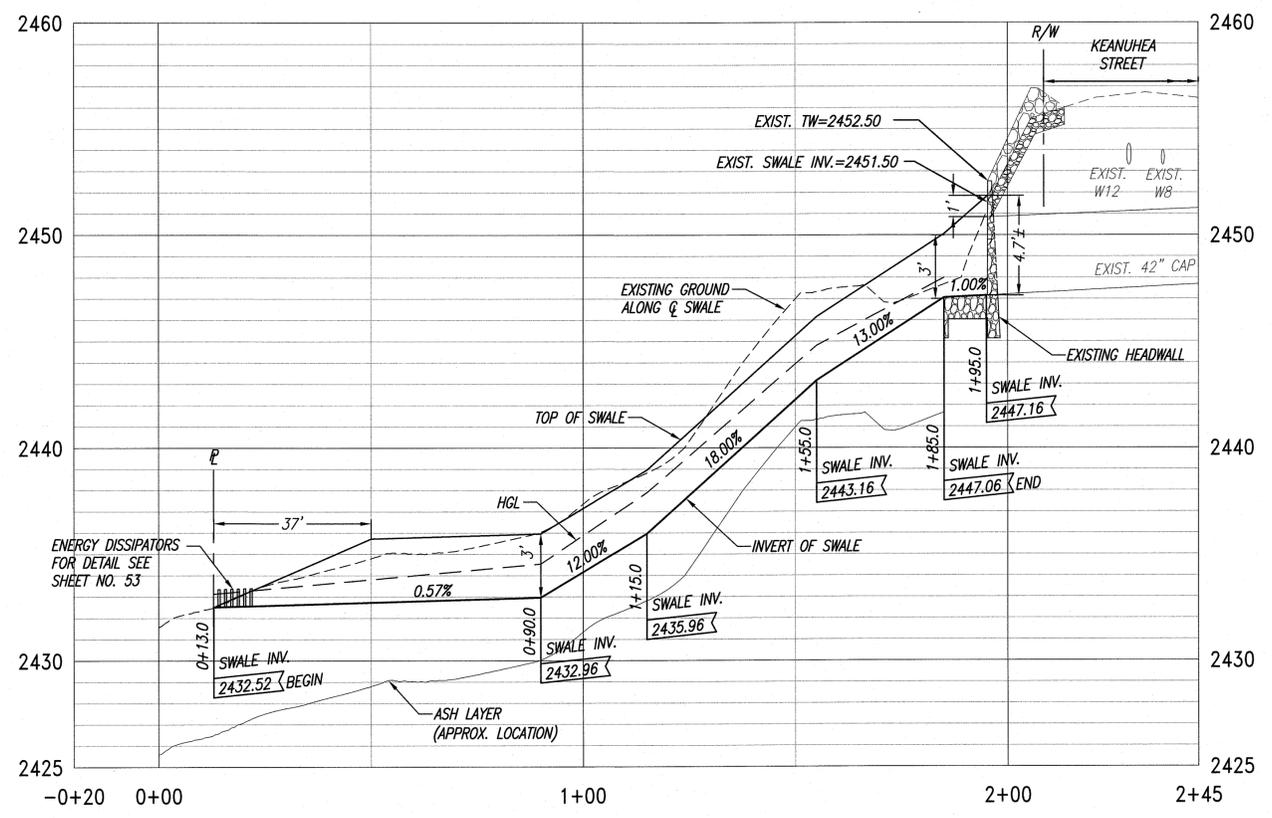
**CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A**  
KEOKEA & WAIOHULI, MAKAWAO, MAUI  
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074 AND (2) 2-2-34: 001 TO 016, 026 & 029

**PLAN AND PROFILE SWALE NO. 7 AND NO. 8**

DRAWN BY: KWNW ENGINEER: KWNW/MFC CHECKED BY: RYS

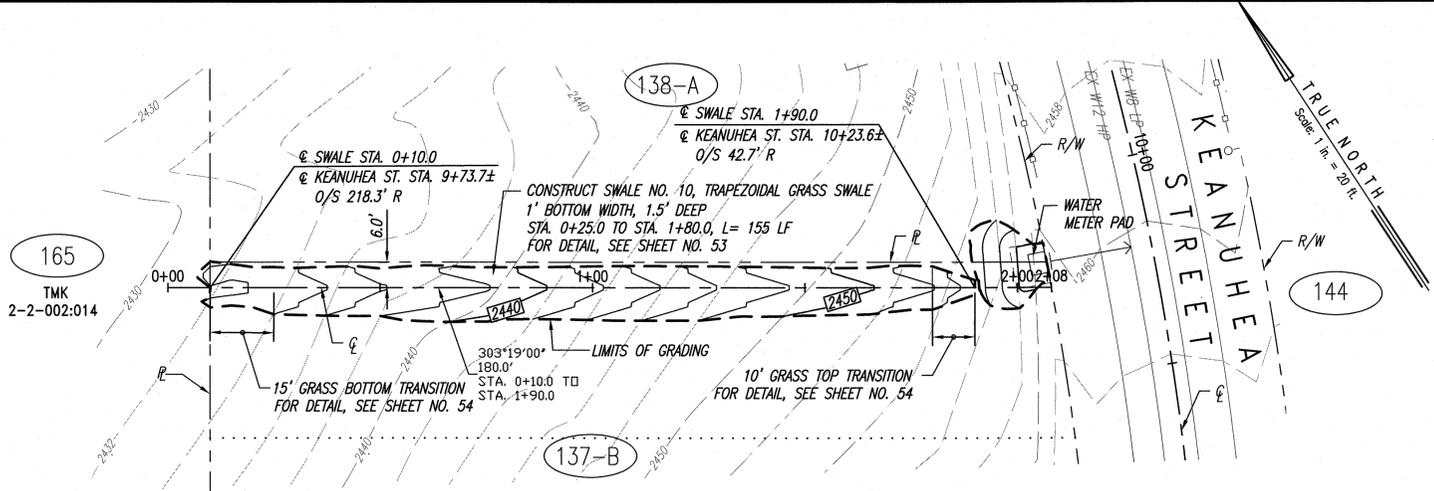


- LEGEND**
- LIMITS OF GRADING
  - - - EXISTING GROUND CONTOUR
  - FINISH GRADE CONTOUR
  - PROPERTY LINE
  - OLD PROPERTY LINE
  - LOT NUMBER
  - EXISTING LOT NUMBER
- TMK  
2-2-002:014

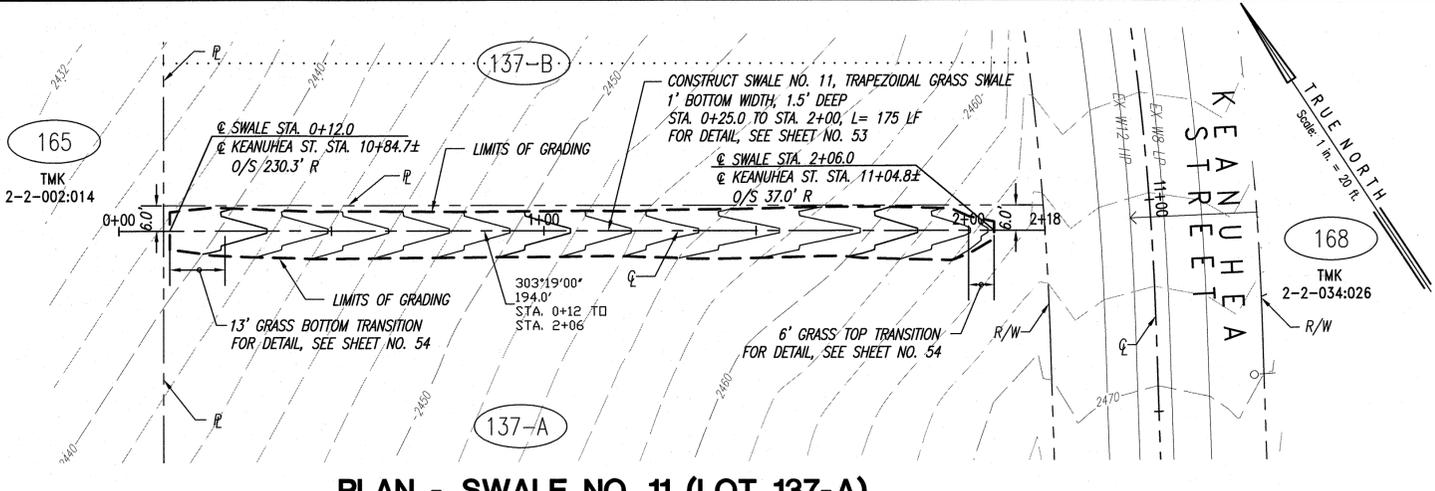


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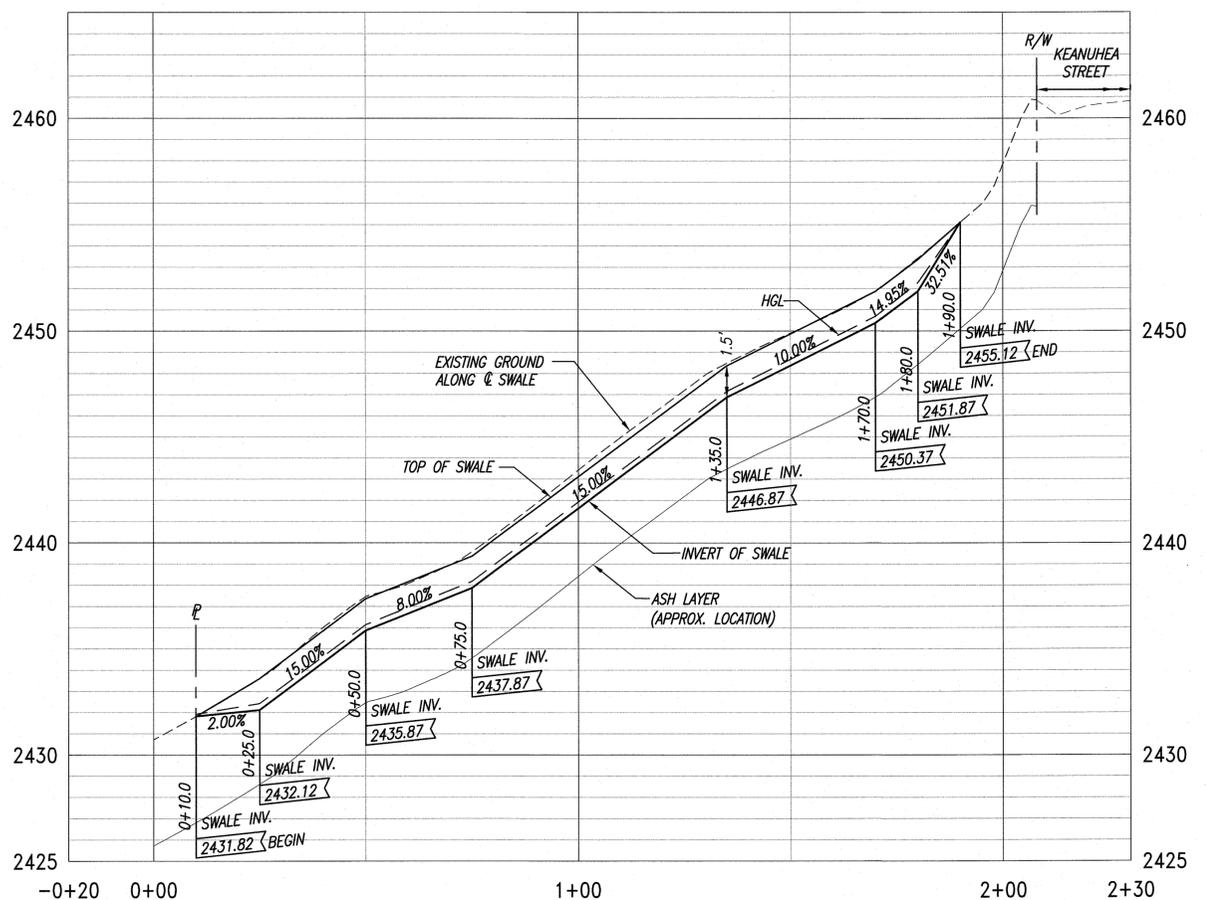
REVISION DATE	DESCRIPTION	MADE BY	APPROVED
<p><b>Community Planning and Engineering, Inc.</b>          Engineering Design   Construction Management   Infrastructure Planning          1288 Queen Emma Street, Third Floor   Honolulu, Hawaii</p> <p><b>CONSOLIDATION / RE-SUBDIVISION          KEOKEA-WAIOHULI DEVELOPMENT          PHASE 1A</b>          KEOKEA &amp; WAIOHULI, MAKAWAO, MAUI          OWNER &amp; DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS          TAX MAP KEYS: (2) 2-2-033: 021 TO 038 &amp; 058-074          AND (2) 2-2-34: 001 TO 016, 026 &amp; 029</p> <p><b>PLAN AND PROFILE          SWALE NO. 9</b></p>			
DRAWN BY: MFC	ENGINEER: KWN/MFC	CHECKED BY: RYS	



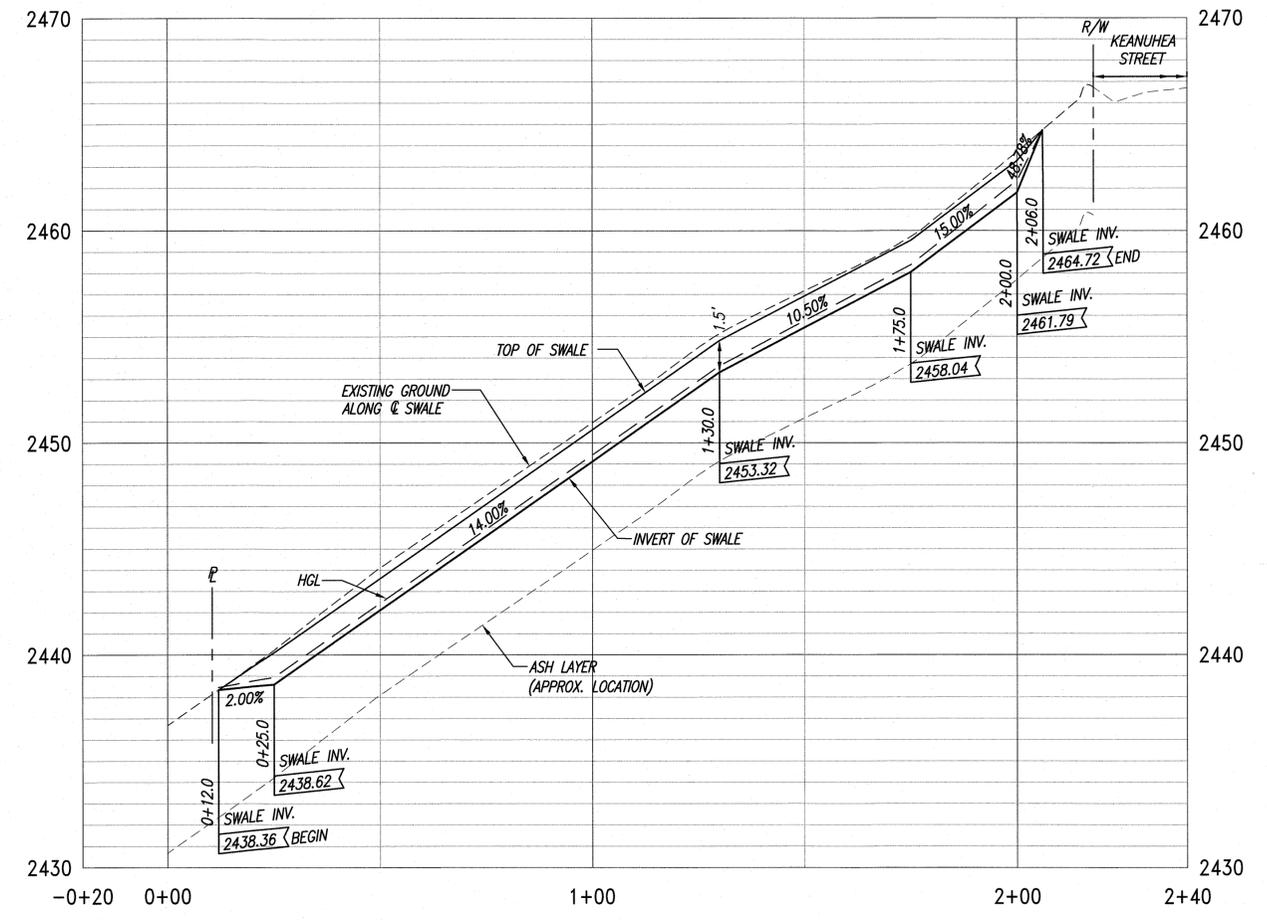
**PLAN - SWALE NO. 10 (LOT 137-B)**  
SCALE: 1" = 20'



**PLAN - SWALE NO. 11 (LOT 137-A)**  
SCALE: 1" = 20'

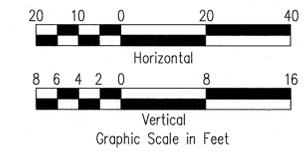
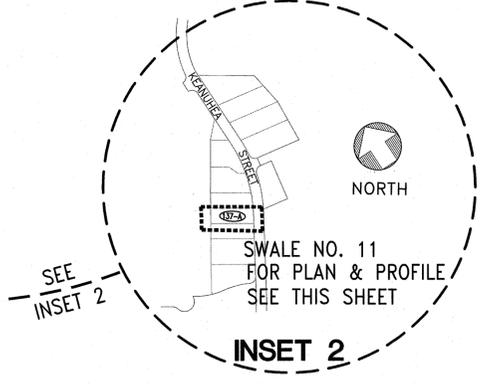
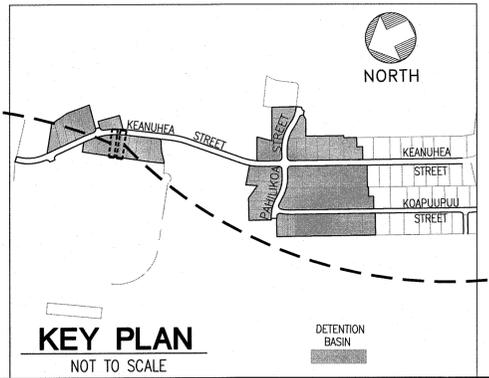
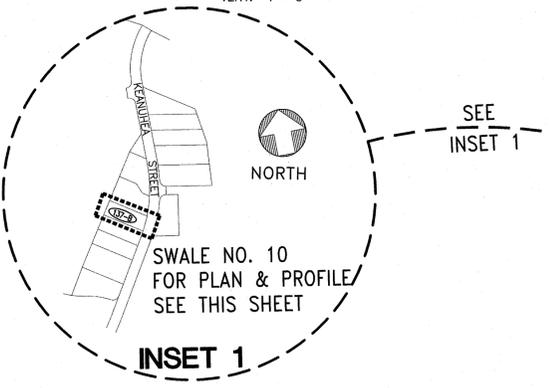


**PROFILE - SWALE NO. 10 (LOT 137-B)**  
SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'



**PROFILE - SWALE NO. 11 (LOT 137-A)**  
SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'

- LEGEND**
- LIMITS OF GRADING
  - - - - - EXISTING GROUND CONTOUR
  - 2450 — FINISH GRADE CONTOUR
  - PROPERTY LINE
  - OLD PROPERTY LINE
  - 140-A LOT NUMBER
  - 165 EXISTING LOT NUMBER
  - TMK 2-2-002:014



**RICHARD Y. SAND**  
LICENSED PROFESSIONAL ENGINEER  
No. 8955-C  
HAWAII, U.S.A.

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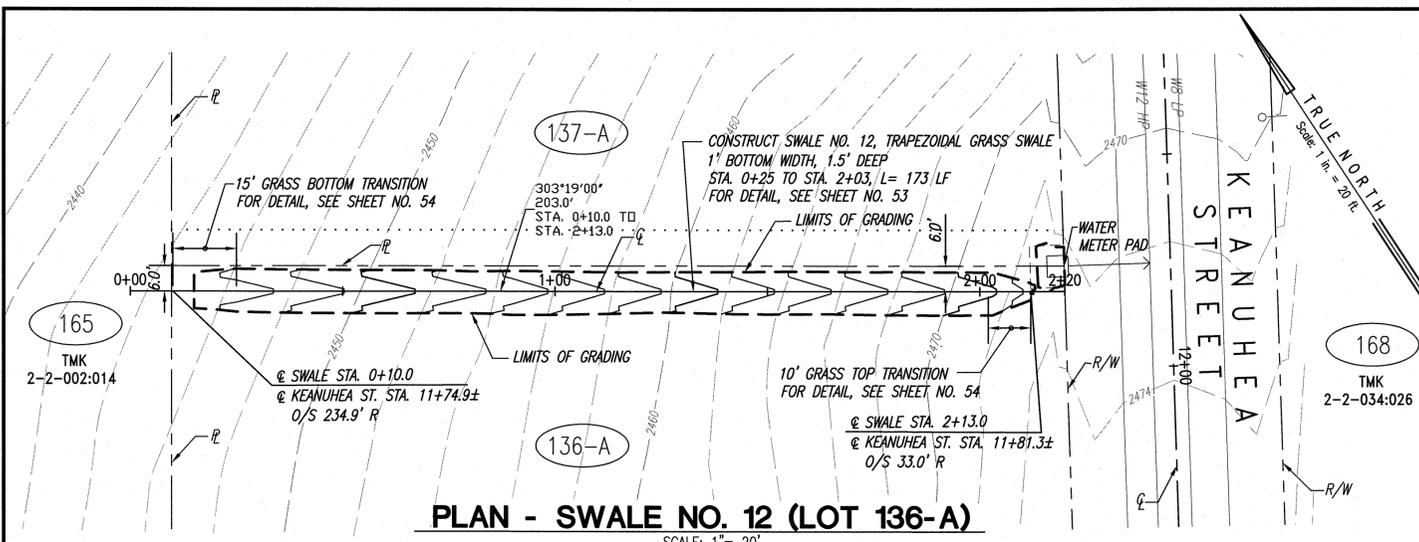
REVISION DATE	DESCRIPTION	MADE BY	APPROVED

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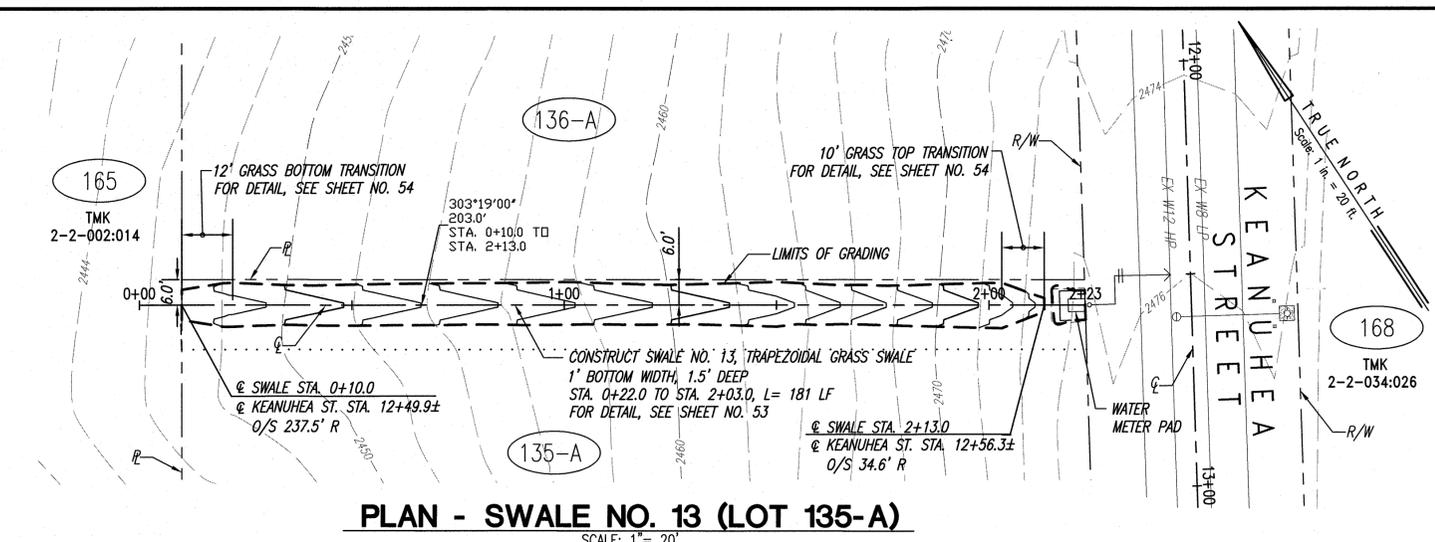
**CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A**  
KEOKEA & WAIOHULI, MAKAWAO, MAUI  
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074 AND (2) 2-2-34: 001 TO 016, 026 & 029

**PLAN AND PROFILE SWALE NO. 10 & SWALE NO. 11**

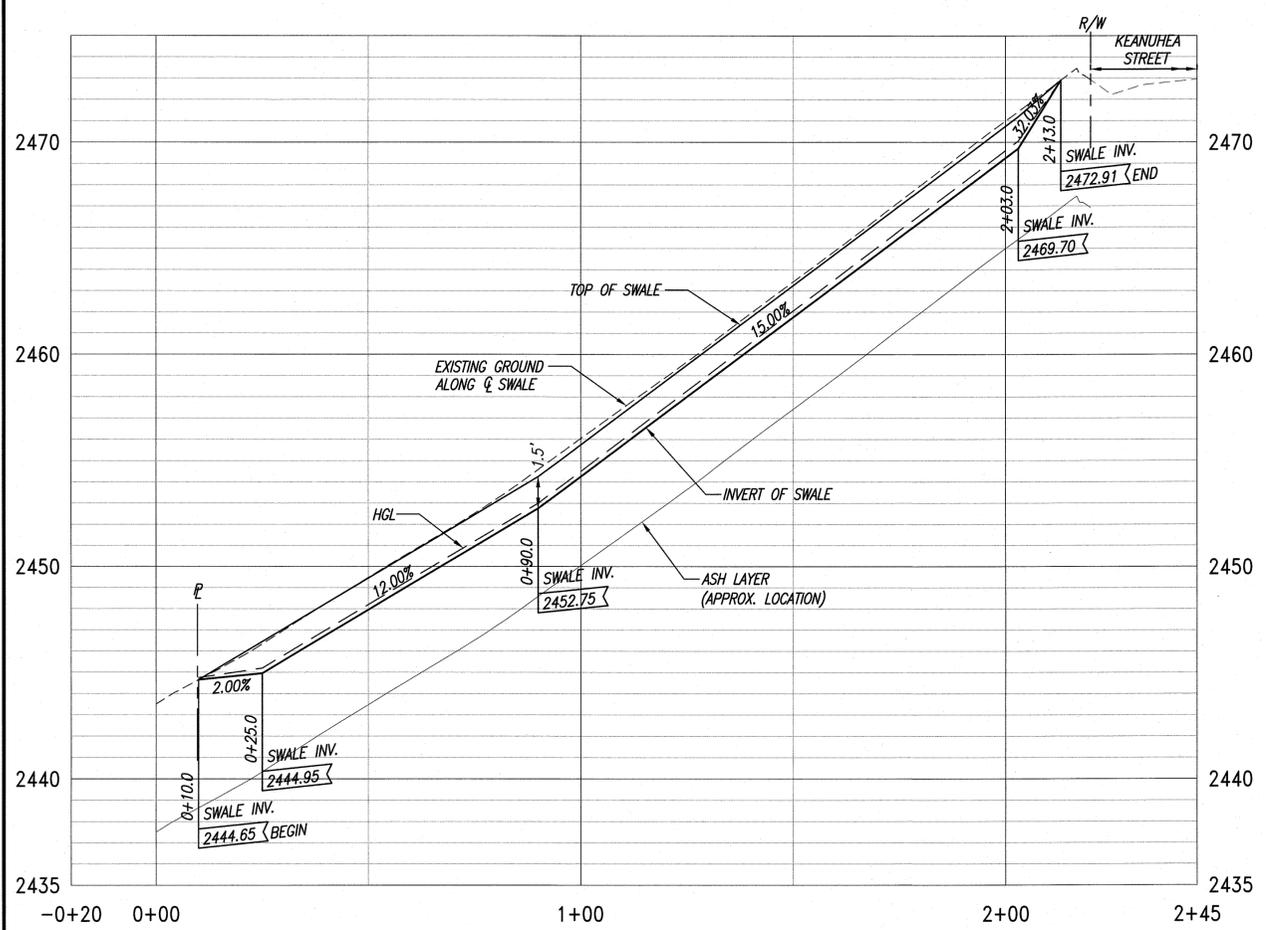
DRAWN BY: KWNW ENGINEER: KWNW/MFC CHECKED BY: RYS



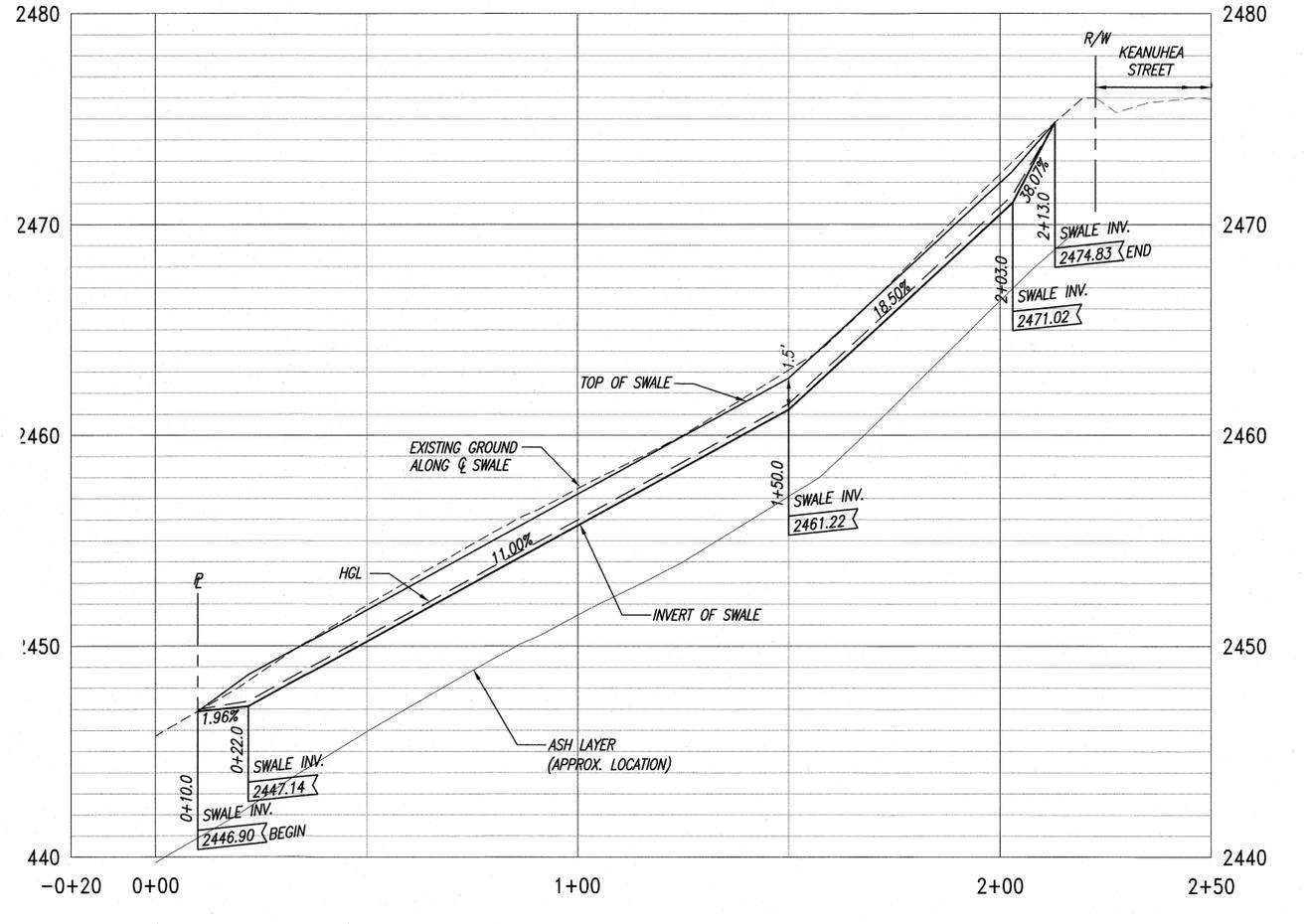
**PLAN - SWALE NO. 12 (LOT 136-A)**  
SCALE: 1" = 20'



**PLAN - SWALE NO. 13 (LOT 135-A)**  
SCALE: 1" = 20'

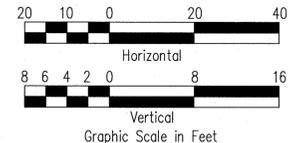
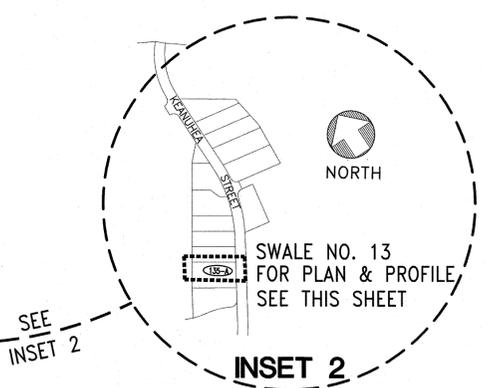
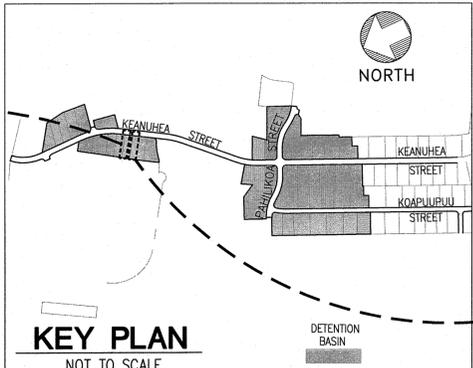
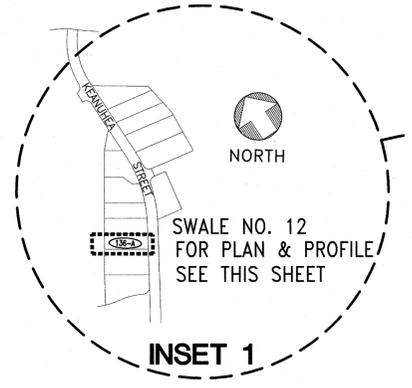


**PROFILE - SWALE NO. 12 (LOT 136-A)**  
SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'



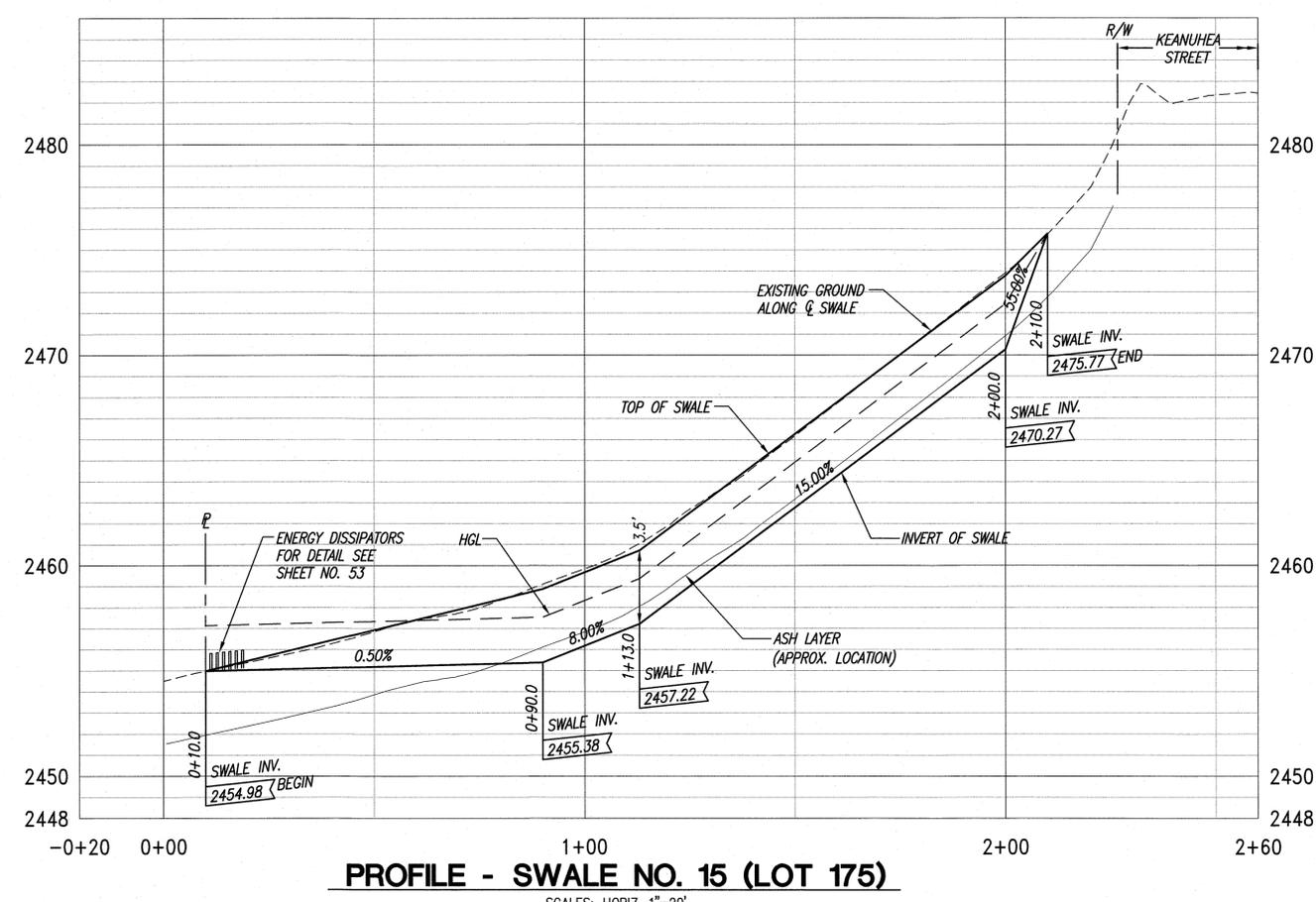
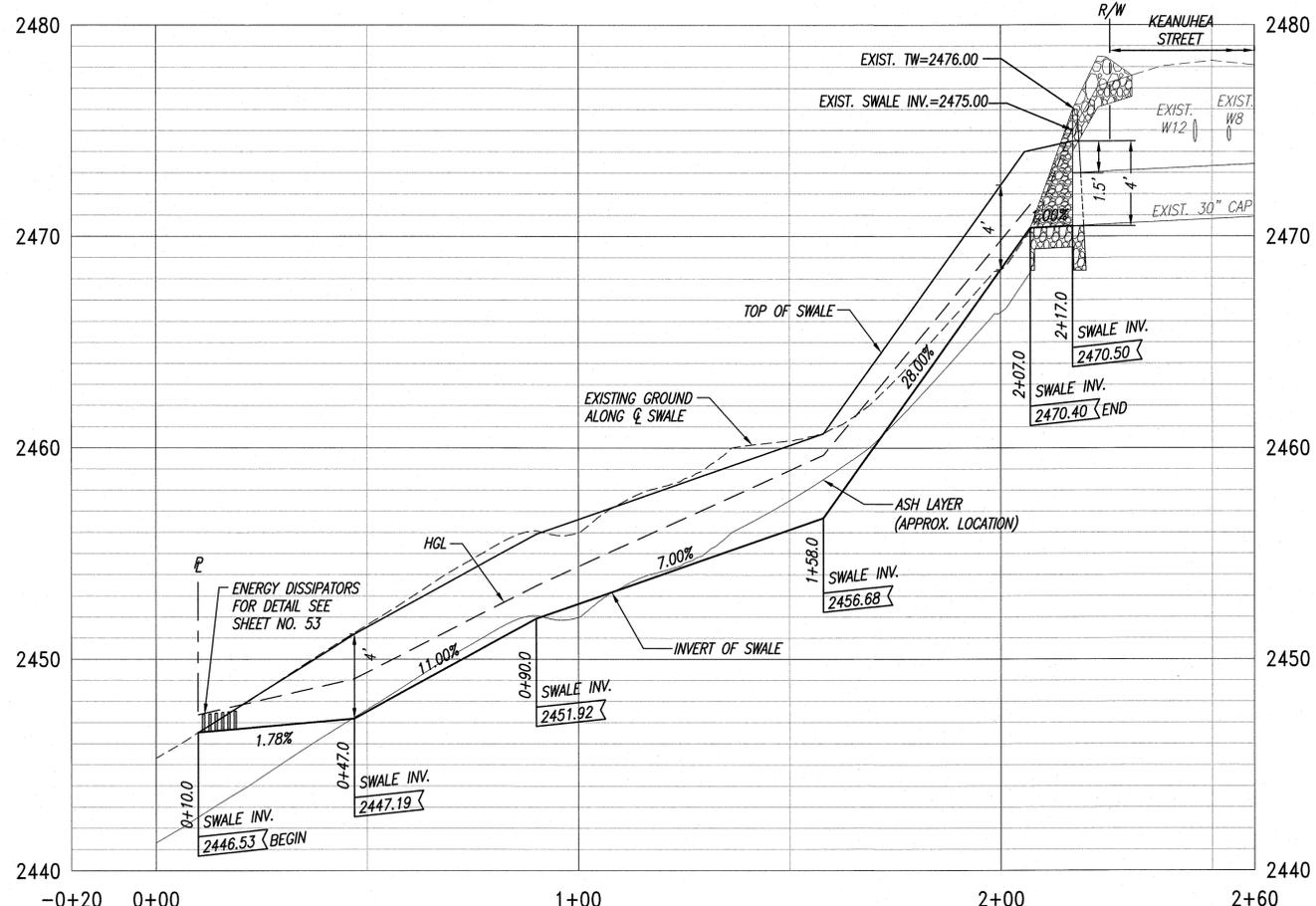
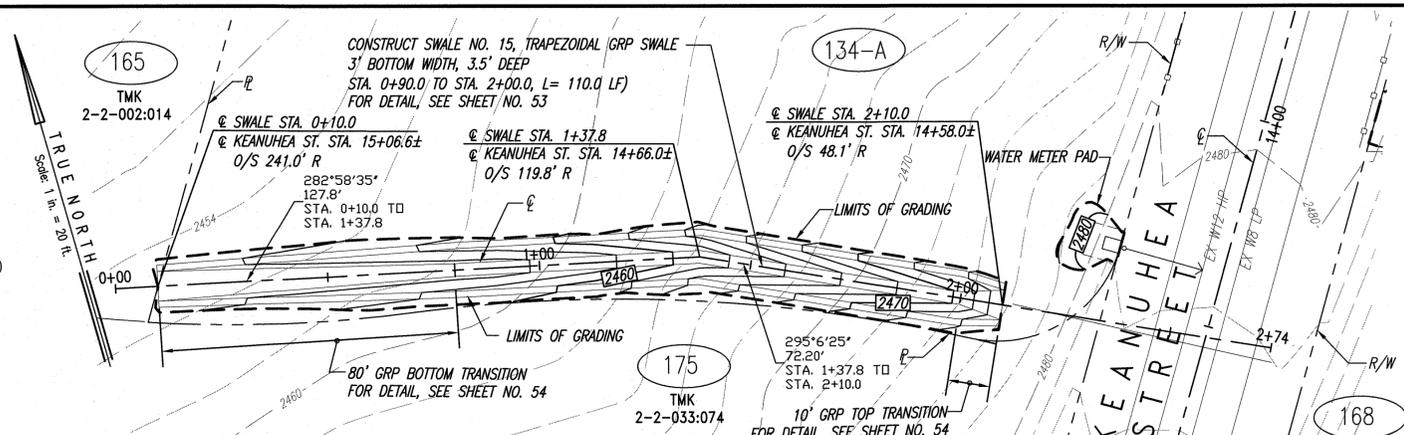
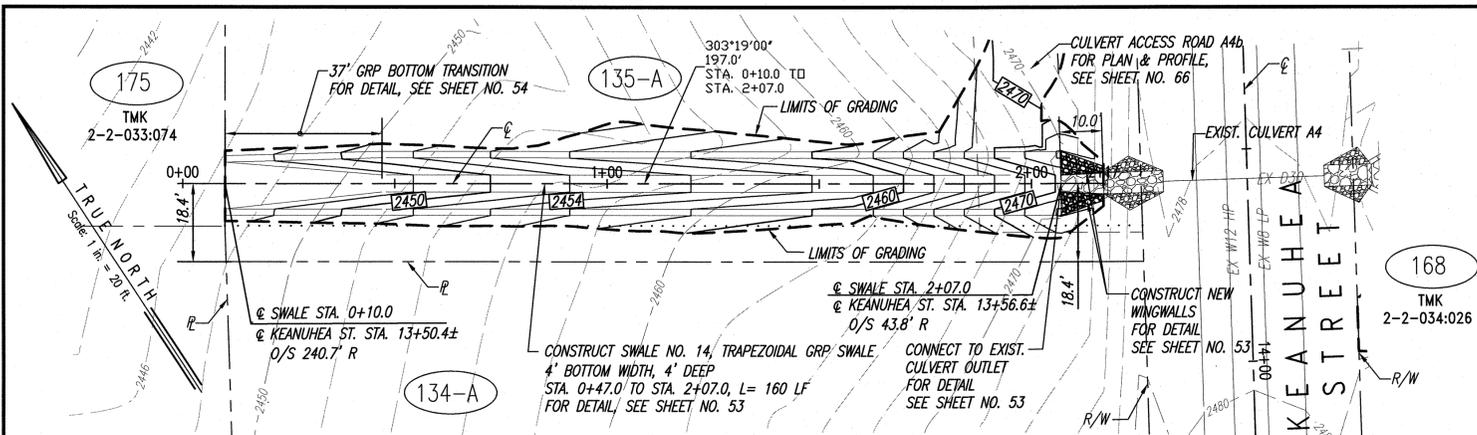
**PROFILE - SWALE NO. 13 (LOT 135-A)**  
SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'

- LEGEND**
- LIMITS OF GRADING
  - - - - - EXISTING GROUND CONTOUR
  - FINISH GRADE CONTOUR
  - PROPERTY LINE
  - OLD PROPERTY LINE
  - (140-A) LOT NUMBER
  - (165) EXISTING LOT NUMBER

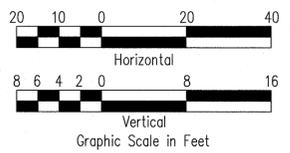
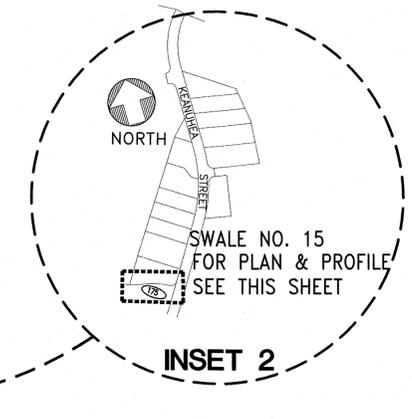
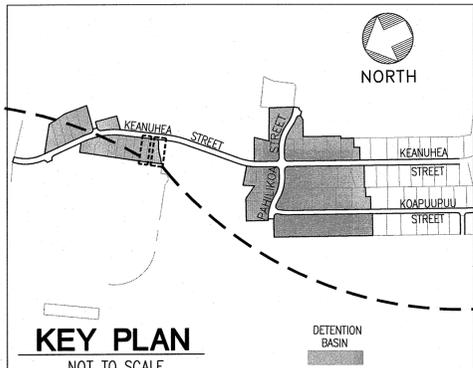
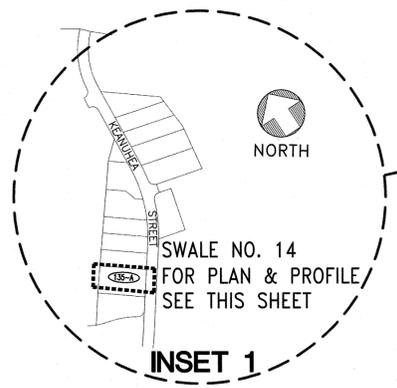


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REVISION DATE	DESCRIPTION	MADE BY	APPROVED
<b>Community Planning and Engineering, Inc.</b> Engineering Design   Construction Management   Infrastructure Planning 1286 Queen Emma Street, Third Floor, Honolulu, Hawaii			
<b>CONSOLIDATION / RE-SUBDIVISION          KEOKEA-WAIOHULI DEVELOPMENT          PHASE 1A</b> KEOKEA & WAIOHULI, MAKAWAO, MAUI OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074 AND (2) 2-2-34: 001 TO 016, 026 & 029			
<b>PLAN AND PROFILE          SWALE NO. 12          &amp; SWALE NO. 13</b>			
DRAWN BY: J50	ENGINEER: KRW/MFC	CHECKED BY: RYS	

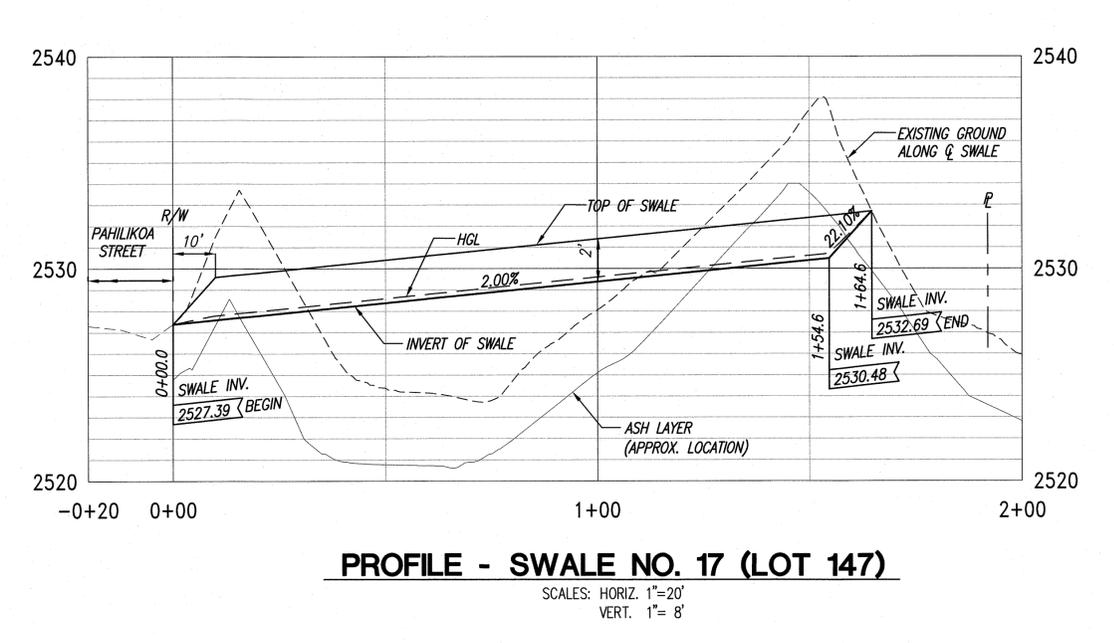
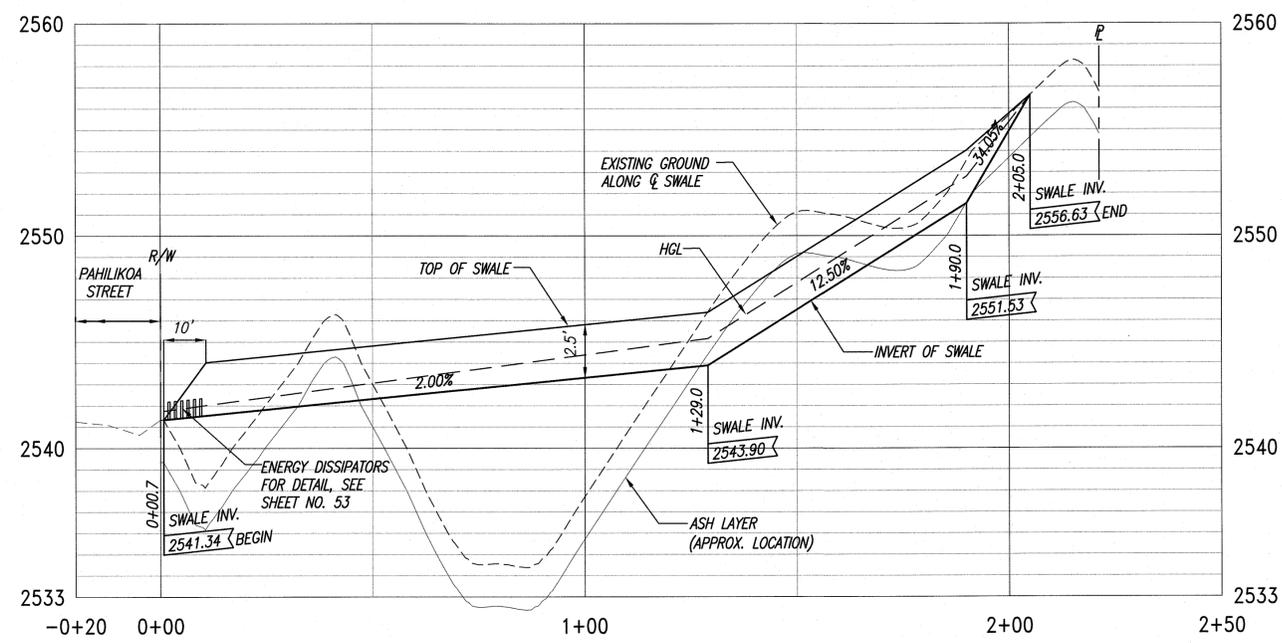
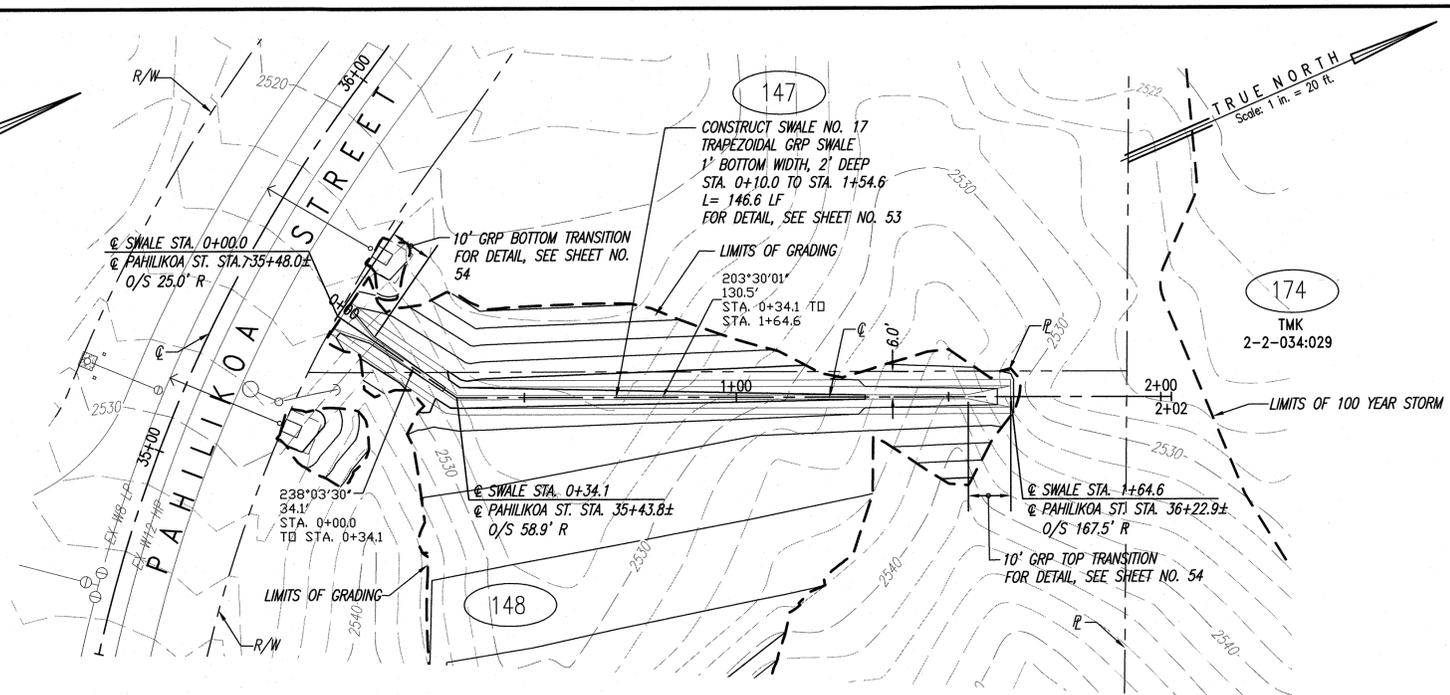
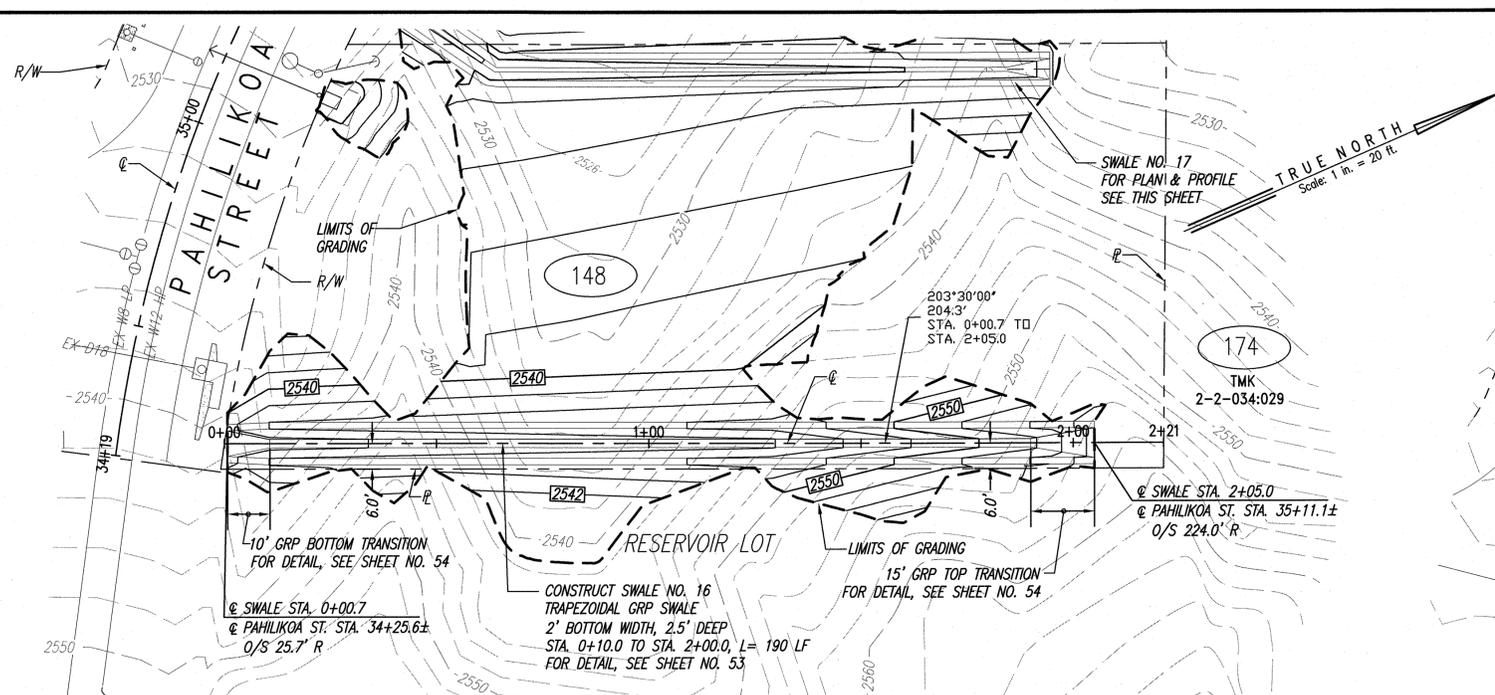


- LEGEND**
- LIMITS OF GRADING
  - - - - - EXISTING GROUND CONTOUR
  - 2450 — FINISH GRADE CONTOUR
  - — — — — PROPERTY LINE
  - ..... OLD PROPERTY LINE
  - 140-A LOT NUMBER
  - 165 EXISTING LOT NUMBER
  - TMK 2-2-002:014

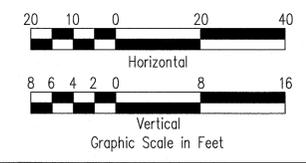
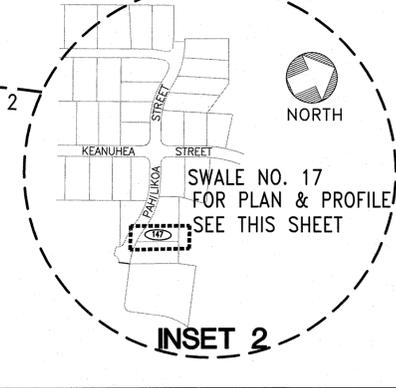
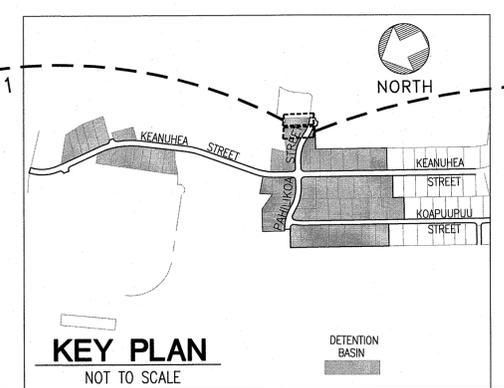
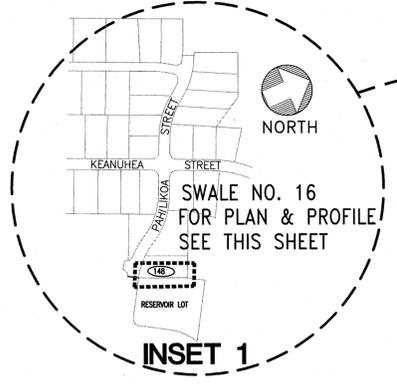


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<p>Community Planning and Engineering, Inc. Engineering Design   Construction Management   Infrastructure Planning 1286 Queen Emma Street, Third Floor Honolulu, Hawaii</p>			
<p><b>CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A</b></p> <p>KEOKEA &amp; WAIOHULI, MAKAWAO, MAUI OWNER &amp; DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS TAX MAP KEYS: (2) 2-2-033: 021 TO 038 &amp; 058-074 AND (2) 2-2-34: 001 TO 016, 026 &amp; 029</p>			
<p><b>PLAN AND PROFILE SWALE NO. 14 &amp; SWALE NO. 15</b></p>			
DRAWN BY: KMW	ENGINEER: KMW/MFC	CHECKED BY: RYS	



- LEGEND**
- LIMITS OF GRADING
  - - - - - EXISTING GROUND CONTOUR
  - 2450 FINISH GRADE CONTOUR
  - PROPERTY LINE
  - OLD PROPERTY LINE
  - 140-A LOT NUMBER
  - 165 EXISTING LOT NUMBER
  - TMK 2-2-002:014



RICHARD Y. SANDO  
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No. 8955-C  
HAWAII, U.S.A.

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REVISION DATE	DESCRIPTION	MADE BY	APPROVED

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1288 Queen Emma Street, Third Floor Honolulu, Hawaii

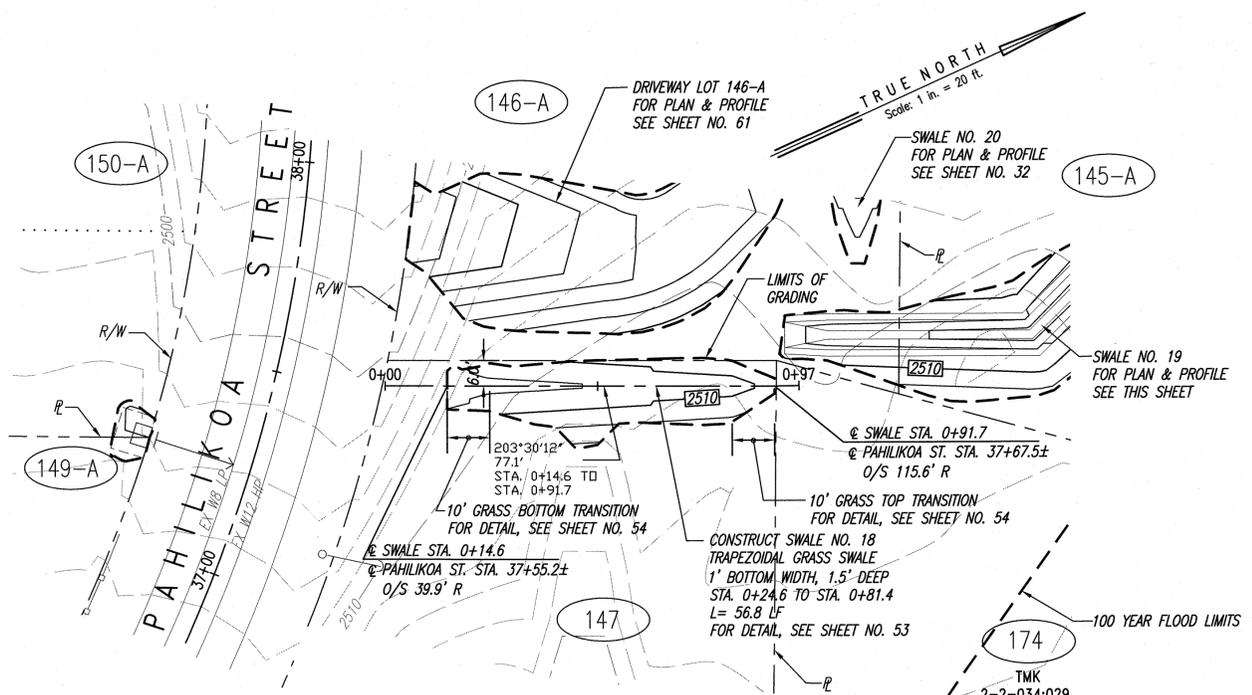
**CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A**  
KEOKEA & WAIOHULI, MAKAWAO, MAUI  
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074 AND (2) 2-2-34: 001 TO 016, 026 & 029

**PLAN AND PROFILE SWALE NO. 16 & SWALE NO. 17**

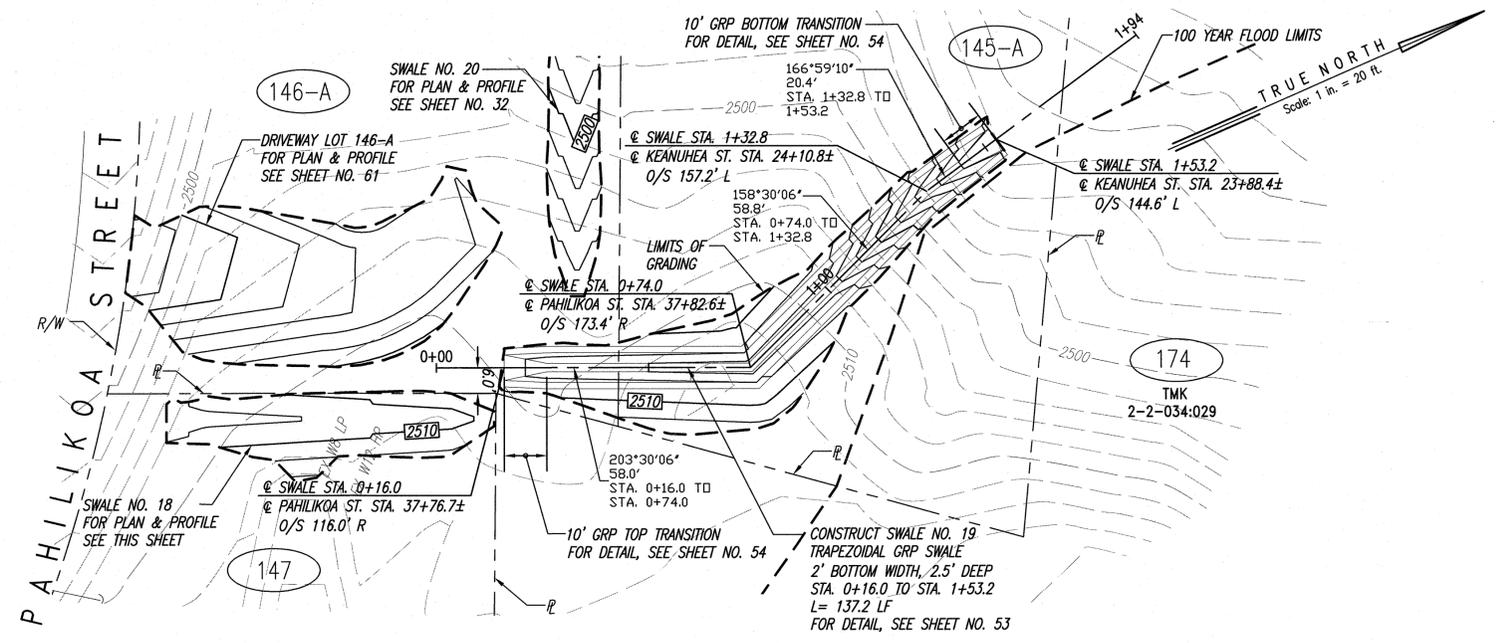
DRAWN BY: JSO ENGINEER: KWNW/MFC CHECKED BY: RYS

FILE \_\_\_\_\_ POCKET \_\_\_\_\_ FOLDER \_\_\_\_\_ NO. \_\_\_\_\_

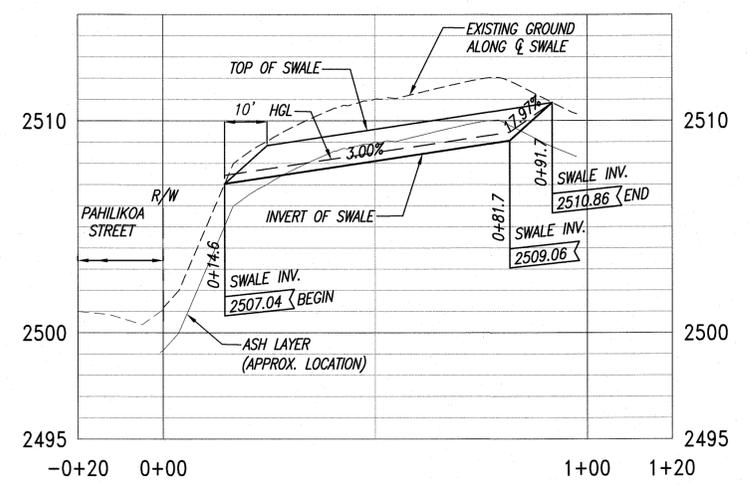
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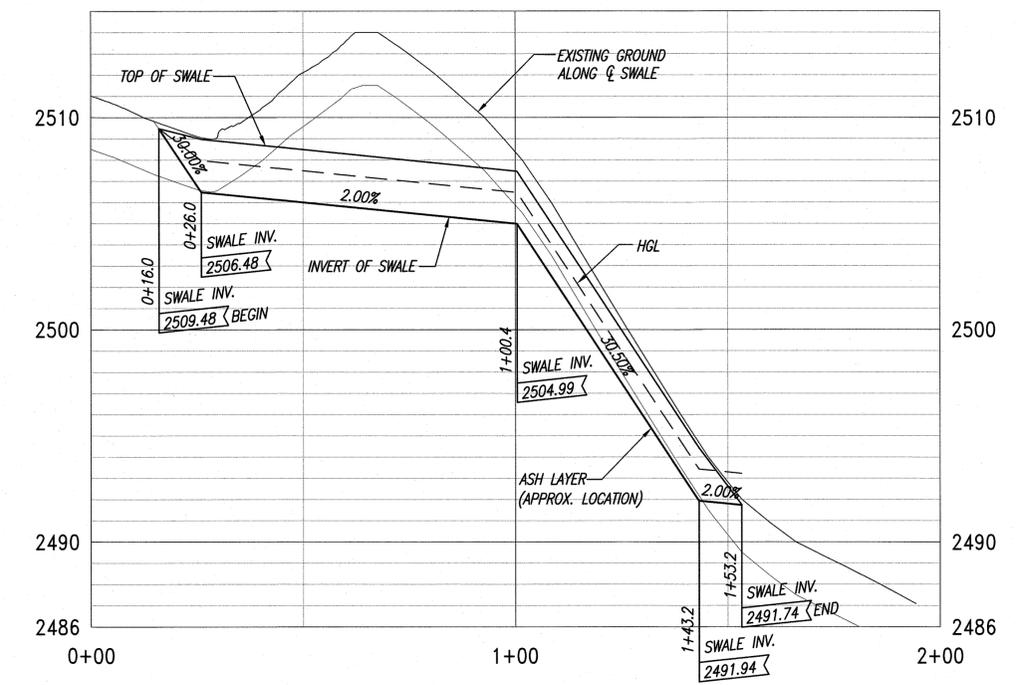
**PLAN - SWALE NO. 18 (LOT 147)**  
SCALE: 1" = 20'



**PLAN - SWALE NO. 19 (LOT 145-A AND LOT 146-A)**  
SCALE: 1" = 20'

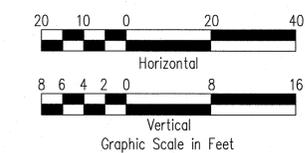
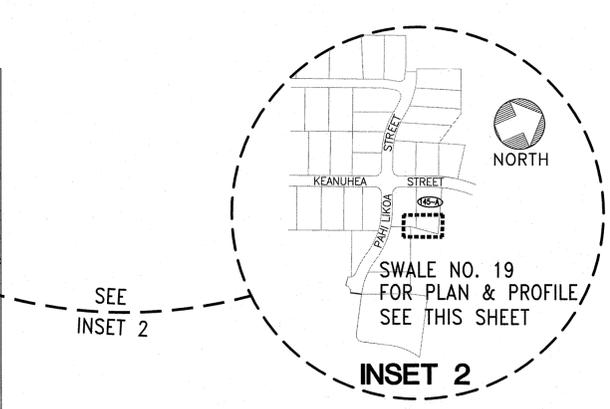
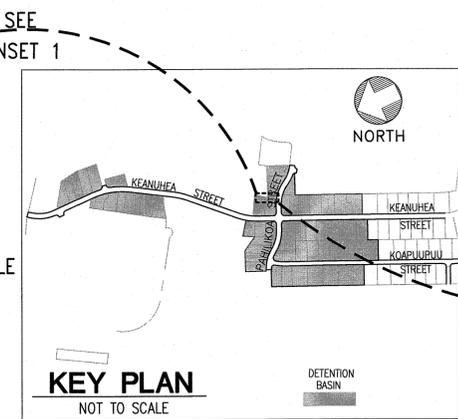
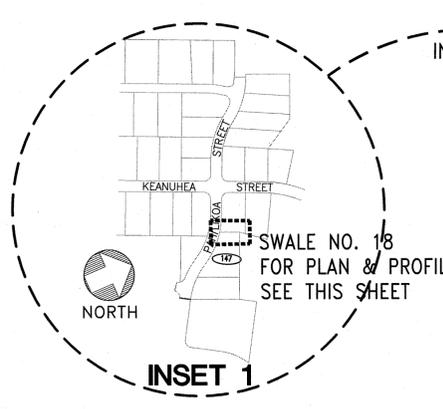


**PROFILE - SWALE NO. 18 (LOT 147)**  
SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'



**PROFILE - SWALE NO. 19 (LOT 145-A AND LOT 146-A)**  
SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'

- LEGEND**
- - - LIMITS OF GRADING
  - - - 2500 EXISTING GROUND CONTOUR
  - - - 2450 FINISH GRADE CONTOUR
  - PROPERTY LINE
  - OLD PROPERTY LINE
  - (140-A) LOT NUMBER
  - (165) EXISTING LOT NUMBER
  - TMK 2-2-002:014



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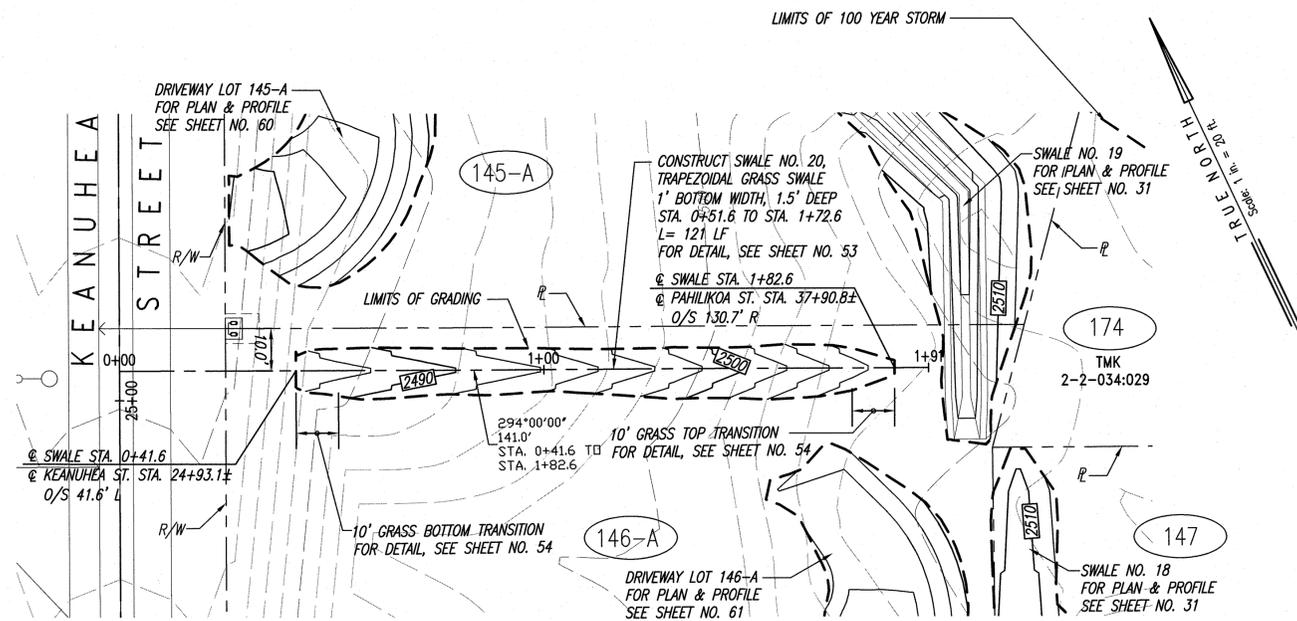
REVISION DATE	DESCRIPTION	MADE BY	APPROVED

**Community Planning and Engineering, Inc.**  
Engineering Design | Construction Management | Infrastructure Planning  
1286 Queen Emma Street, Third Floor Honolulu, Hawaii

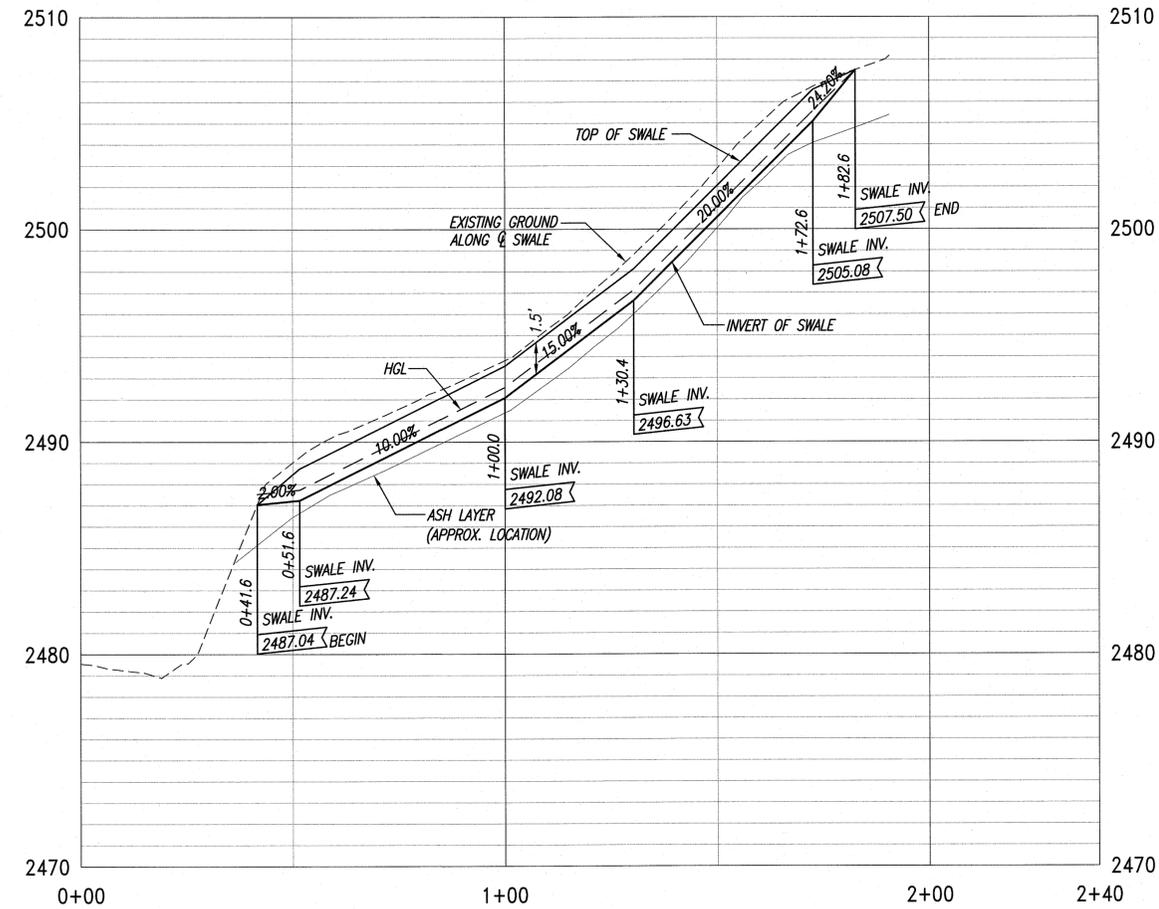
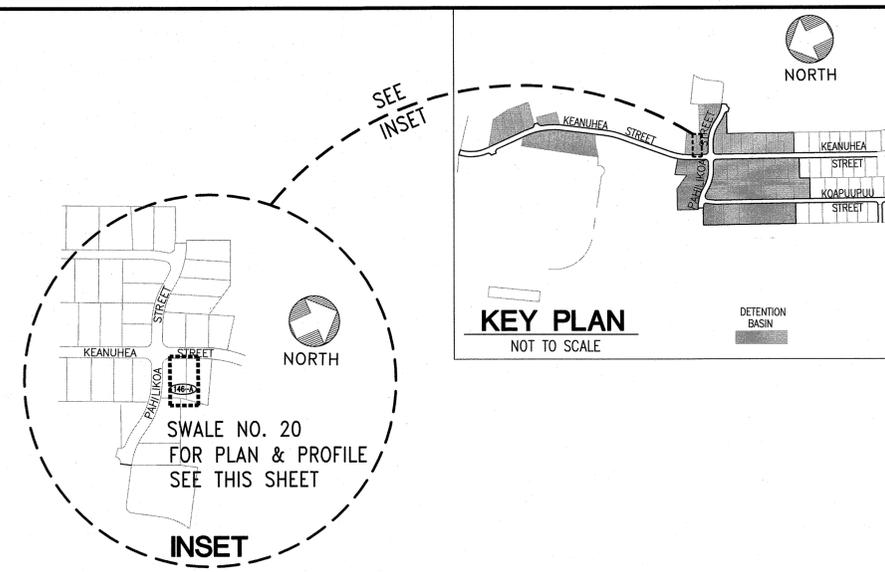
**CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A**  
KEOKEA & WAIOHULI, MAKAWAO, MAUI  
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074 AND (2) 2-2-34: 001 TO 016, 026 & 029

**PLAN AND PROFILE SWALE NO. 18 & SWALE NO. 19**

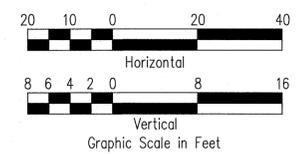
DRAWN BY: KWNW ENGINEER: KWNW/MFC CHECKED BY: RYS



**PLAN - SWALE NO. 20 (LOT 146-A)**  
SCALE: 1" = 20'



**PROFILE - SWALE NO. 20 (LOT 146-A)**  
SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'



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REVISION DATE	DESCRIPTION	MADE BY	APPROVED

**Community Planning and Engineering, Inc.**  
Engineering Design | Construction Management | Infrastructure Planning  
1226 Queen Emma Street, Third Floor Honolulu, Hawaii

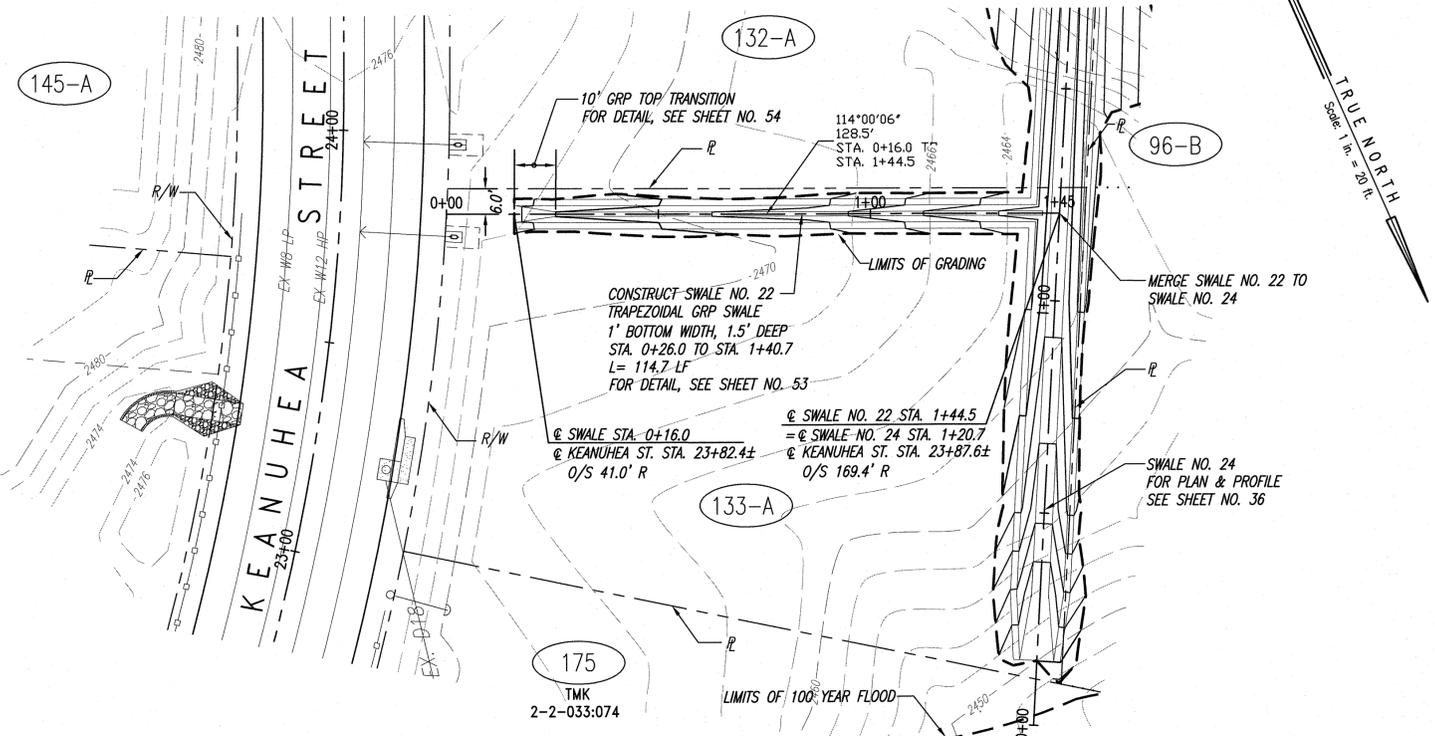
**CONSOLIDATION / RE-SUBDIVISION  
KEOKEA-WAIOHULI DEVELOPMENT  
PHASE 1A**  
KEOKEA & WAIOHULI, MAKAWAO, MAUI  
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074  
AND (2) 2-2-34: 001 TO 016, 026 & 029

**PLAN AND PROFILE  
SWALE NO. 20**

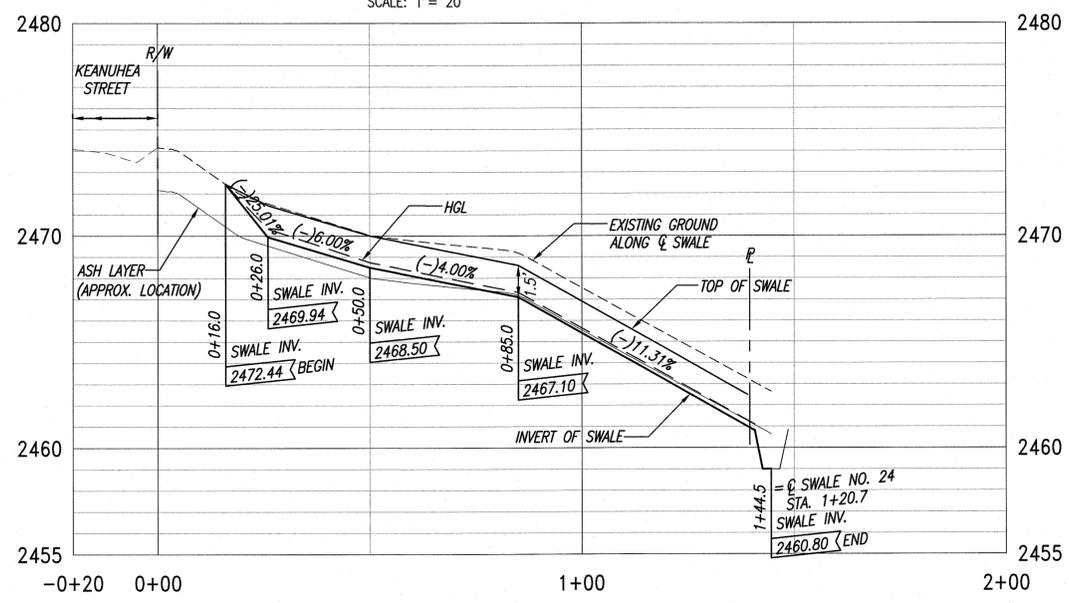
DRAWN BY: KWNW	ENGINEER: KWNW/MFC	CHECKED BY: RYS
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FILE	POCKET	FOLDER	N/A
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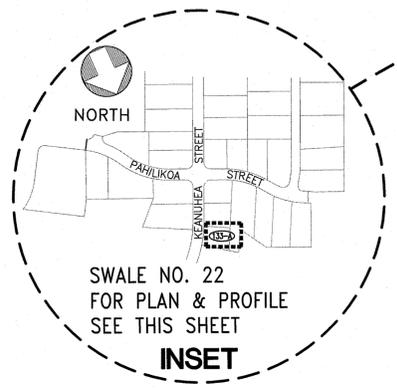
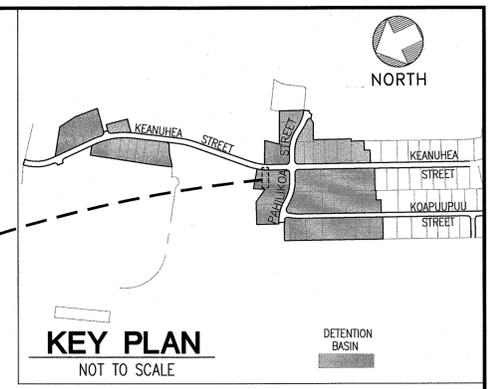




**PLAN - SWALE NO. 22 (LOT 133-A)**  
SCALE: 1" = 20'



**PROFILE - SWALE NO. 22 (LOT 133-A)**  
SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'



- LEGEND**
- LIMITS OF GRADING
  - - - - - EXISTING GROUND CONTOUR
  - 2450 — FINISH GRADE CONTOUR
  - 2450 — PROPERTY LINE
  - ..... OLD PROPERTY LINE
  - (140-A) LOT NUMBER
  - (165) EXISTING LOT NUMBER
  - TMK 2-2-002:014

REVISION DATE	DESCRIPTION	MADE BY	APPROVED

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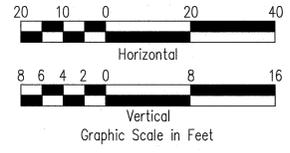
**CONSOLIDATION / RE-SUBDIVISION  
 KEOKEA-WAIOHULI DEVELOPMENT  
 PHASE 1A**  
 KEOKEA & WAIOHULI, MAKAWAO, MAUI  
 OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
 TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074  
 AND (2) 2-2-34: 001 TO 016, 026 & 029

**PLAN AND PROFILE  
 SWALE NO. 22**

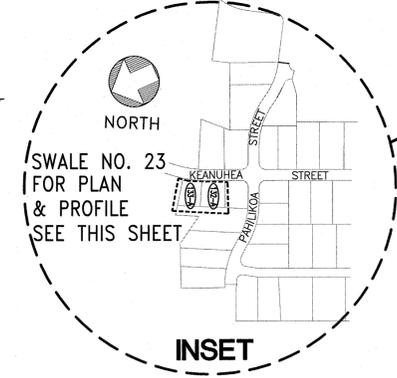
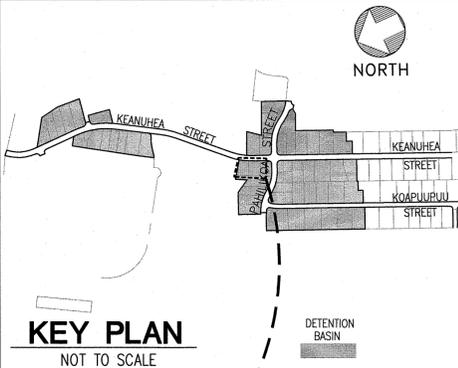
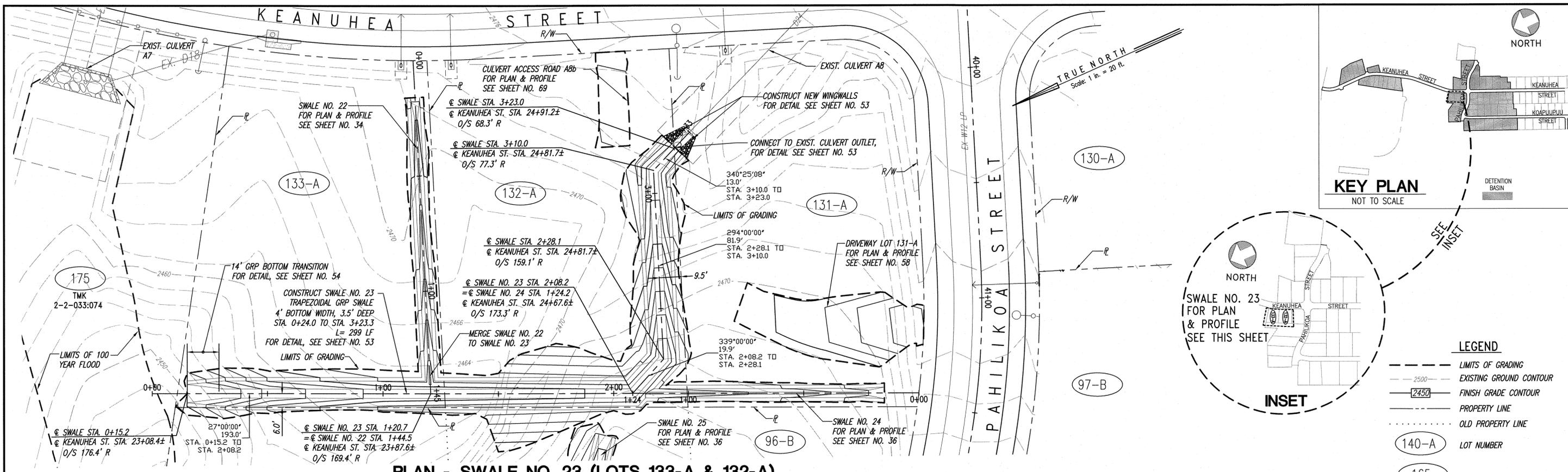
DRAWN BY: KWNW ENGINEER: KWNW/MFC CHECKED BY: RYS



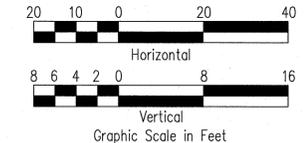
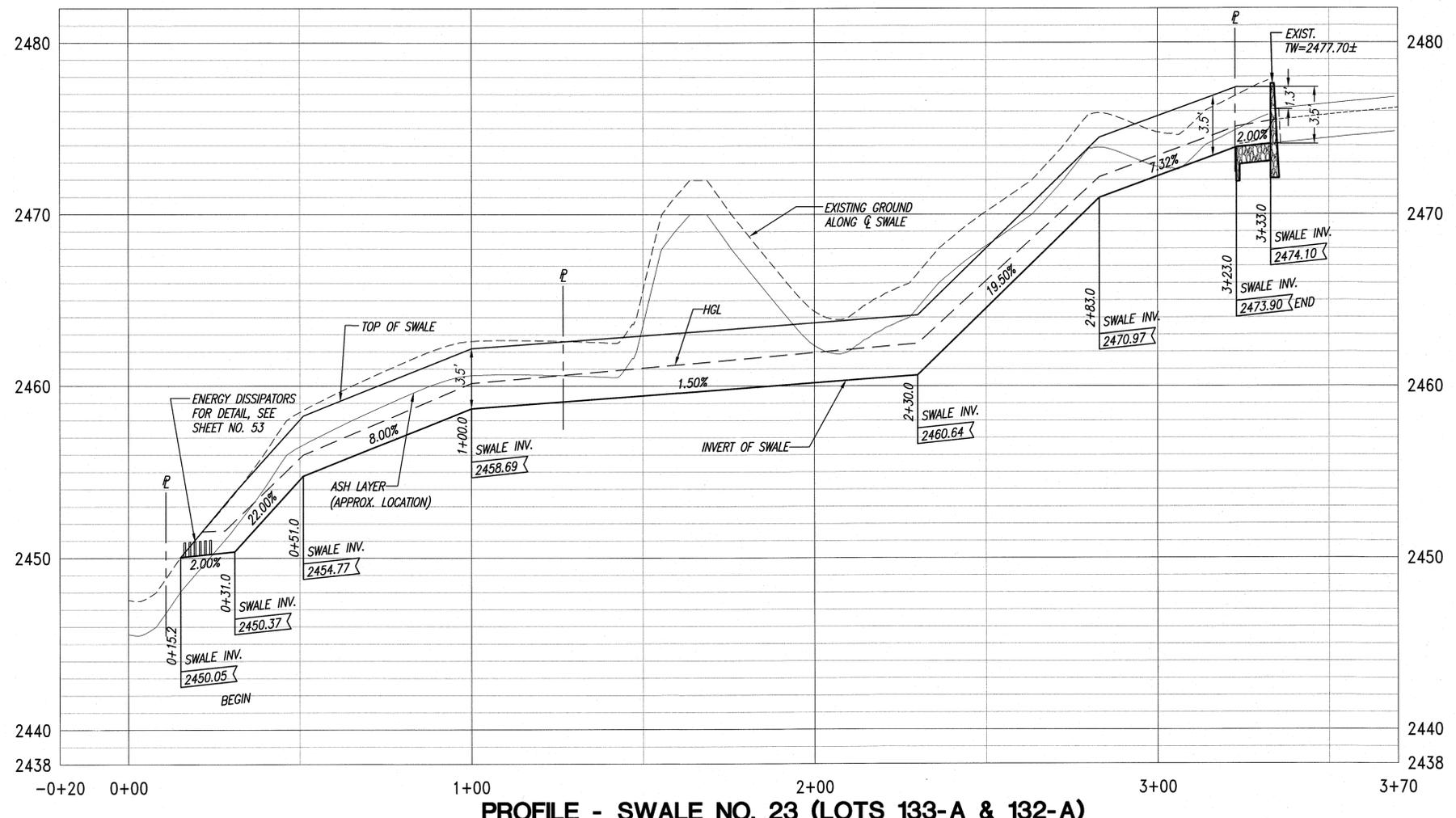
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. LICENSE EXPIRATION DATE: 04/30/16



P:\Land Projects\DHHL Keokea Ph. 1, 2 & 4\DWG\Increment 1\Current\34-36 P&P Swale 22-26.dwg, 11/14/2014 3:29:53 PM, 1:1



- LEGEND**
- LIMITS OF GRADING
  - - - 2500 EXISTING GROUND CONTOUR
  - 2450 FINISH GRADE CONTOUR
  - PROPERTY LINE
  - OLD PROPERTY LINE
  - 140-A LOT NUMBER
  - 165 EXISTING LOT NUMBER
  - TMK 2-2-002:014



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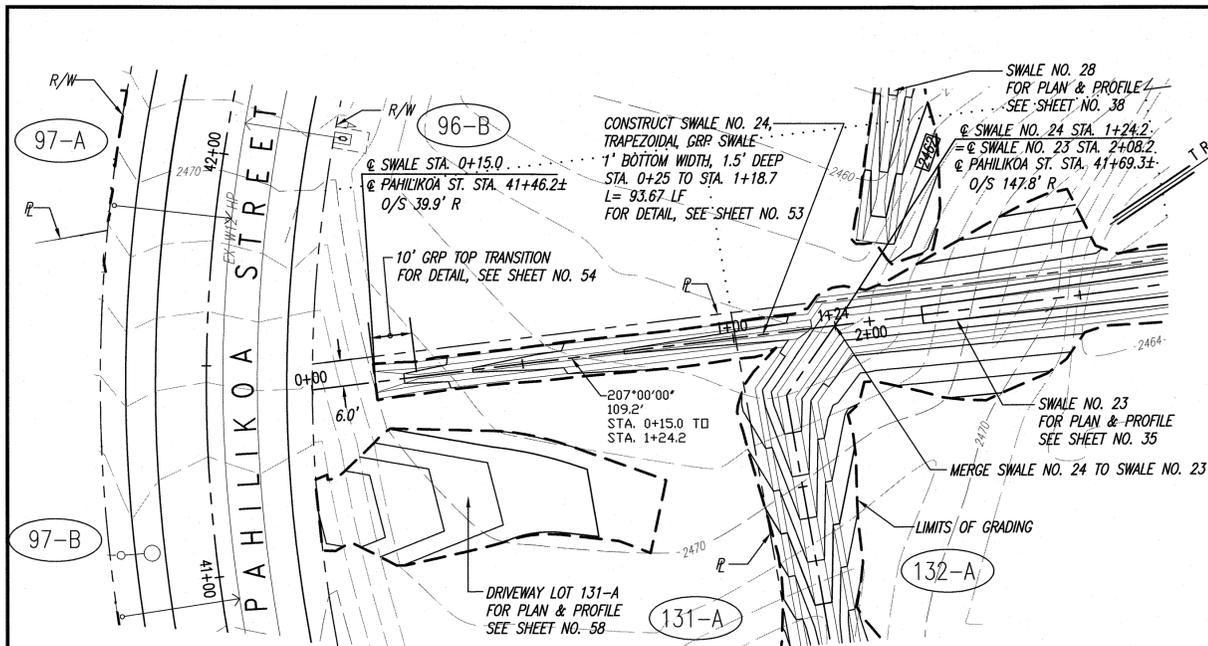
REVISION DATE	DESCRIPTION	MADE BY	APPROVED

**Community Planning and Engineering, Inc.**  
 Engineering Design | Construction Management | Infrastructure Planning  
 1286 Queen Emma Street, Third Floor Honolulu, Hawaii

**CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A**  
 KEOKEA & WAIOHULI, MAKAWAO, MAUI  
 OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
 TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074 AND (2) 2-2-34: 001 TO 016, 026 & 029

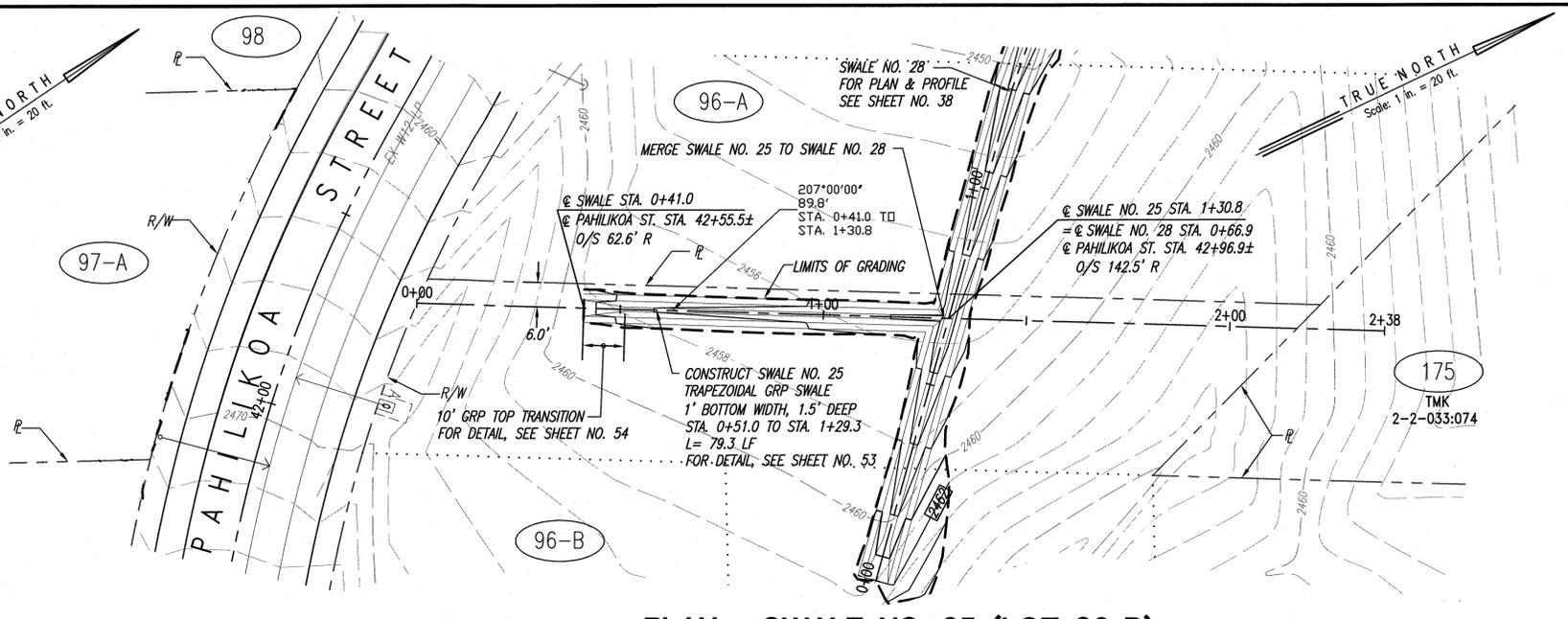
**PLAN AND PROFILE SWALE NO. 23**

DRAWN BY: KWNW ENGINEER: KWNW/MFC CHECKED BY: RYS



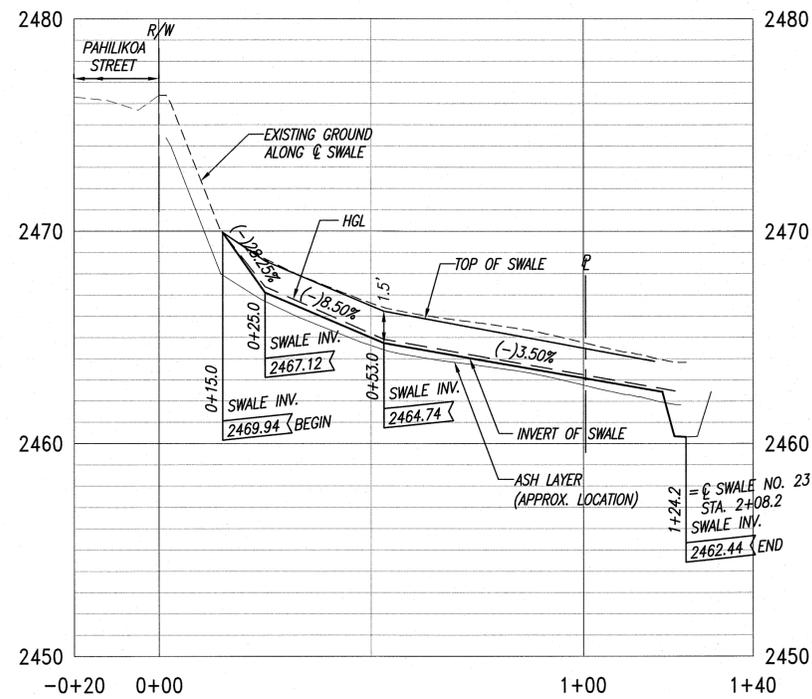
**PLAN - SWALE NO. 24 (LOTS 131-A & 132-A)**

SCALE: 1" = 20'



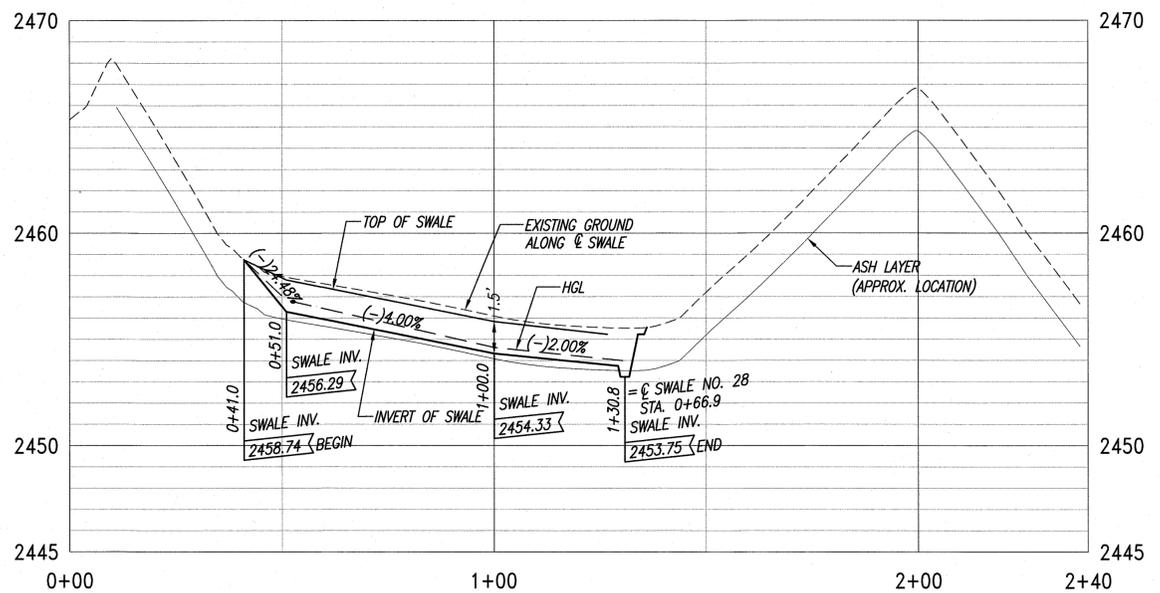
**PLAN - SWALE NO. 25 (LOT 96-B)**

SCALE: 1" = 20'



**PROFILE - SWALE NO. 24 (LOTS 131-A & 132-A)**

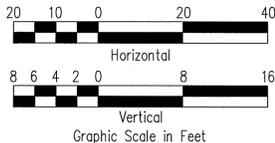
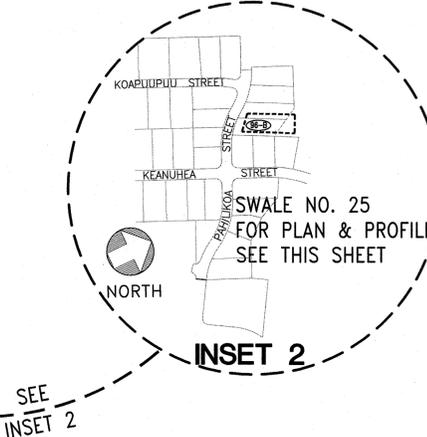
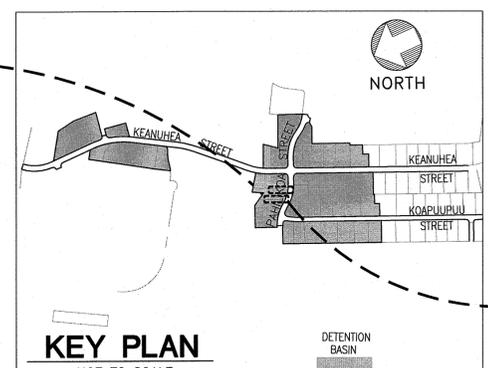
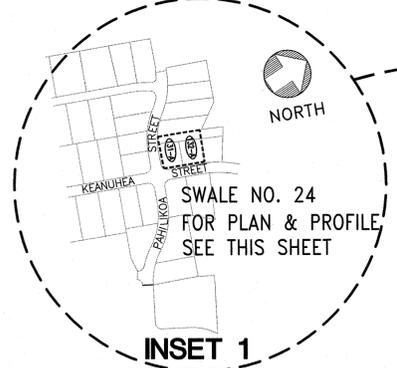
SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'



**PROFILE - SWALE NO. 25 (LOT 96-B)**

SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'

- LEGEND**
- LIMITS OF GRADING
  - - - - - 2500 --- EXISTING GROUND CONTOUR
  - 2450 — FINISH GRADE CONTOUR
  - — — — — PROPERTY LINE
  - ..... OLD PROPERTY LINE
  - (140-A) LOT NUMBER
  - (165) EXISTING LOT NUMBER
  - TMK 2-2-002:014



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REVISION DATE	DESCRIPTION	MADE BY	APPROVED

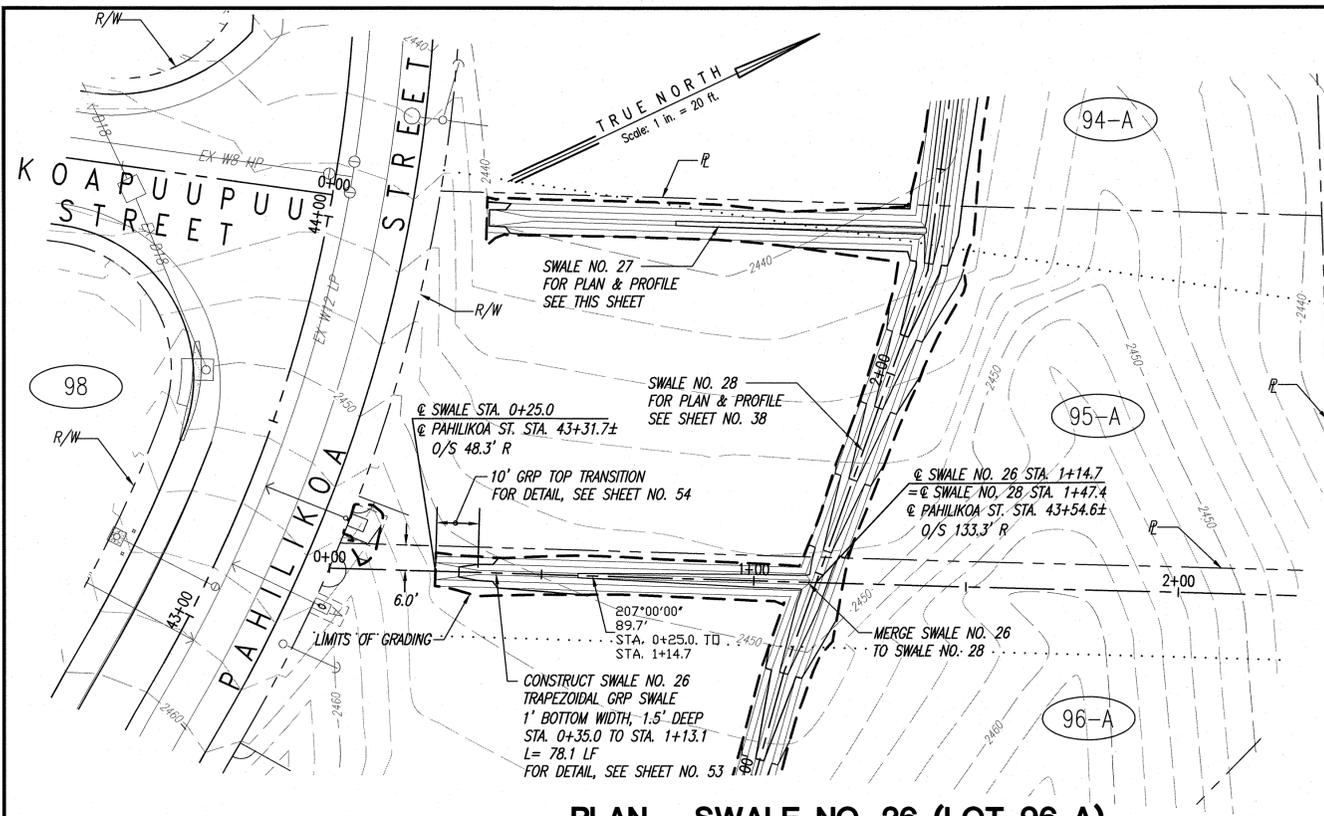
**Community Planning and Engineering, Inc.**  
 Engineering Design | Construction Management | Infrastructure Planning  
 2288 Queen Emma Street, Third Floor Honolulu, Hawaii

**CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A**  
 KEOKEA & WAIOHULI, MAKAWAO, MAUI  
 OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
 TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074 AND (2) 2-2-34: 001 TO 016, 026 & 029

**PLAN AND PROFILE SWALE NO. 24 AND SWALE NO. 25**

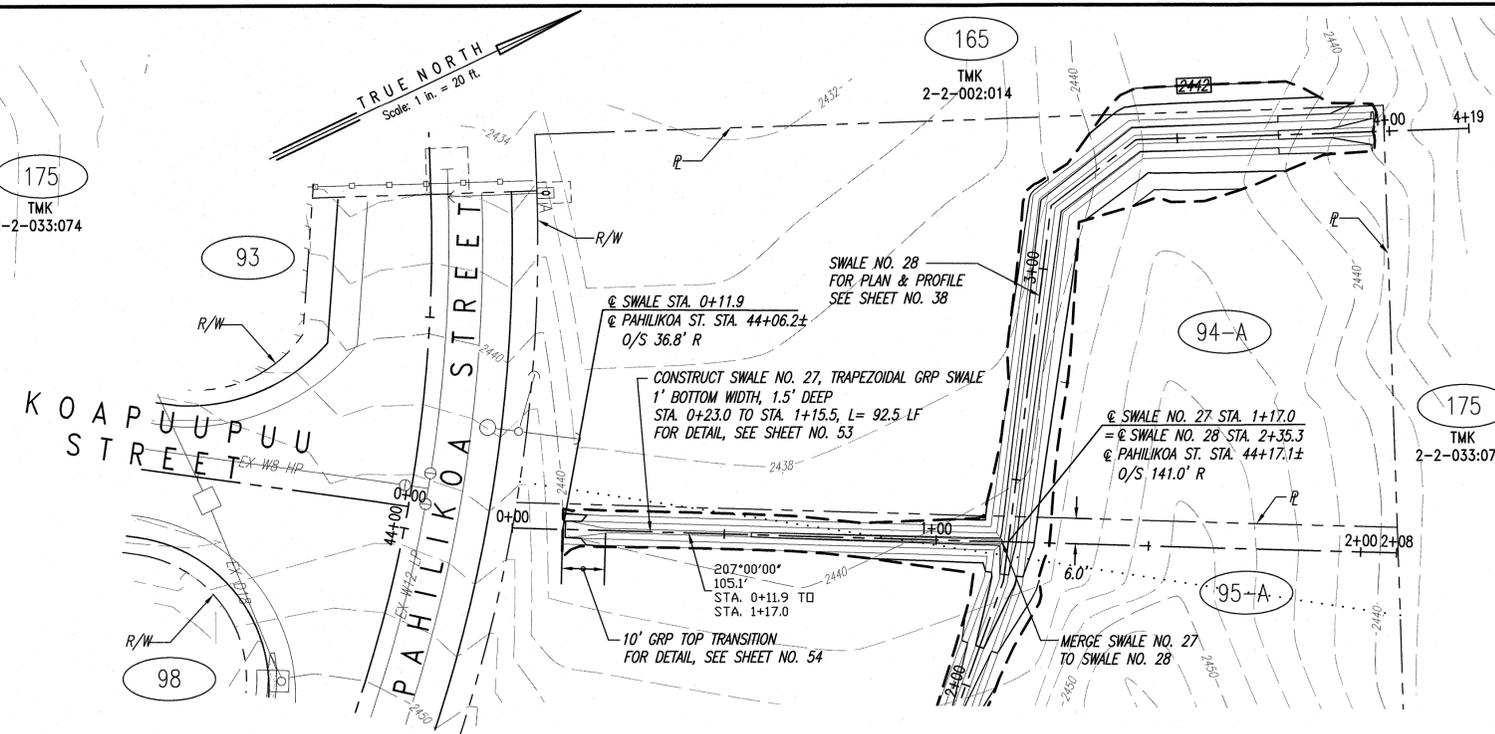
DRAWN BY: KWNW ENGINEER: KWNW/MFC CHECKED BY: RYS

P:\Land Projects\DHHL Keokea Ph 1, 2 & 4\DWG\Increment 1\Current\34-38 P&P Swale 22-26.dwg, 11/17/2014 8:37:32 AM, 1:1



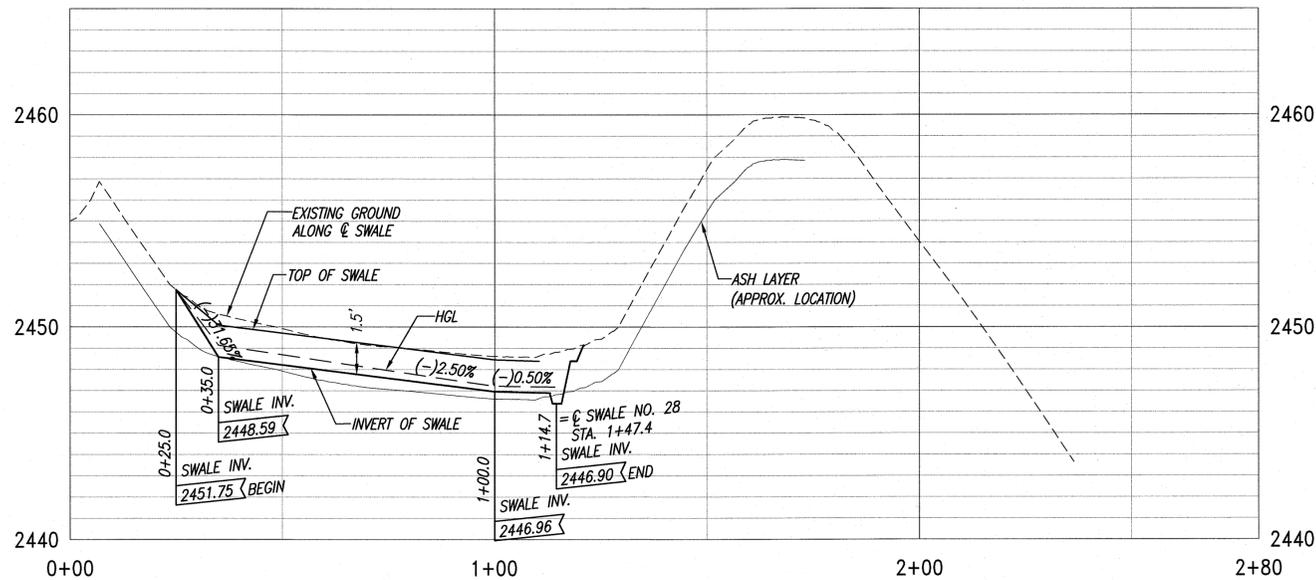
**PLAN - SWALE NO. 26 (LOT 96-A)**

SCALE: 1" = 20'



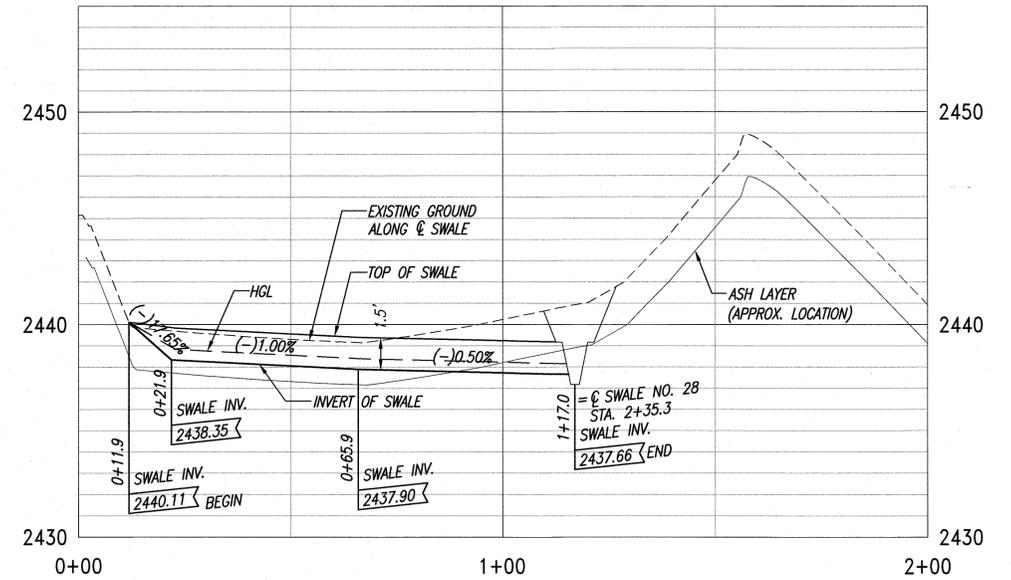
**PLAN - SWALE NO. 27 (LOT 95-A)**

SCALE: 1" = 20'



**PROFILE - SWALE NO. 26 (LOT 96-A)**

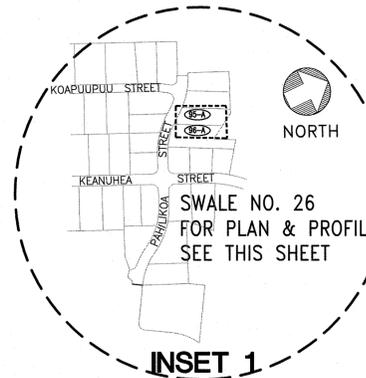
SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'



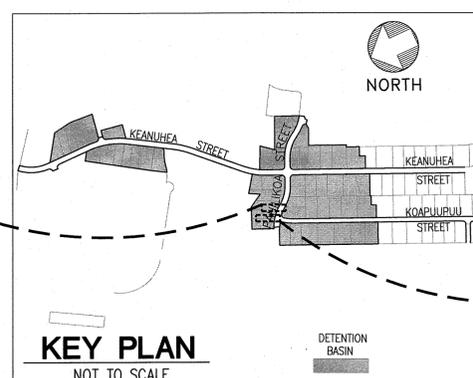
**PROFILE - SWALE NO. 27 (LOT 95-A)**

SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'

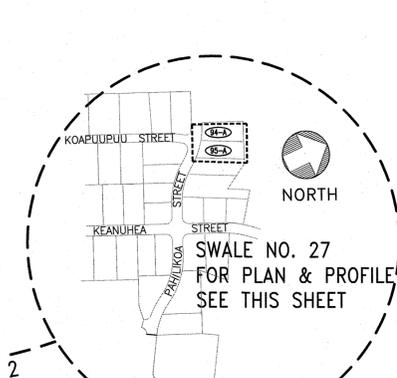
- LEGEND**
- LIMITS OF GRADING
  - - - - - EXISTING GROUND CONTOUR
  - 2450 — FINISH GRADE CONTOUR
  - — — — — PROPERTY LINE
  - ..... OLD PROPERTY LINE
  - (140-A) LOT NUMBER
  - (165) EXISTING LOT NUMBER



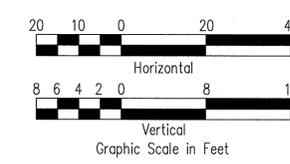
**INSET 1**



**KEY PLAN**  
NOT TO SCALE



**INSET 2**



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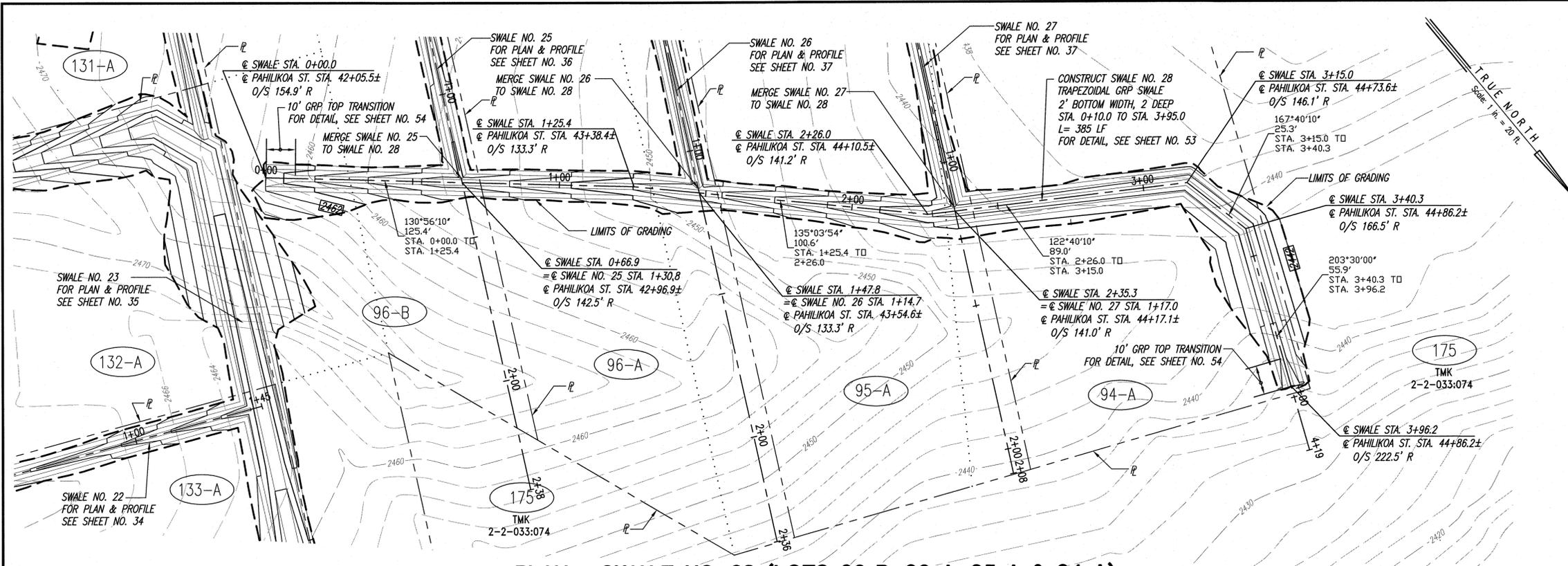
REVISION DATE	DESCRIPTION	MADE BY	APPROVED

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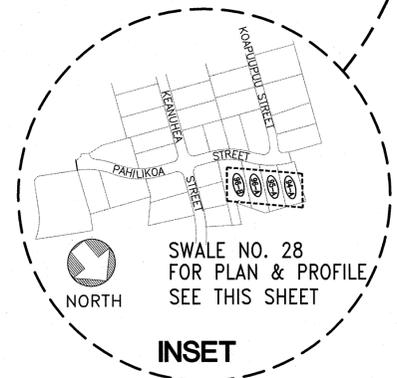
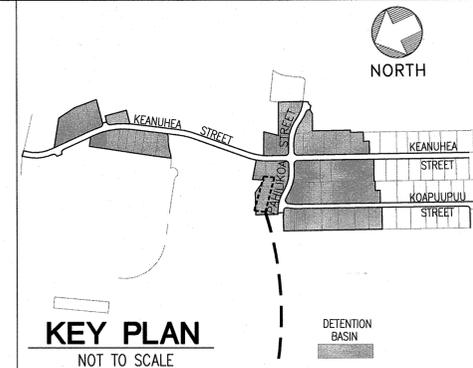
**CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A**  
 KEOKEA & WAIOHULI, MAKAWAO, MAUI  
 OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
 TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074  
 AND (2) 2-2-34: 001 TO 016, 026 & 029

**PLAN AND PROFILE SWALE NO. 26 AND SWALE NO. 27**

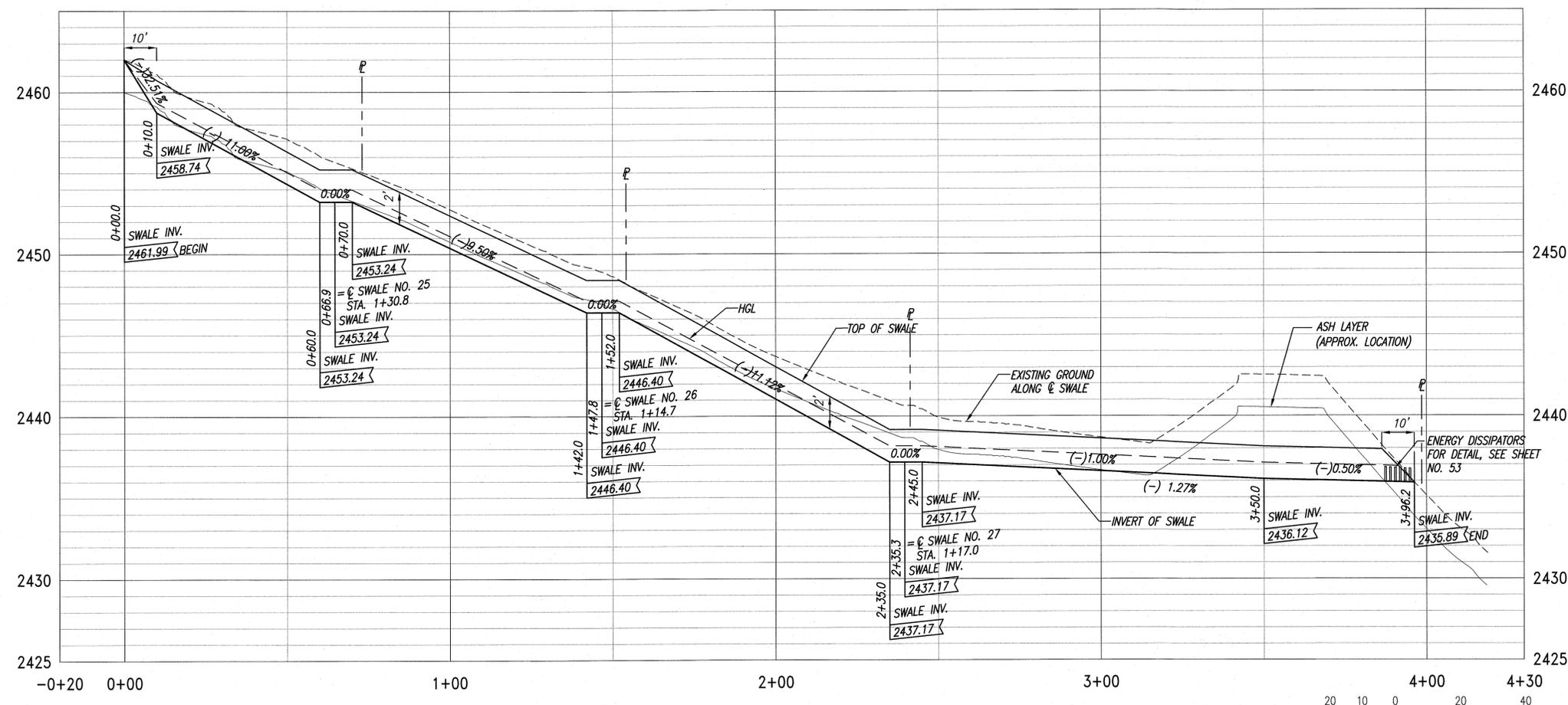
DRAWN BY: KMWV ENGINEER: KMWV/MFC CHECKED BY: RYS



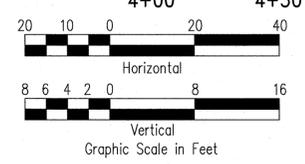
**PLAN - SWALE NO. 28 (LOTS 96-B, 96-A, 95-A & 94-A)**  
SCALE: 1" = 20'



- LEGEND**
- LIMITS OF GRADING
  - - - - - 2500 EXISTING GROUND CONTOUR
  - - - - - 2450 FINISH GRADE CONTOUR
  - PROPERTY LINE
  - ..... OLD PROPERTY LINE
  - (140-A) LOT NUMBER
  - (165) EXISTING LOT NUMBER
  - TMK 2-2-002:014



**PROFILE - SWALE NO. 28 (LOTS 96-B, 96-A, 95-A & 94-A)**  
SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'



REVISION DATE	DESCRIPTION	MADE BY	APPROVED

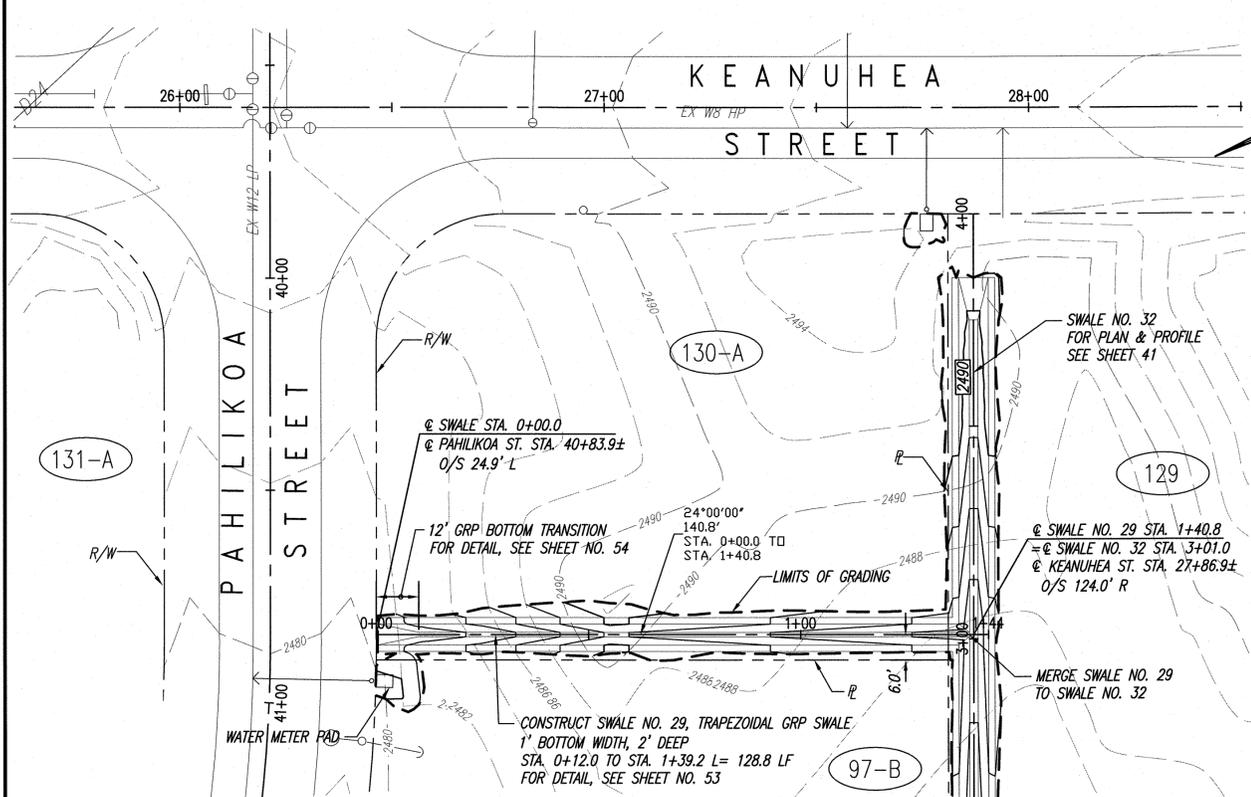
**Community Planning and Engineering, Inc.**  
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1288 Queen Emma Street, Third Floor Honolulu, Hawaii

**CONSOLIDATION / RE-SUBDIVISION  
KEOKEA-WAIOHULI DEVELOPMENT  
PHASE 1A**  
KEOKEA & WAIOHULI, MAKAWAO, MAUI  
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074  
AND (2) 2-2-34: 001 TO 016, 026 & 029

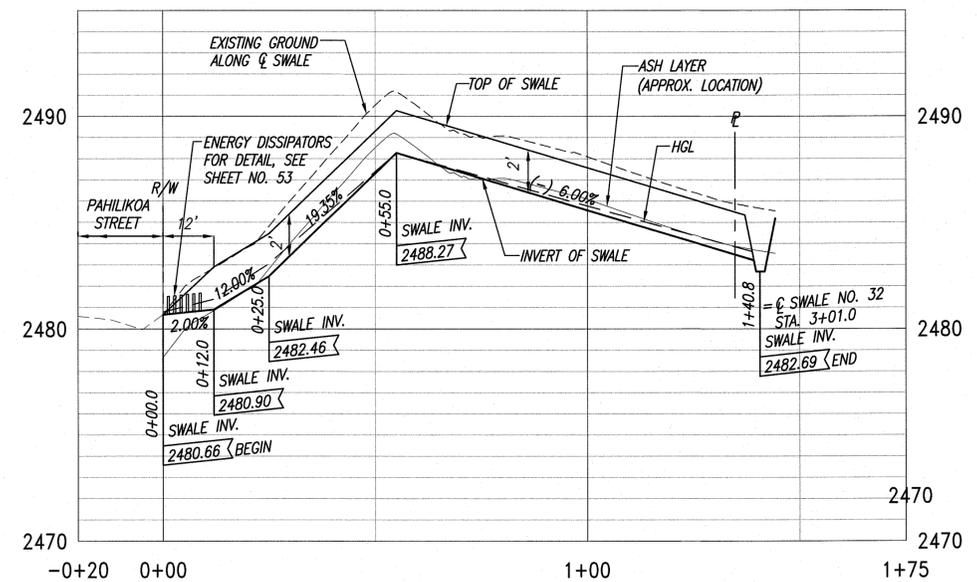
**PLAN AND PROFILE  
SWALE NO. 28**

DRAWN BY: KWNW ENGINEER: KWNW/MFC CHECKED BY: RYS

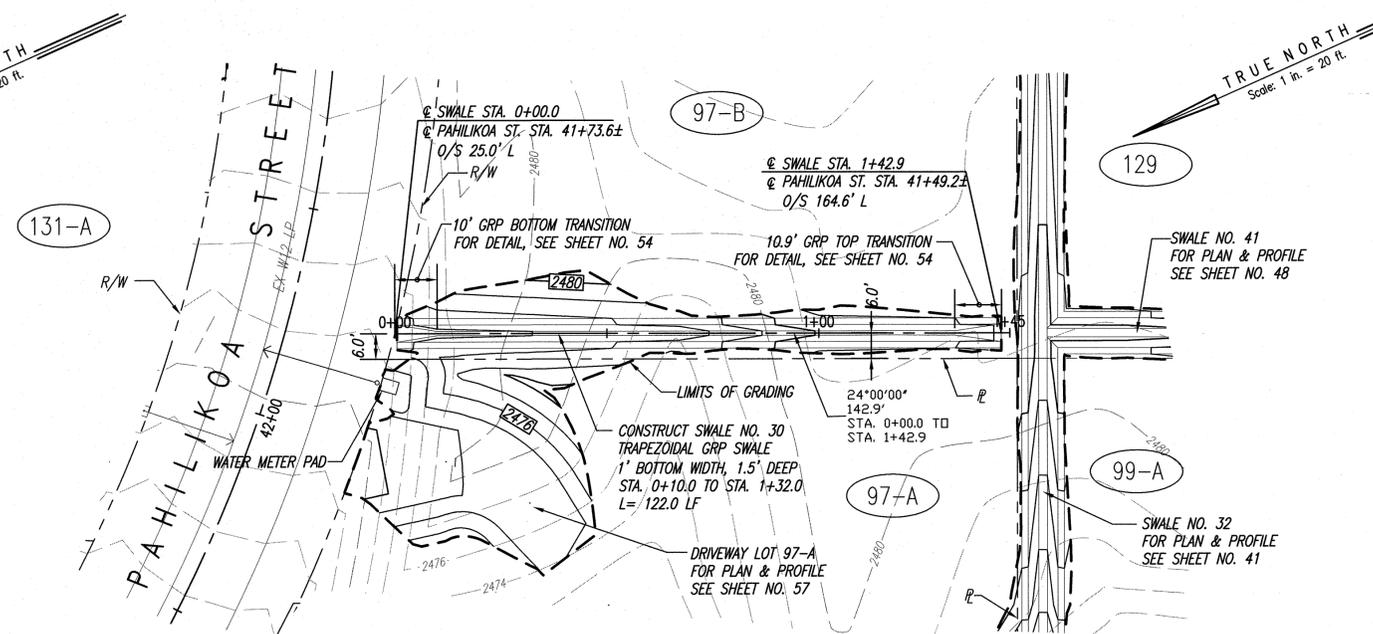
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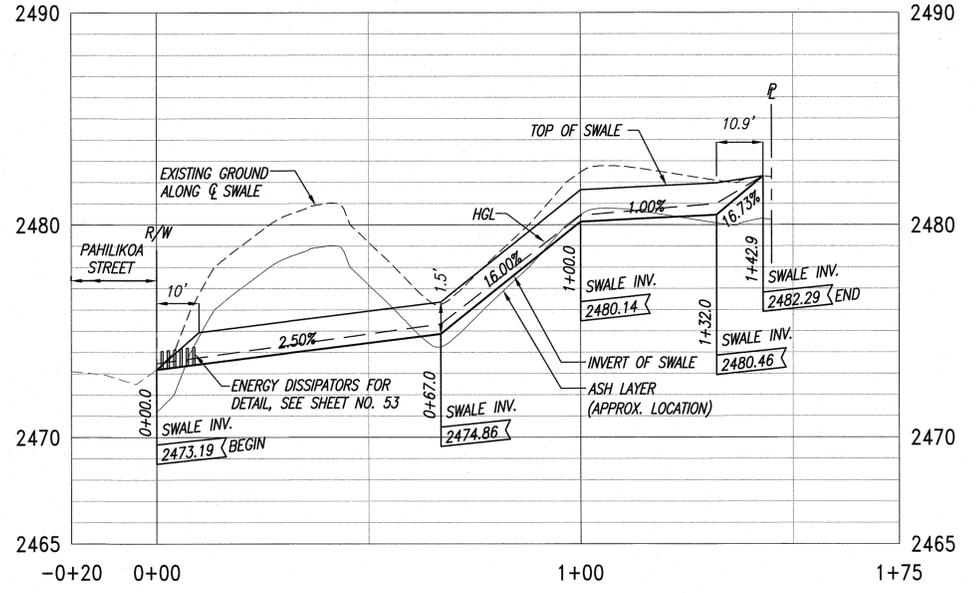
**PLAN - SWALE NO. 29 (LOT 130-A)**  
SCALE: 1" = 20'



**PROFILE - SWALE NO. 29 (LOT 130-A)**  
SCALES: HORIZ. 1"=20'  
VERT. 1"= 8'

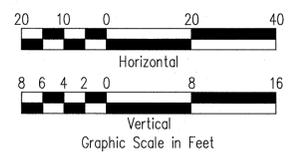
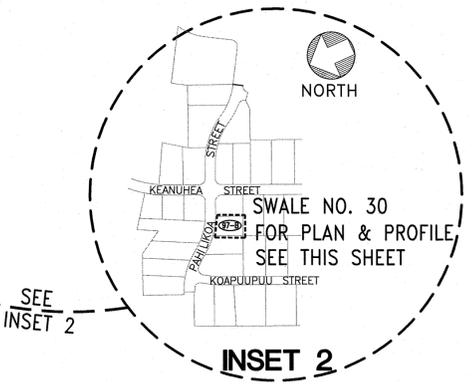
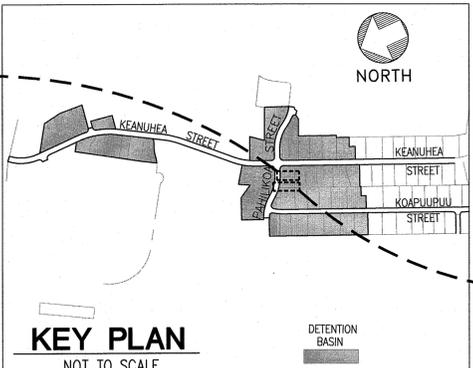
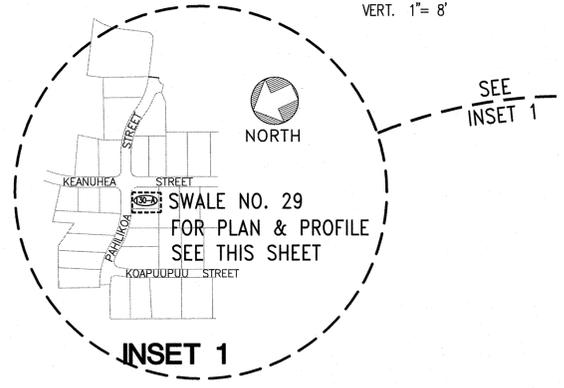


**PLAN - SWALE NO. 30 (LOT 97-B)**  
SCALE: 1" = 20'



**PROFILE - SWALE NO. 30 (LOT 97-B)**  
SCALES: HORIZ. 1"=20'  
VERT. 1"= 8'

- LEGEND**
- LIMITS OF GRADING
  - - - - EXISTING GROUND CONTOUR
  - 2450 — FINISH GRADE CONTOUR
  - — — — PROPERTY LINE
  - ..... OLD PROPERTY LINE
  - (140-A) LOT NUMBER
  - (165) EXISTING LOT NUMBER



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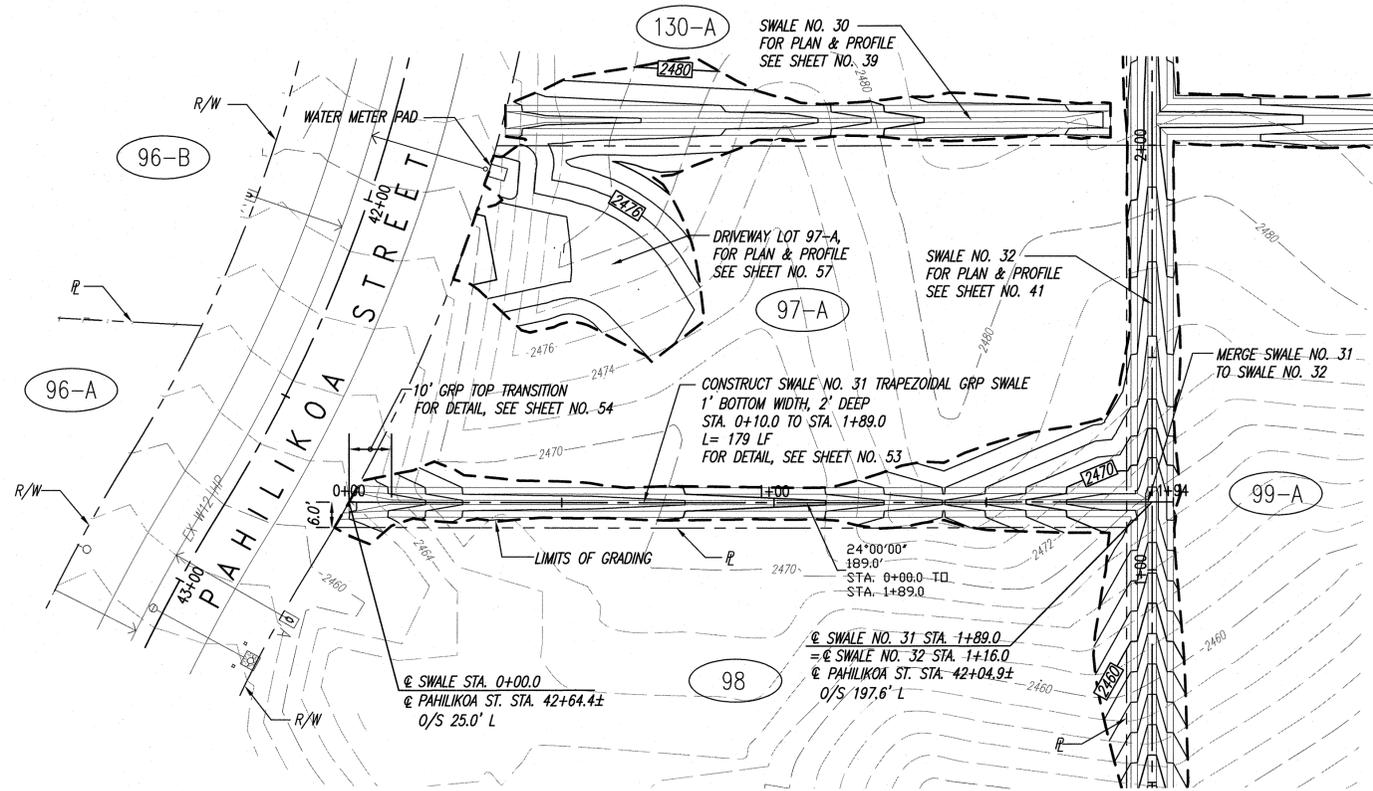
REVISION DATE	DESCRIPTION	MADE BY	APPROVED

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Engineering Design | Construction Management | Infrastructure Planning  
1286 Queen Emma Street, Third Floor Honolulu, Hawaii

**CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A**  
KEOKEA & WAIOHULI, MAKAWAO, MAUI  
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TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074 AND (2) 2-2-34: 001 TO 016, 026 & 029

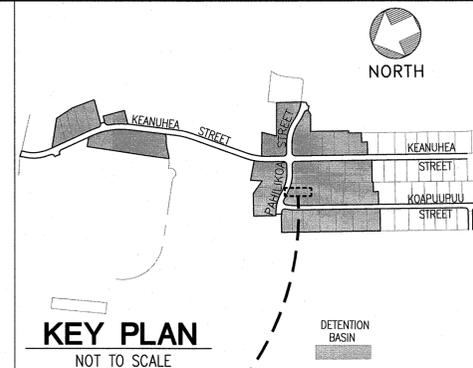
**PLAN AND PROFILE SWALE NO. 29 & SWALE NO. 30**

DRAWN BY: KWNW ENGINEER: KWNW/MFC CHECKED BY: RYS



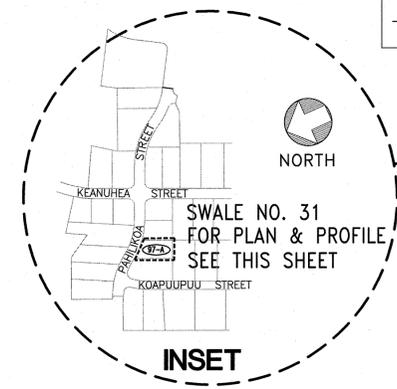
**PLAN - SWALE NO. 31 (LOT 97-A)**

SCALE: 1" = 20'



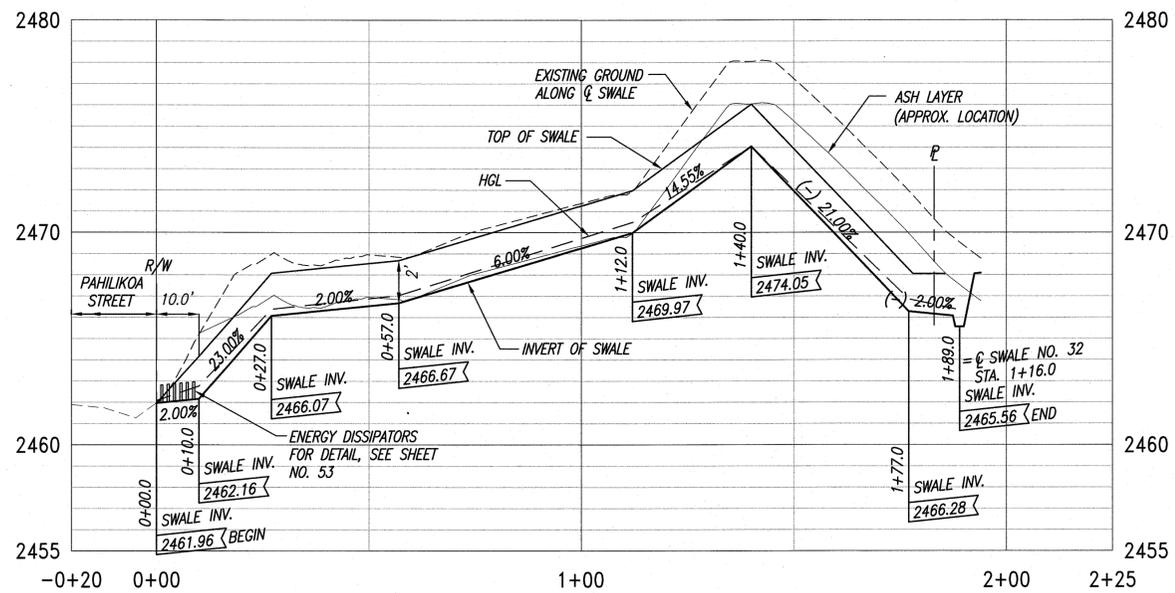
**KEY PLAN**

NOT TO SCALE



**SWALE NO. 31 FOR PLAN & PROFILE SEE THIS SHEET**

**INSET**

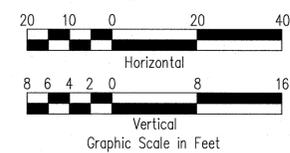


**PROFILE - SWALE NO. 31 (LOT 97-A)**

SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'

**LEGEND**

- LIMITS OF GRADING
- - - 2500 EXISTING GROUND CONTOUR
- - - 2450 FINISH GRADE CONTOUR
- PROPERTY LINE
- ..... OLD PROPERTY LINE
- (140-A) LOT NUMBER
- (165) EXISTING LOT NUMBER
- TMK 2-2-002:014



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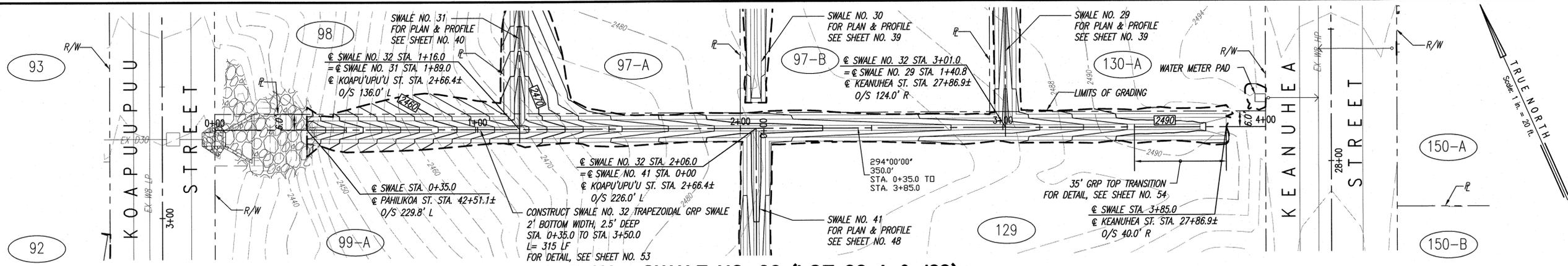
REVISION DATE	DESCRIPTION	MADE BY	APPROVED

**Community Planning and Engineering, Inc.**  
 Engineering Design | Construction Management | Infrastructure Planning  
 1286 Queen Emma Street, Third Floor Honolulu, Hawaii

**CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A**  
 KEOKEA & WAIOHULI, MAKAWAO, MAUI  
 OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
 TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074  
 AND (2) 2-2-34: 001 TO 016, 026 & 029

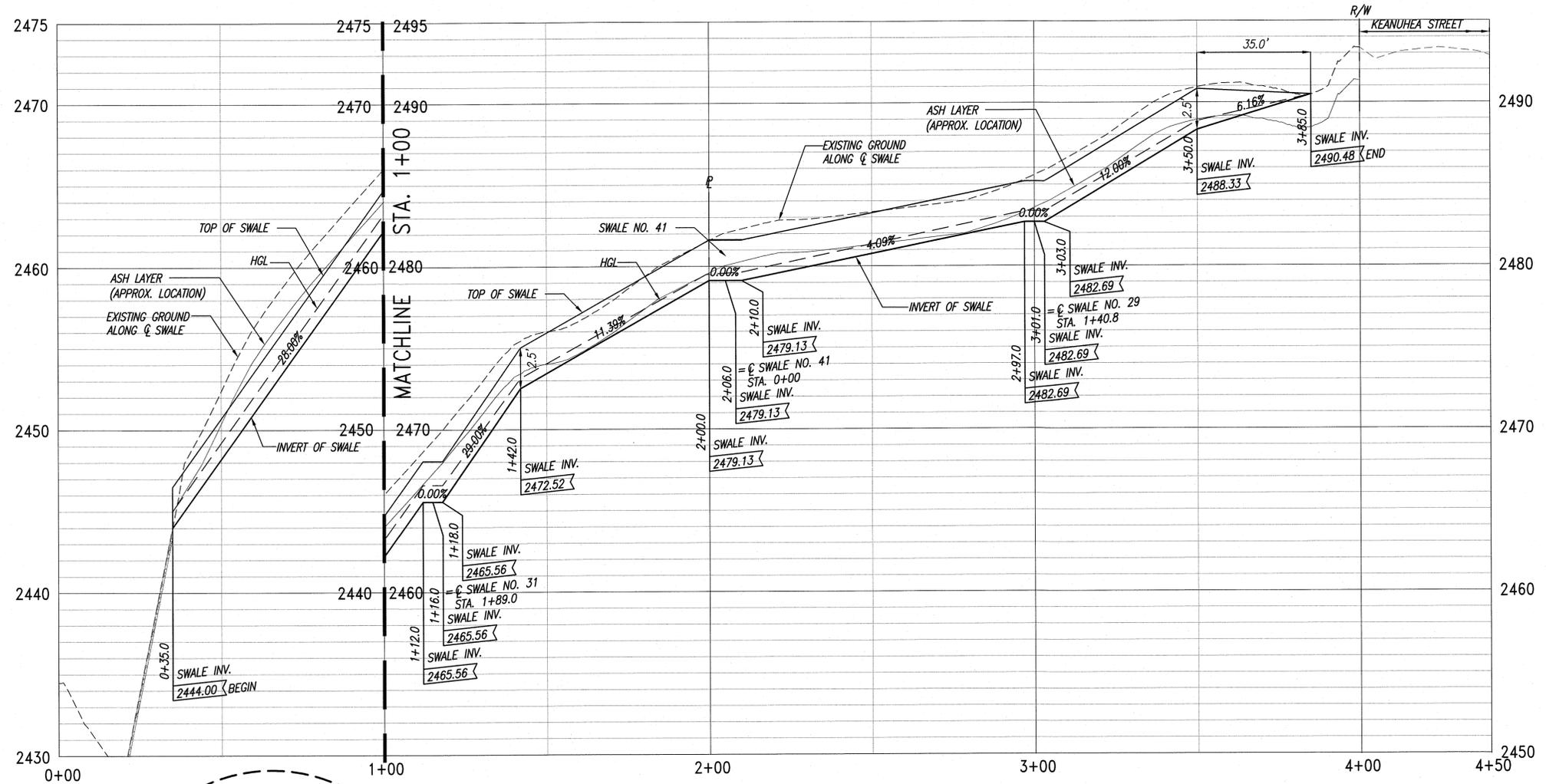
**PLAN AND PROFILE SWALE NO. 31**

DRAWN BY: KWNW ENGINEER: KWNW/MFC CHECKED BY: RYS



**PLAN - SWALE NO. 32 (LOT 99-A & 129)**

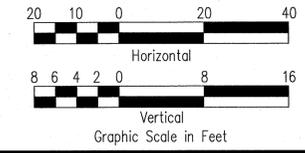
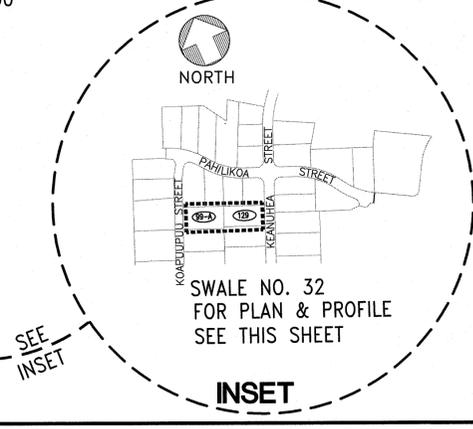
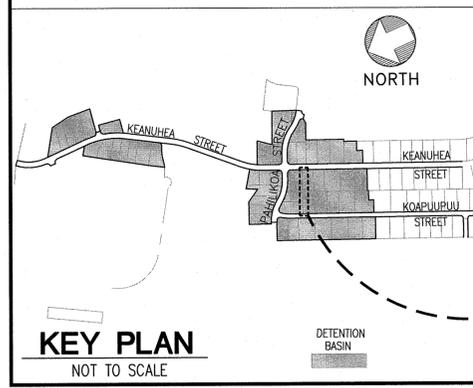
SCALE: 1" = 20'



**PROFILE - SWALE NO. 32 (LOTS 99-A & 129)**

SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'

- LEGEND**
- LIMITS OF GRADING
  - - - 2500' EXISTING GROUND CONTOUR
  - 2450' FINISH GRADE CONTOUR
  - PROPERTY LINE
  - ... OLD PROPERTY LINE
  - (140-A) LOT NUMBER
  - (165) EXISTING LOT NUMBER
  - TMK 2-2-002:014



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REVISION DATE	DESCRIPTION	MADE BY	APPROVED

**Community Planning and Engineering, Inc.**  
Engineering Design | Construction Management | Infrastructure Planning  
1286 Queen Emma Street, Third Floor Honolulu, Hawaii

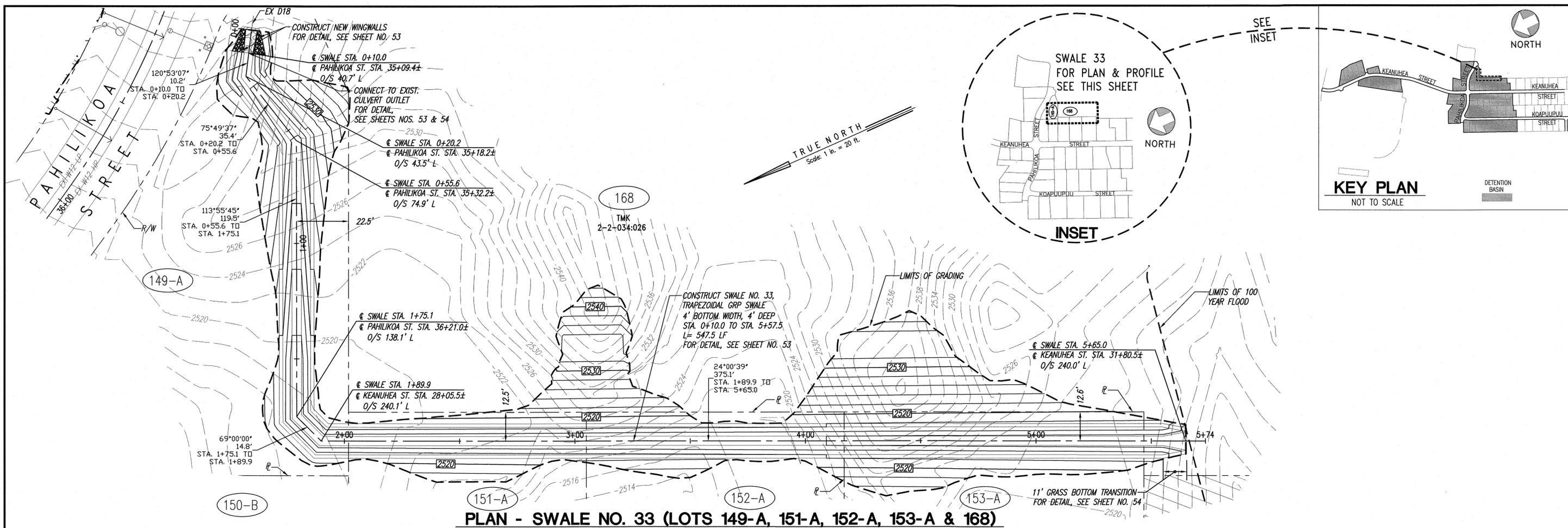
**CONSOLIDATION / RE-SUBDIVISION  
KEOKEA-WAIOHULI DEVELOPMENT  
PHASE 1A**  
KEOKEA & WAIOHULI, MAKAWAO, MAUI  
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074  
AND (2) 2-2-34: 001 TO 016, 026 & 029

**PLAN AND PROFILE  
SWALE NO. 32**

DRAWN BY: KWNW    ENGINEER: KWNW/MFC    CHECKED BY: RYS

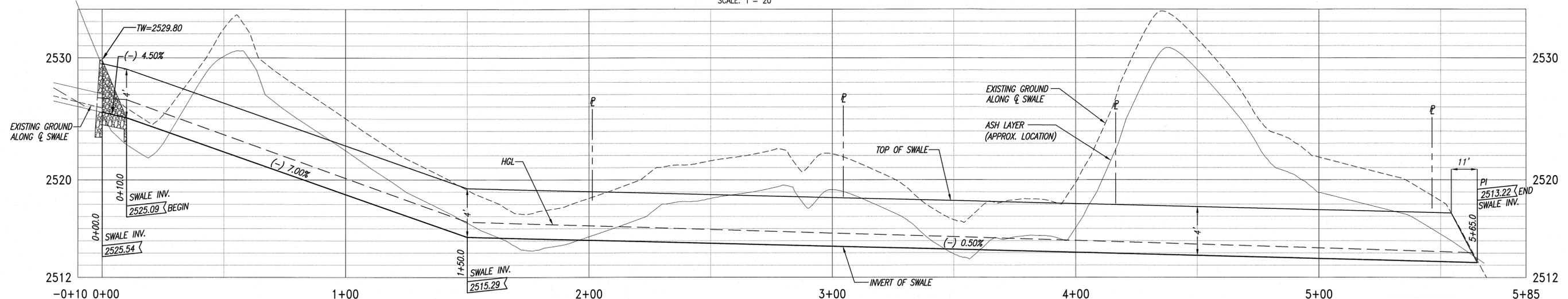
FILE	POCKET	FOLDER	NO.

P:\Land Projects\DHLL\_Koolea Ph 1, 2 & 4\DWG\Increment 1\Current\39-41 P&P Swale 29-32.dwg, 11/14/2014 3:51:45 PM, 1:1



**PLAN - SWALE NO. 33 (LOTS 149-A, 151-A, 152-A, 153-A & 168)**

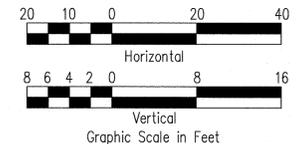
SCALE: 1" = 20'



**PROFILE - SWALE NO. 33 (LOTS 149-A, 151-A, 152-A, 153-A & 168)**

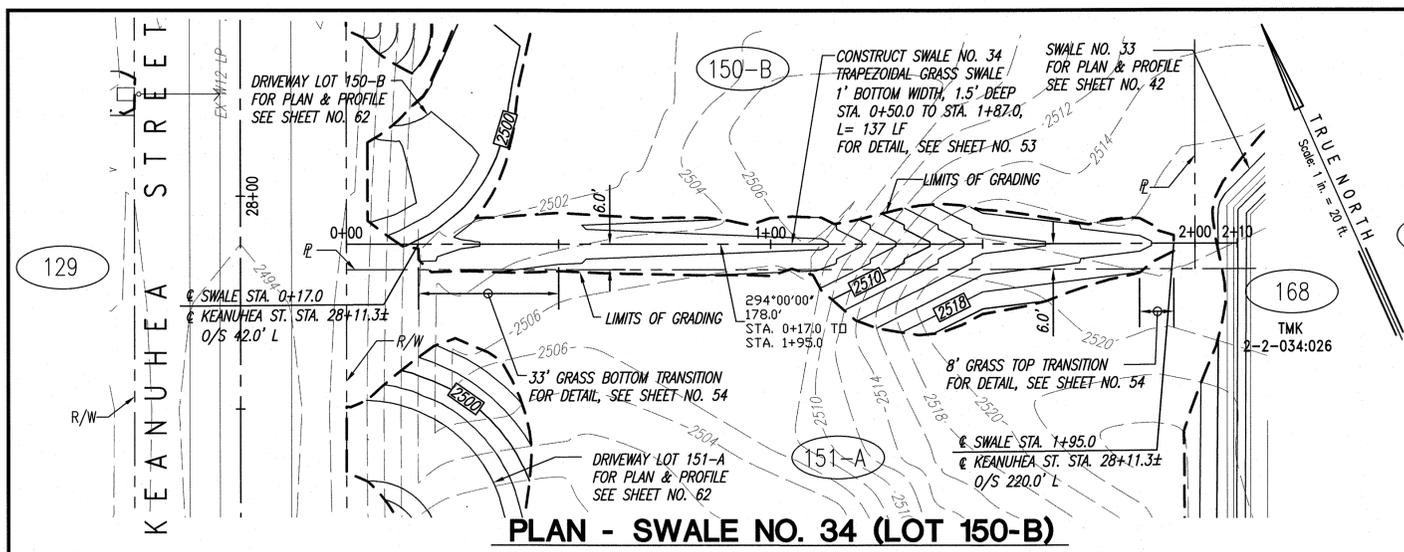
SCALE: HORIZ. 1" = 20'  
VERT. 1" = 8'

- LEGEND**
- LIMITS OF GRADING
  - - - - - EXISTING GROUND CONTOUR
  - 2500 --- FINISH GRADE CONTOUR
  - PROPERTY LINE
  - ..... OLD PROPERTY LINE
  - (140-A) LOT NUMBER
  - (165) EXISTING LOT NUMBER
  - TMK 2-2-002:014

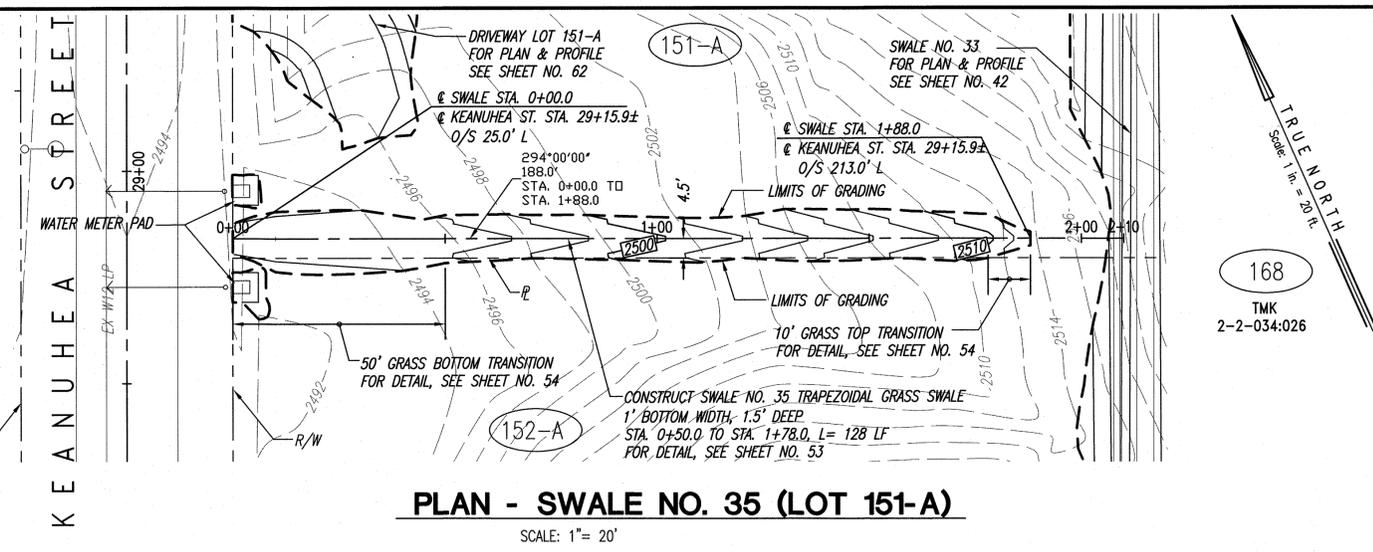


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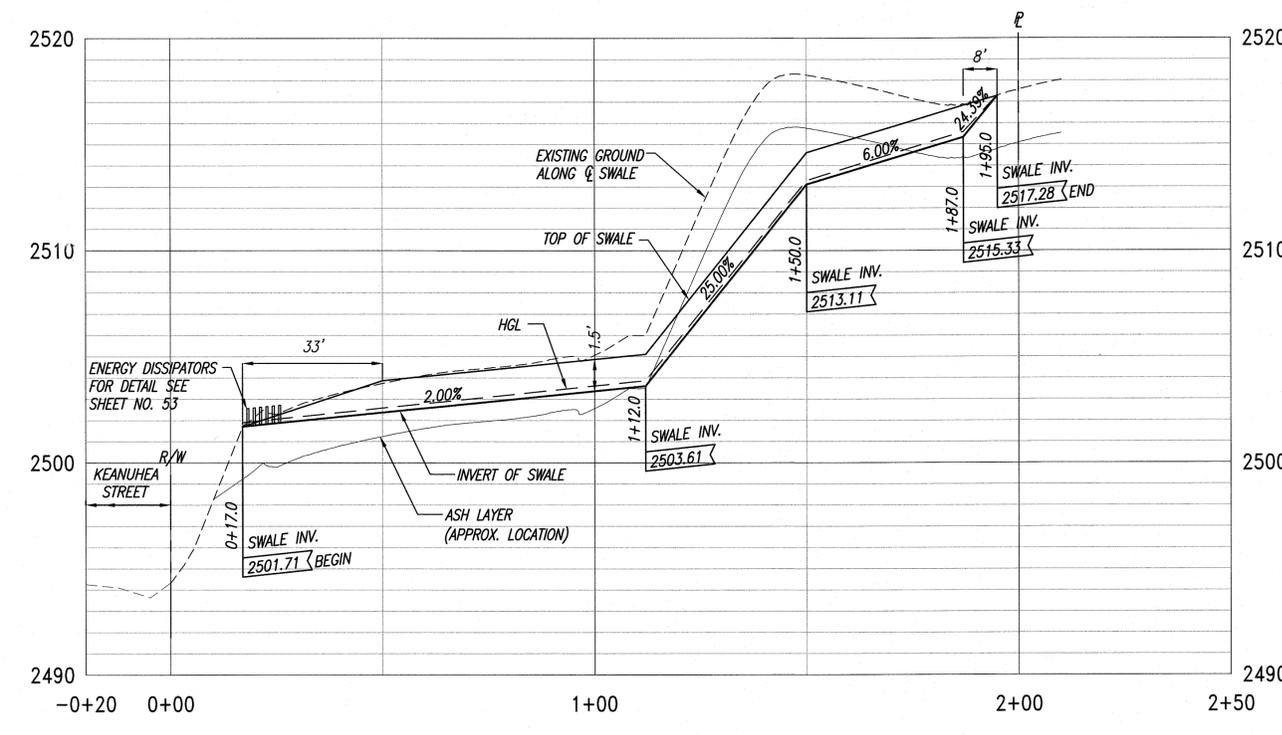
REVISION DATE	DESCRIPTION	MADE BY	APPROVED
<b>Community Planning and Engineering, Inc.</b> Engineering Design   Construction Management   Infrastructure Planning 1295 Queen Emma Street, Third Floor   Honolulu, Hawaii			
<b>CONSOLIDATION / RE-SUBDIVISION          KEOKEA-WAIOHULI DEVELOPMENT          PHASE 1A</b> KEOKEA & WAIOHULI, MAKAWAO, MAUI OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074 AND (2) 2-2-34: 001 TO 016, 026 & 029			
<b>PLAN AND PROFILE          SWALE NO. 33</b>			
DRAWN BY: KWNW	ENGINEER: KWNW/MFC	CHECKED BY: RYS	



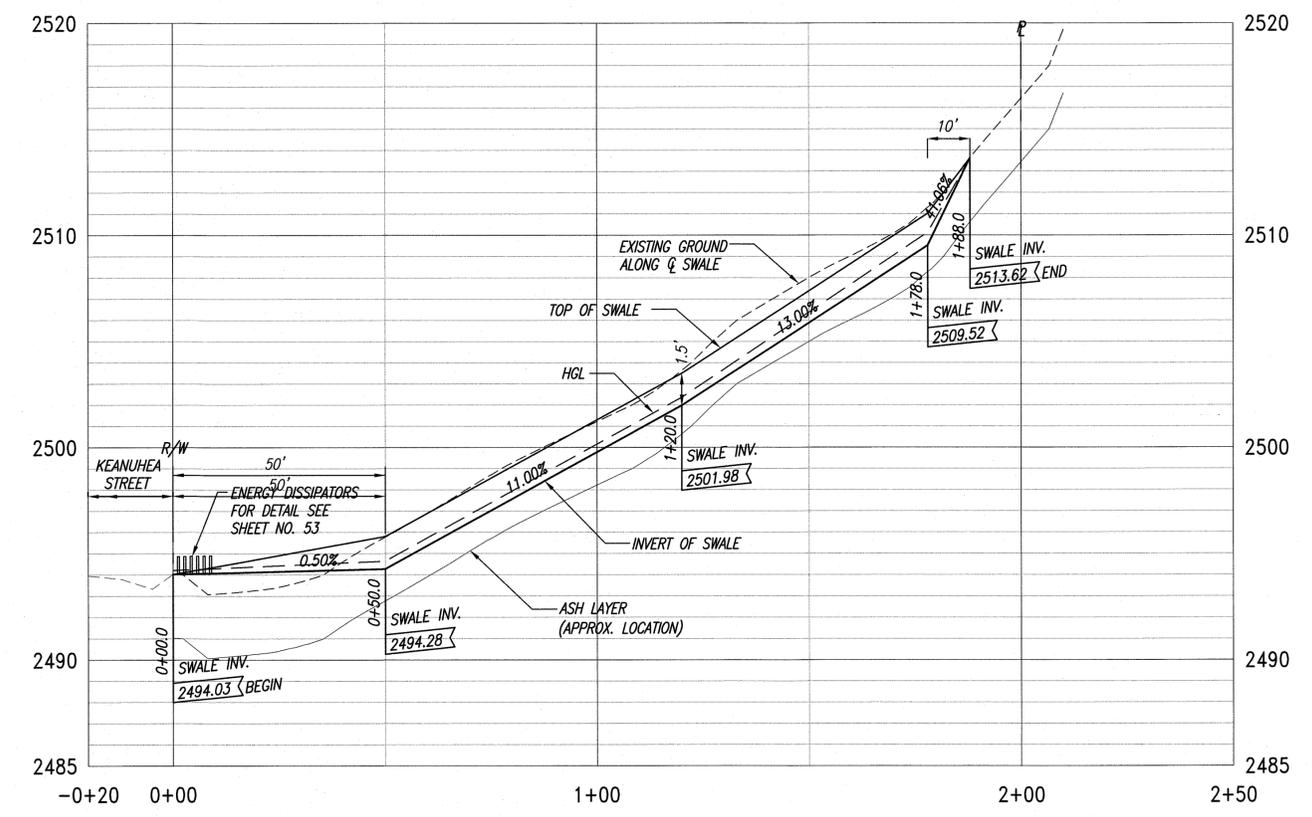
**PLAN - SWALE NO. 34 (LOT 150-B)**  
SCALE: 1" = 20'



**PLAN - SWALE NO. 35 (LOT 151-A)**  
SCALE: 1" = 20'

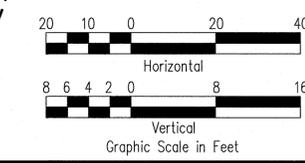
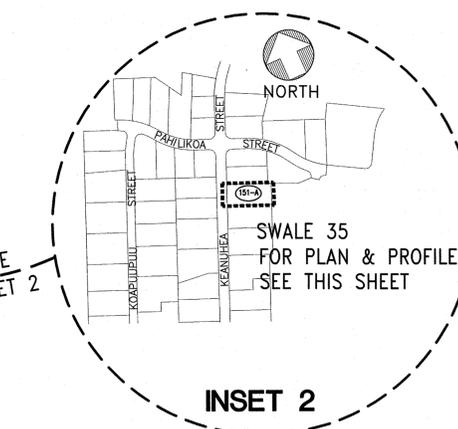
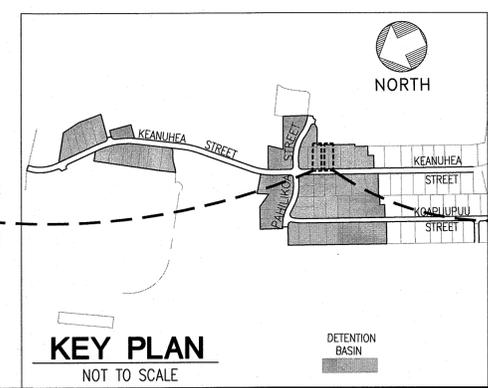
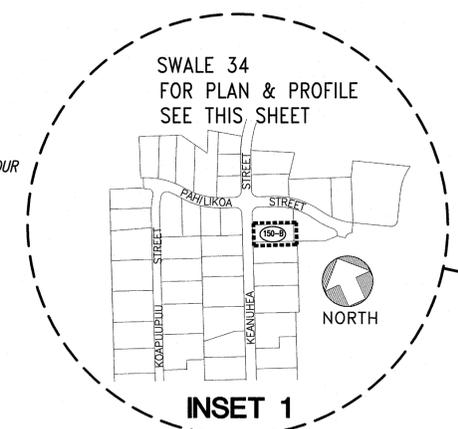


**PROFILE - SWALE NO. 34 (LOT 150-B)**  
SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'



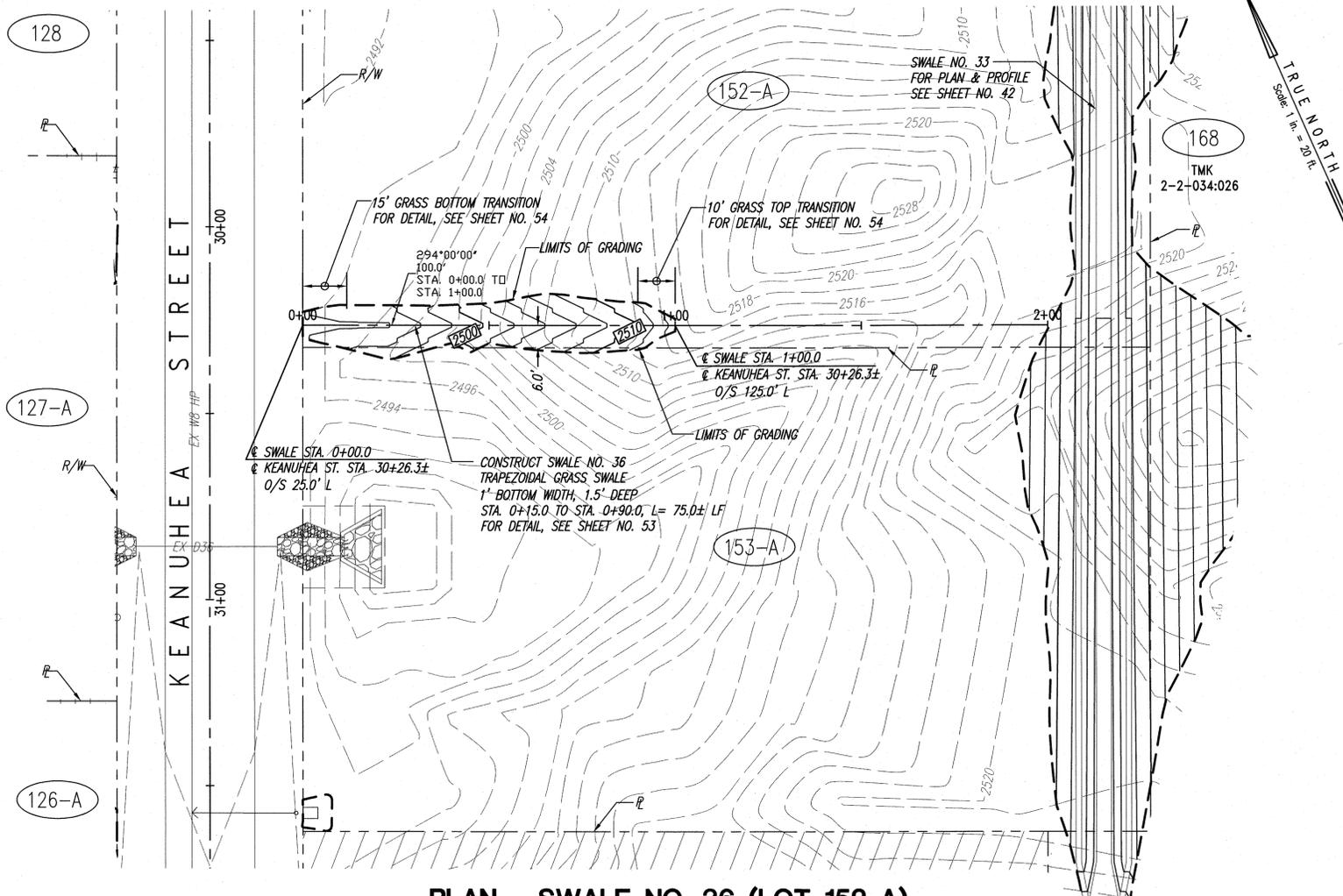
**PROFILE - SWALE NO. 35 (LOT 151-A)**  
SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'

- LEGEND**
- LIMITS OF GRADING
  - - - EXISTING GROUND CONTOUR
  - ▭ FINISH GRADE CONTOUR
  - PROPERTY LINE
  - ⋯ OLD PROPERTY LINE
  - LOT NUMBER
  - EXISTING LOT NUMBER



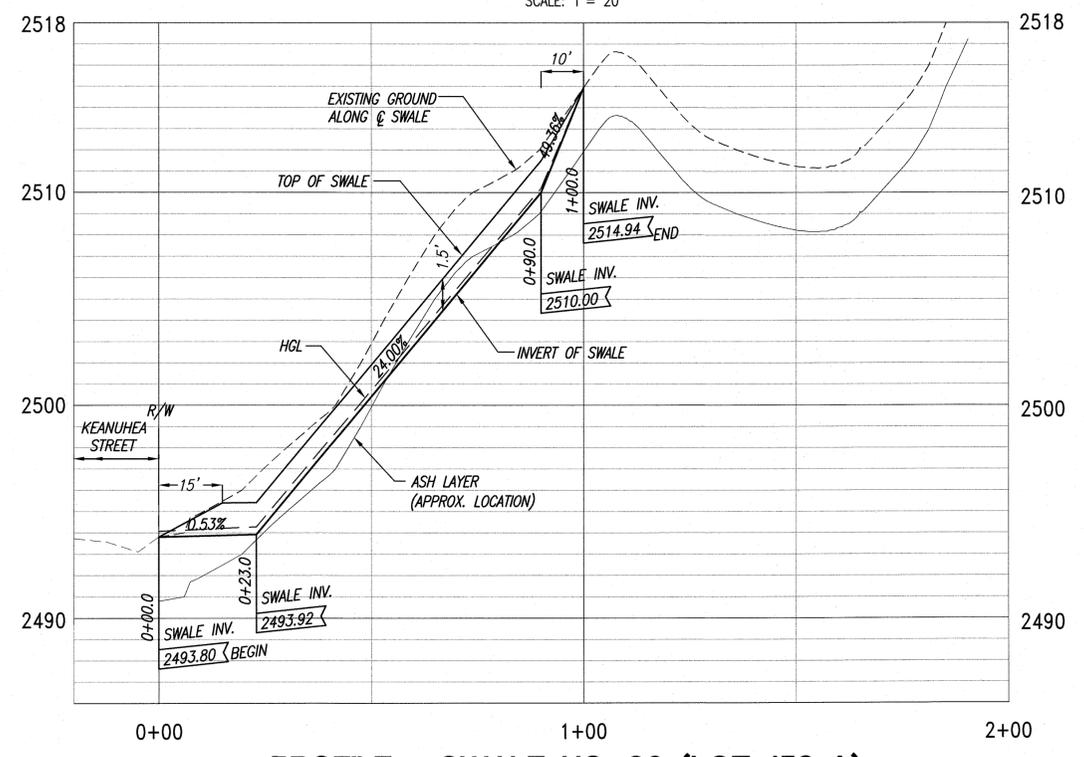
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. LICENSE EXPIRATION DATE: 04/30/16

REVISION DATE	DESCRIPTION	MADE BY	APPROVED
<b>Community Planning and Engineering, Inc.</b> Engineering Design   Construction Management   Infrastructure Planning 1286 Queen Emma Street, Third Floor   Honolulu, Hawaii			
<b>CONSOLIDATION / RE-SUBDIVISION          KEOKEA-WAIOHULI DEVELOPMENT          PHASE 1A</b> KEOKEA & WAIOHULI, MAKAWAO, MAUI OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074 AND (2) 2-2-34: 001 TO 016, 026 & 029			
<b>PLAN AND PROFILE          SWALE NO. 34          AND SWALE NO. 35</b>			
DRAWN BY: K'NNW	ENGINEER: K'NNW/MFC	CHECKED BY: RYS	



**PLAN - SWALE NO. 36 (LOT 152-A)**

SCALE: 1" = 20'

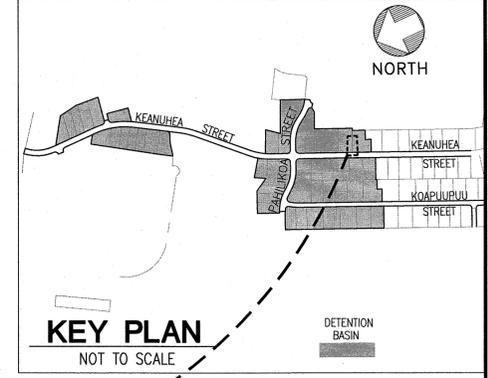


**PROFILE - SWALE NO. 36 (LOT 152-A)**

SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'

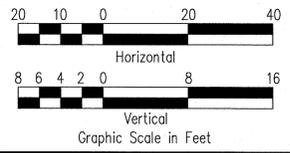


**INSET**



**KEY PLAN**  
NOT TO SCALE

- LEGEND**
- LIMITS OF GRADING
  - - - - - EXISTING GROUND CONTOUR
  - [2450] — FINISH GRADE CONTOUR
  - — — — — PROPERTY LINE
  - · · · · OLD PROPERTY LINE
  - (140-A) LOT NUMBER
  - (165) EXISTING LOT NUMBER
  - TMK 2-2-002:014



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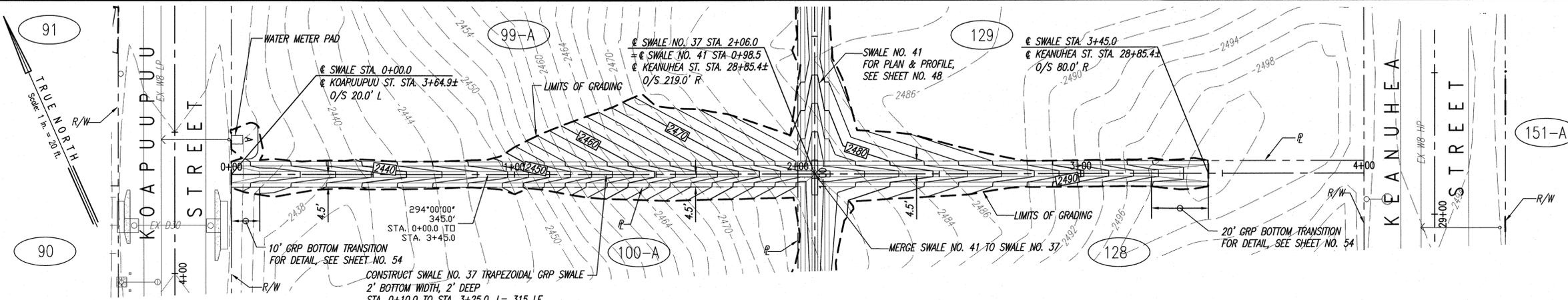
**Community Planning and Engineering, Inc.**  
 Engineering Design | Construction Management | Infrastructure Planning  
 1288 Queen Emma Street, Third Floor Honolulu, Hawaii

**CONSOLIDATION / RE-SUBDIVISION  
 KEOKEA-WAIOHULI DEVELOPMENT  
 PHASE 1A**  
 KEOKEA & WAIOHULI, MAKAWAO, MAUI  
 OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
 TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074  
 AND (2) 2-2-34: 001 TO 016, 026 & 029

**PLAN AND PROFILE  
 SWALE NO. 36**

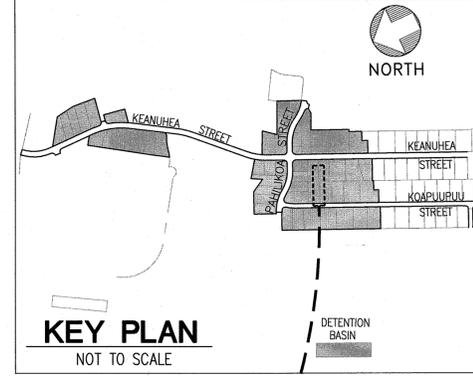
DRAWN BY: KWNW    ENGINEER: KWNW/MFC    CHECKED BY: RYS

FILE	POCKET	FOLDER	NCL

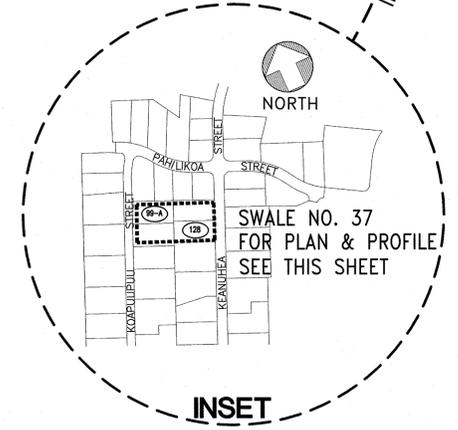


**PLAN - SWALE NO. 37 (LOTS 99-A & 128)**

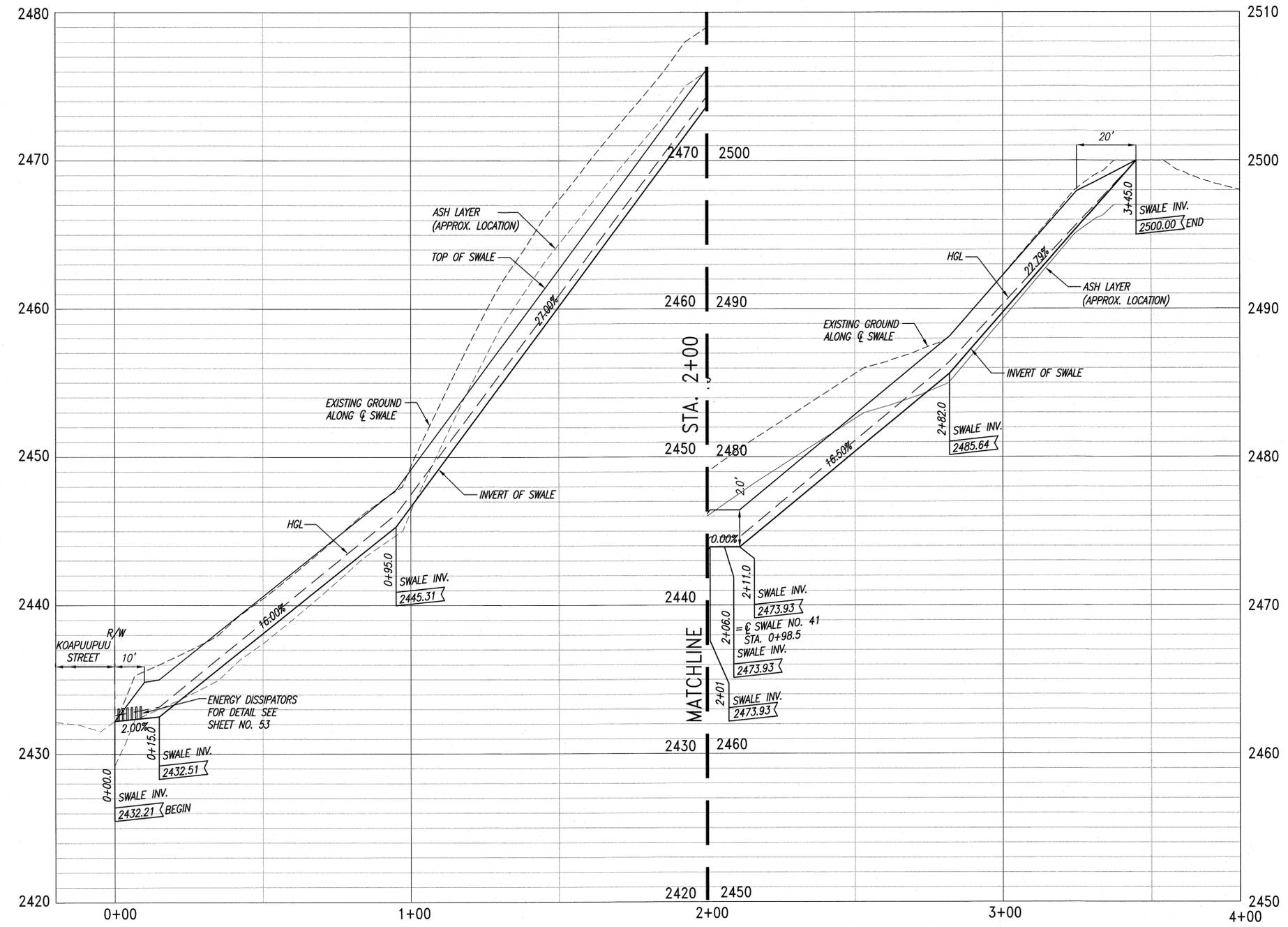
SCALE: 1" = 20'



**KEY PLAN**  
NOT TO SCALE



**INSET**



**PROFILE - SWALE NO. 37 (LOTS 99-A & 128)**

SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'

**LEGEND**

- LIMITS OF GRADING
- - - EXISTING GROUND CONTOUR
- 2500 ---
- 2450 ---
- FINISH GRADE CONTOUR
- PROPERTY LINE
- OLD PROPERTY LINE
- 140-A ○ LOT NUMBER
- 165 ○ EXISTING LOT NUMBER
- TMK 2-2-002:014

REVISION DATE	DESCRIPTION	MADE BY	APPROVED

**Community Planning and Engineering, Inc.**  
Engineering Design | Construction Management | Infrastructure Planning  
1286 Queen Emma Street, Third Floor Honolulu, Hawaii

**CONSOLIDATION / RE-SUBDIVISION  
KEOKEA-WAIOHULI DEVELOPMENT  
PHASE 1A**  
KEOKEA & WAIOHULI, MAKAWAO, MAUI  
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074  
AND (2) 2-2-34: 001 TO 016, 026 & 029

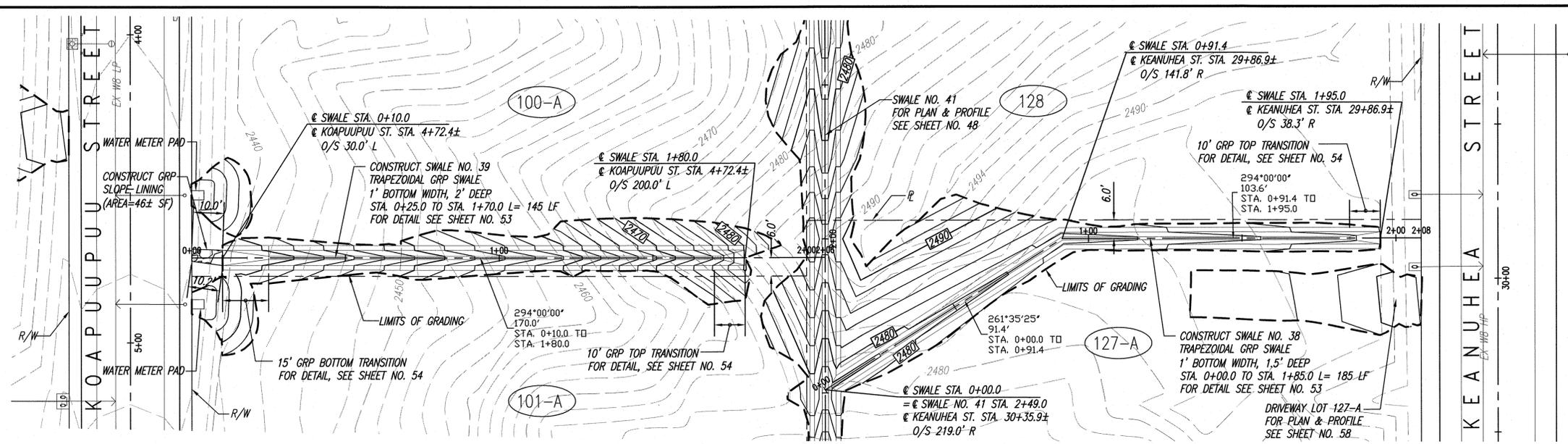
**PLAN AND PROFILE  
SWALE NO. 37**

DRAWN BY: KWNW    ENGINEER: KWNW/MFC    CHECKED BY: RYS



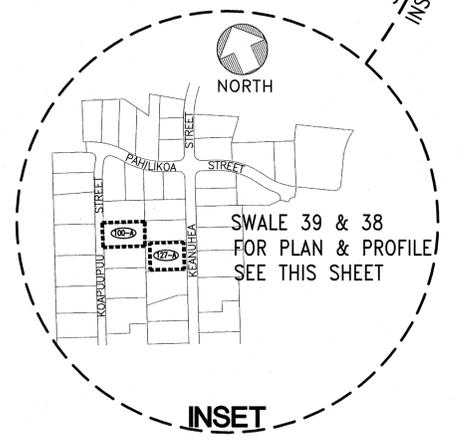
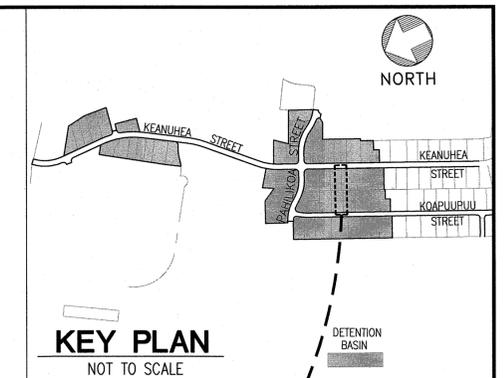
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P:\Land Projects\DHLL Keokea Ph 1, 2 & 4A\DWG\Increment 1\Curren\42-46 P&P Swale 33-37.dwg, 11/14/2014 4:03:56 PM, 1:1



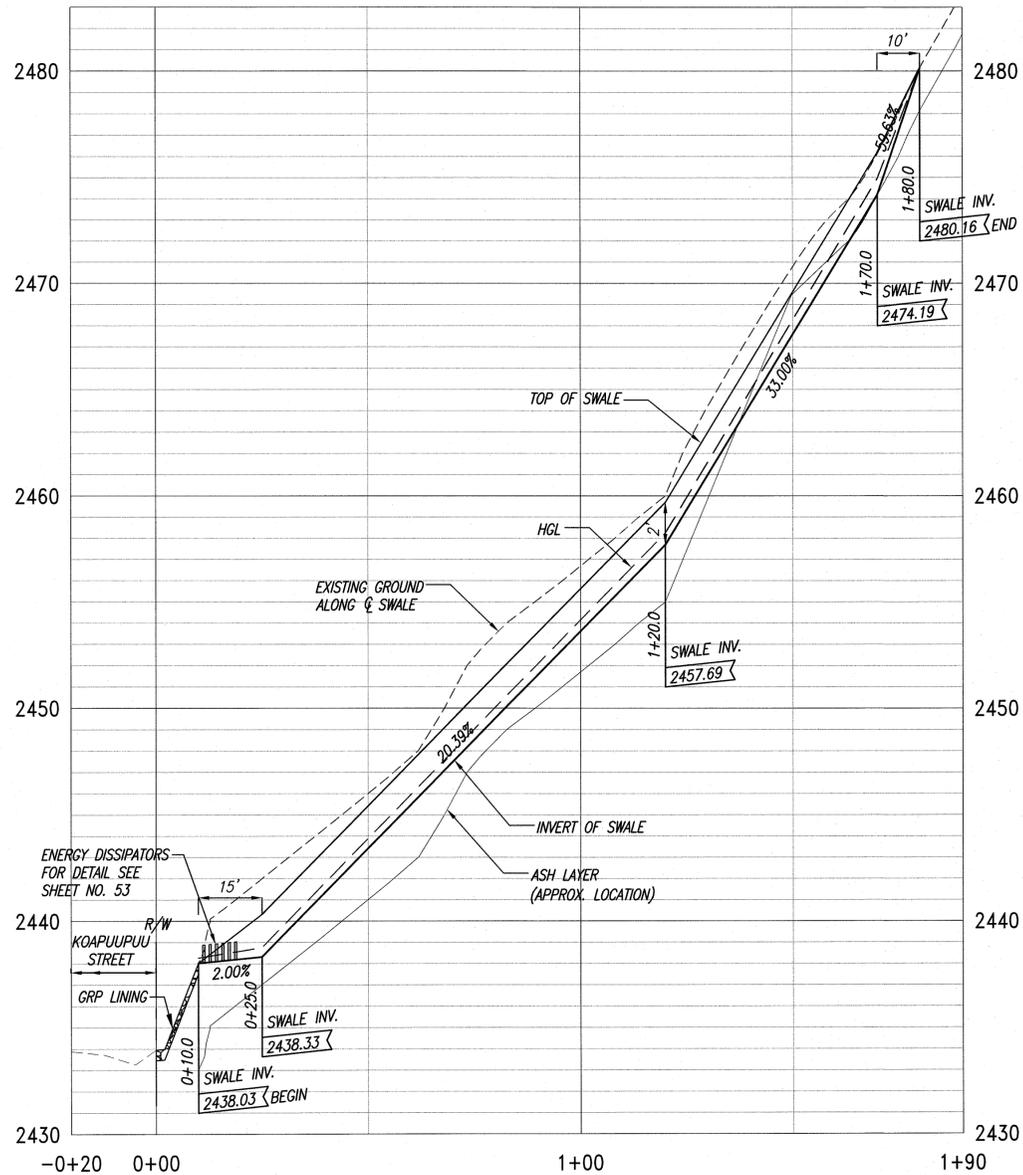
**PLAN - SWALE NO. 39 (LOT 100-A) & SWALE NO. 38 (LOT 127-A)**

SCALE: 1" = 20'



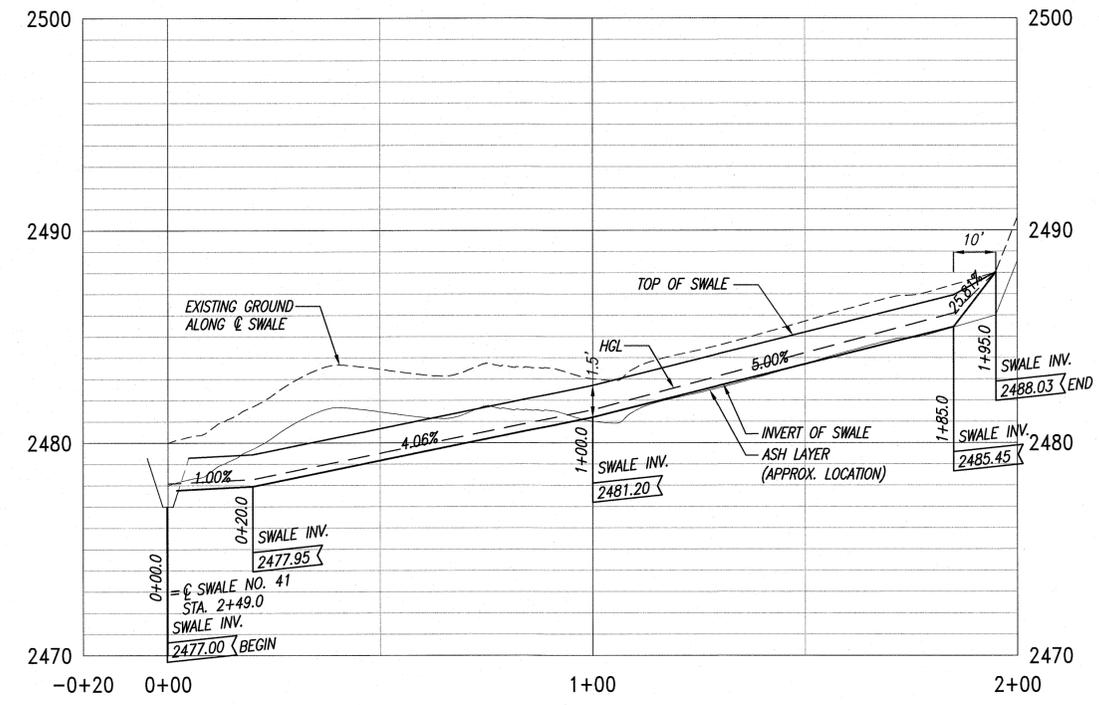
**LEGEND**

- LIMITS OF GRADING
- - - - - EXISTING GROUND CONTOUR
- 2450 — FINISH GRADE CONTOUR
- — — — — PROPERTY LINE
- ..... OLD PROPERTY LINE
- (140-A) LOT NUMBER
- (165) EXISTING LOT NUMBER
- TMK 2-2-002:014



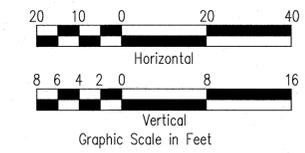
**PROFILE - SWALE NO. 39 (LOT 100-A)**

SCALE: HORIZ. 1" = 20'  
VERT. 1" = 8'



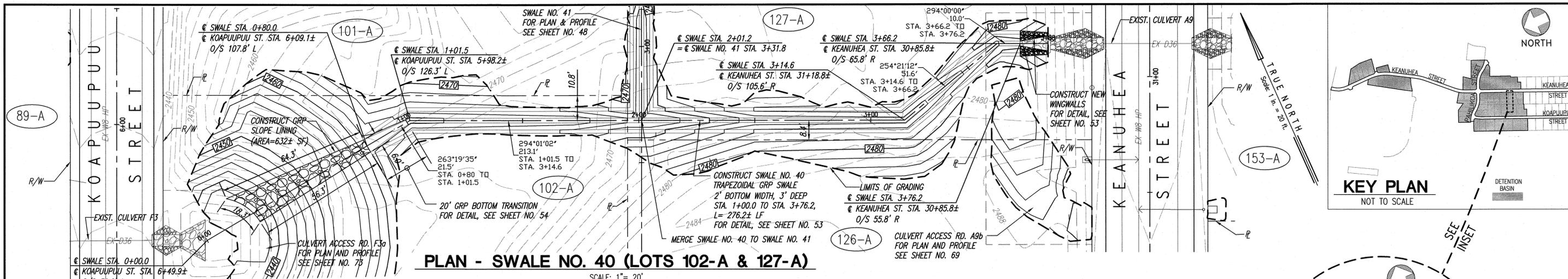
**PROFILE - SWALE NO. 38 (LOT 127-A)**

SCALE: HORIZ. 1" = 20'  
VERT. 1" = 8'



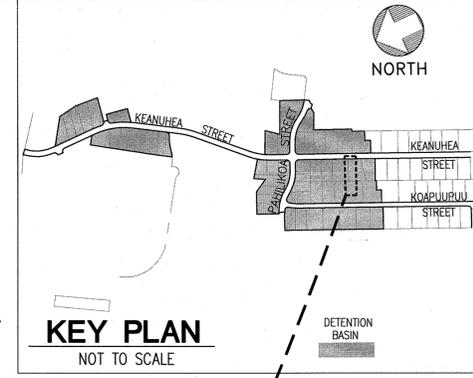
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. LICENSE EXPIRATION DATE: 04/30/16

REVISION DATE	DESCRIPTION	MADE BY	APPROVED
<p><b>Community Planning and Engineering, Inc.</b>            Engineering Design   Construction Management   Infrastructure Planning            1298 Queen Emma Street, Third Floor   Honolulu, Hawaii</p> <p><b>CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A</b>            KEOKEA &amp; WAIOHULI, MAKAWAO, MAUI            OWNER &amp; DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS            TAX MAP KEYS: (2) 2-2-033: 021 TO 038 &amp; 058-074            AND (2) 2-2-34: 001 TO 016, 026 &amp; 029</p> <p><b>PLAN AND PROFILE SWALE NO. 38 AND SWALE NO. 39</b></p>			
DRAWN BY: KWNW		ENGINEER: KWNW/MFC	CHECKED BY: RYS

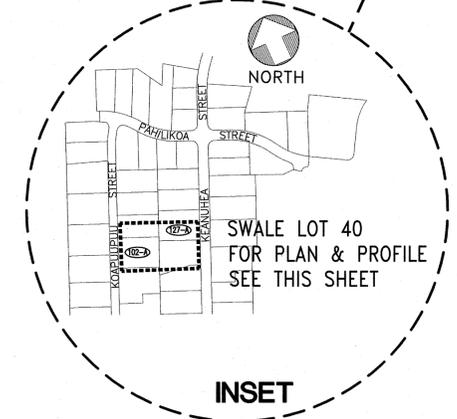


**PLAN - SWALE NO. 40 (LOTS 102-A & 127-A)**

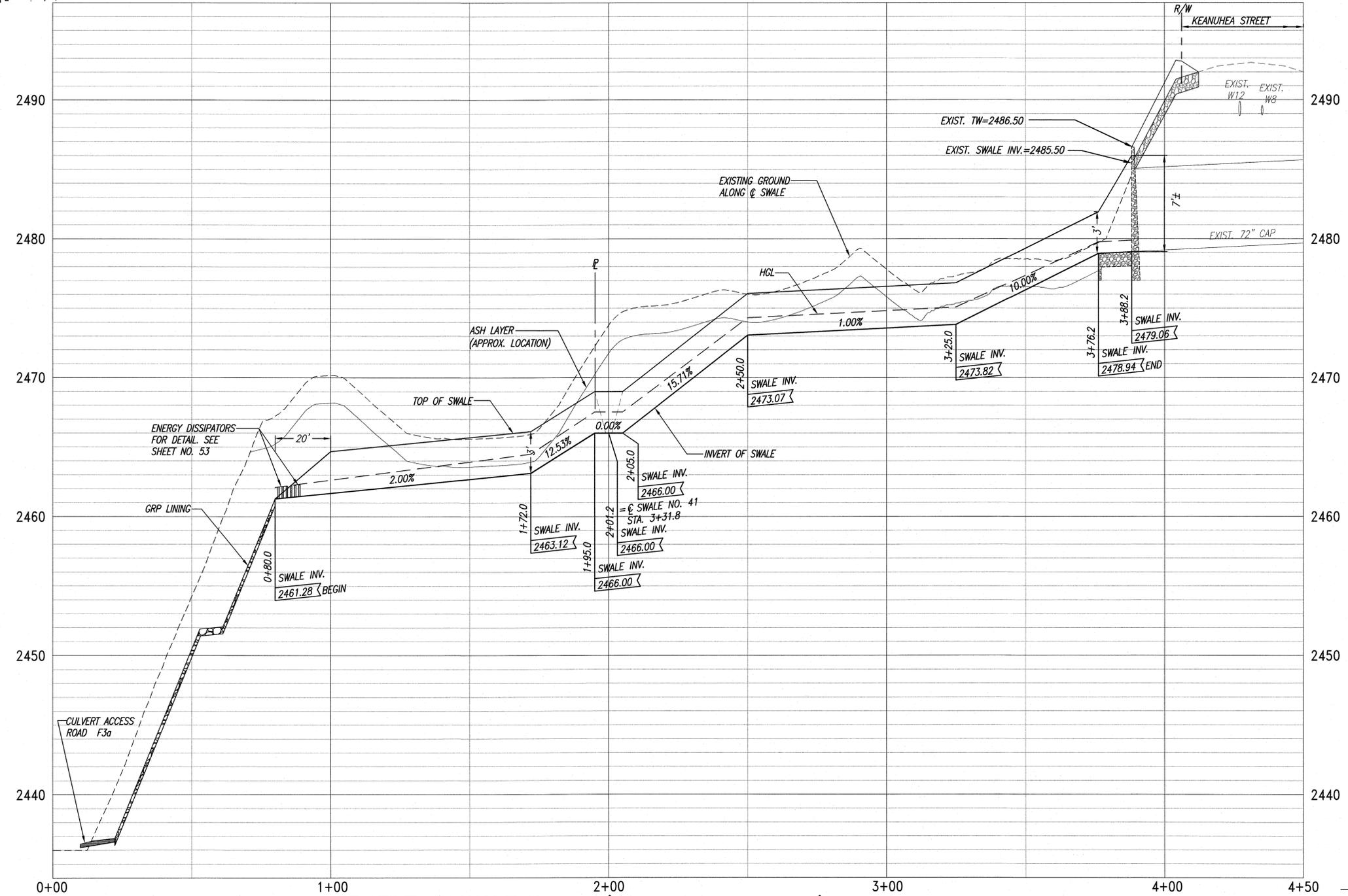
SCALE: 1" = 20'



**KEY PLAN**  
NOT TO SCALE



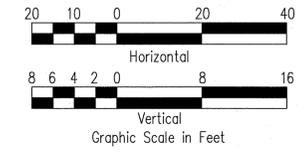
**INSET**



**PROFILE - SWALE NO. 40 (LOTS 102-A & 127-A)**

SCALE: HORIZ. 1" = 20'  
VERT. 1" = 8'

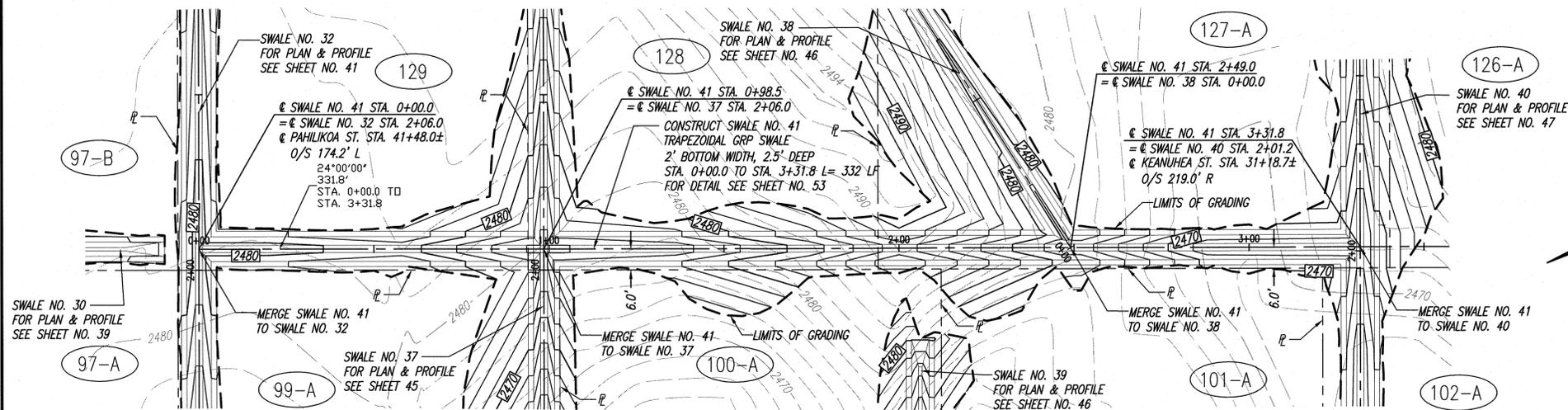
- LEGEND**
- LIMITS OF GRADING
  - - - - - EXISTING GROUND CONTOUR
  - 2450 — EXISTING GROUND CONTOUR
  - 2450 — FINISH GRADE CONTOUR
  - — — — — PROPERTY LINE
  - ... .. OLD PROPERTY LINE
  - 140-A LOT NUMBER
  - 165 EXISTING LOT NUMBER
  - TMK 2-2-002:014



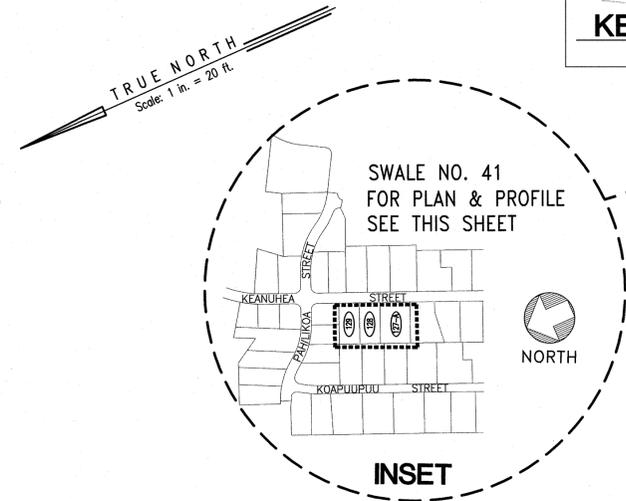
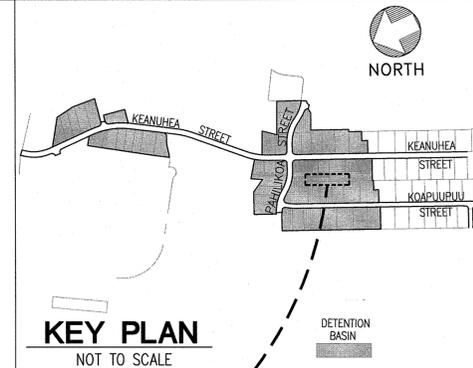
REVISION DATE	DESCRIPTION	MADE BY	APPROVED
<b>Community Planning and Engineering, Inc.</b> Engineering Design   Construction Management   Infrastructure Planning 1286 Queen Emma Street, Third Floor Honolulu, Hawaii			
<b>CONSOLIDATION / RE-SUBDIVISION            KEOKEA-WAIOHULI DEVELOPMENT            PHASE 1A</b> KEOKEA & WAIOHULI, MAKAWAO, MAUI OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074 AND (2) 2-2-34: 001 TO 016, 026 & 029			
<b>PLAN AND PROFILE            SWALE NO. 40</b>			
DRAWN BY: KJNW	ENGINEER: KJNW/MFC	CHECKED BY: RYS	



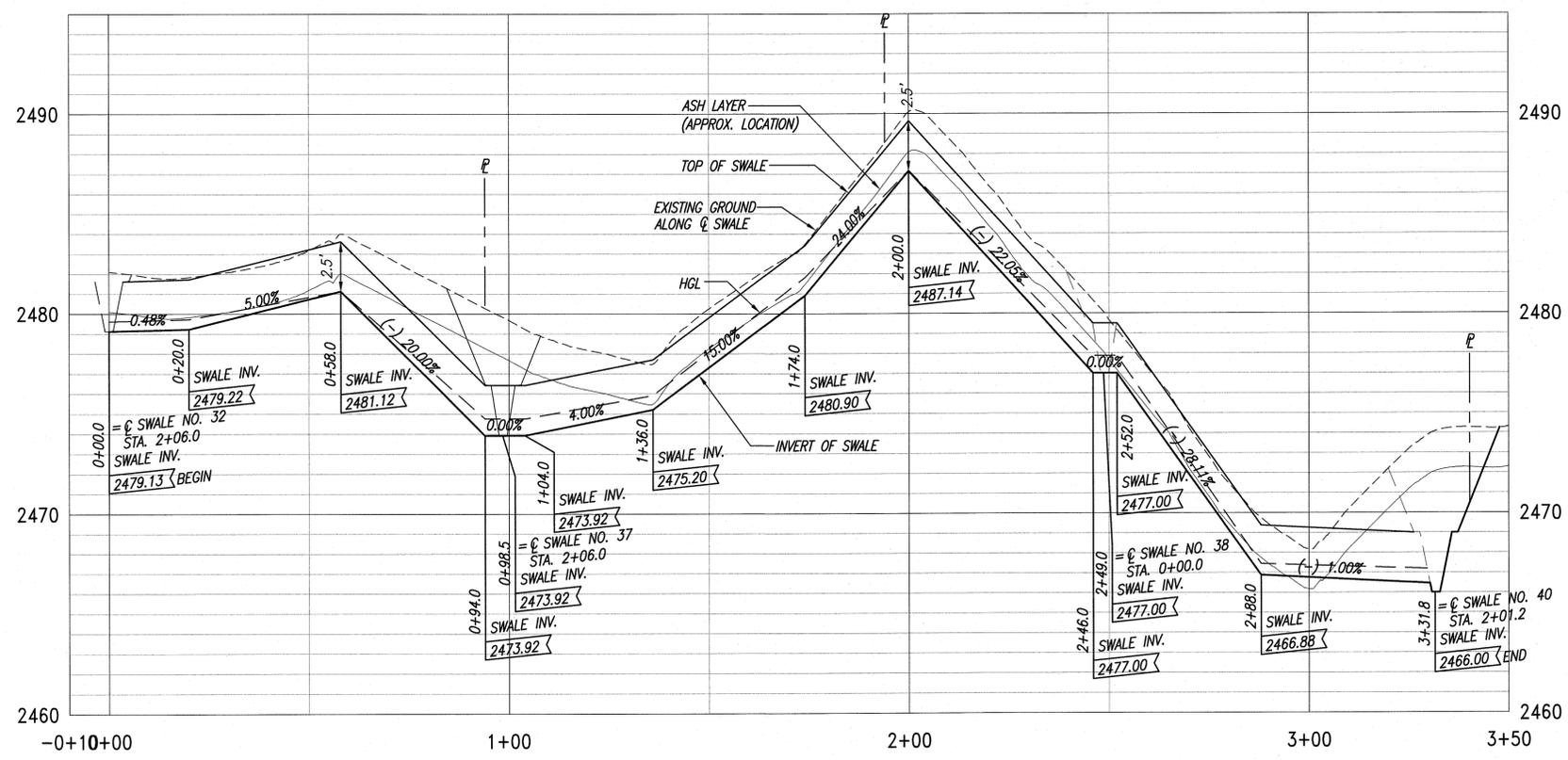
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. LICENSE EXPIRATION DATE: 04/30/16



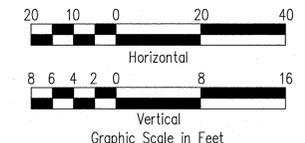
**PLAN - SWALE NO. 41 (LOTS 129, 128 & 127-A)**  
SCALE: 1" = 20'



- LEGEND**
- LIMITS OF GRADING
  - - - - EXISTING GROUND CONTOUR
  - 2450 — FINISH GRADE CONTOUR
  - — — — PROPERTY LINE
  - ..... OLD PROPERTY LINE
  - (140-A) LOT NUMBER
  - (165) EXISTING LOT NUMBER
  - TMK 2-2-002:014



**PROFILE - SWALE NO. 41 (LOTS 129, 128 & 127-A)**  
SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'



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REVISION DATE	DESCRIPTION	MADE BY	APPROVED

**Community Planning and Engineering, Inc.**  
Engineering Design | Construction Management | Infrastructure Planning  
1286 Queen Emma Street, Third Floor Honolulu, Hawaii

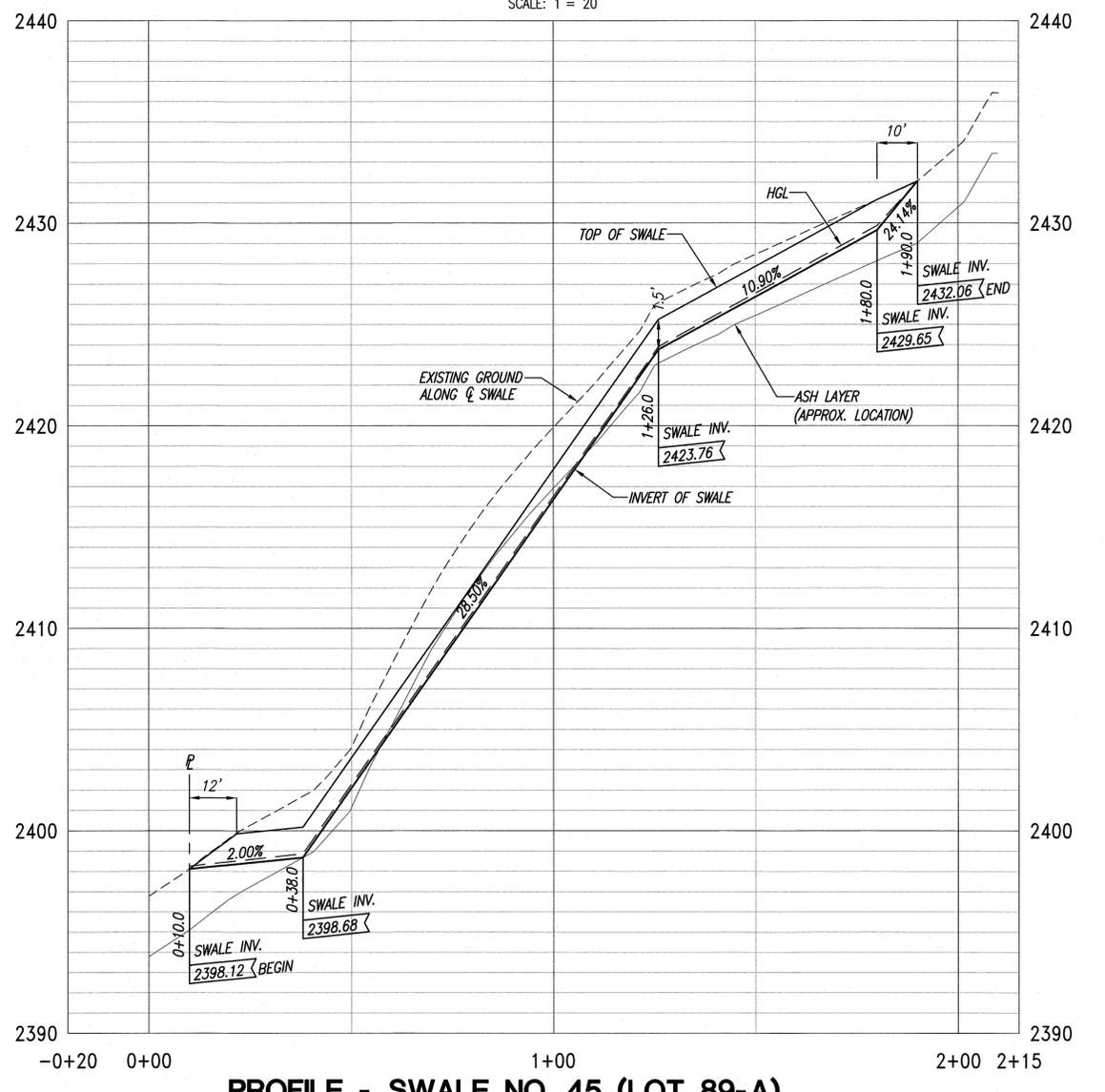
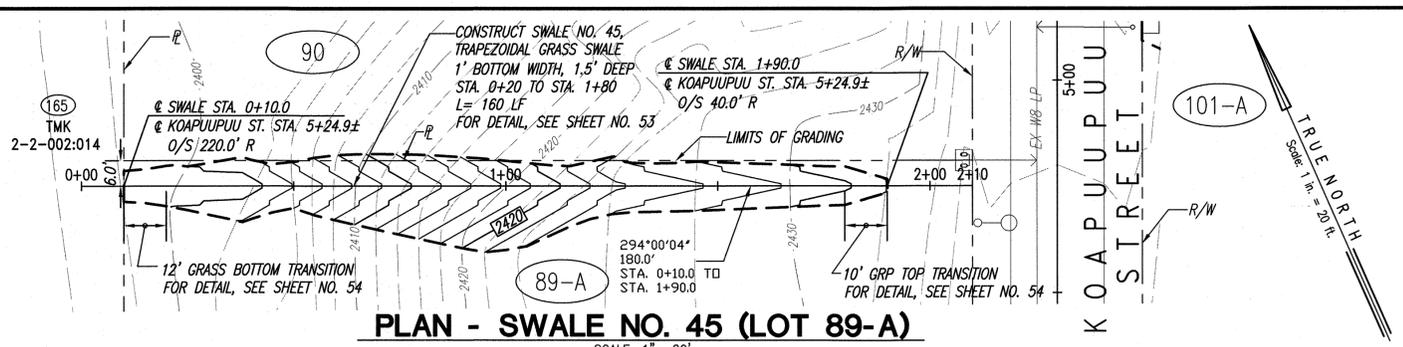
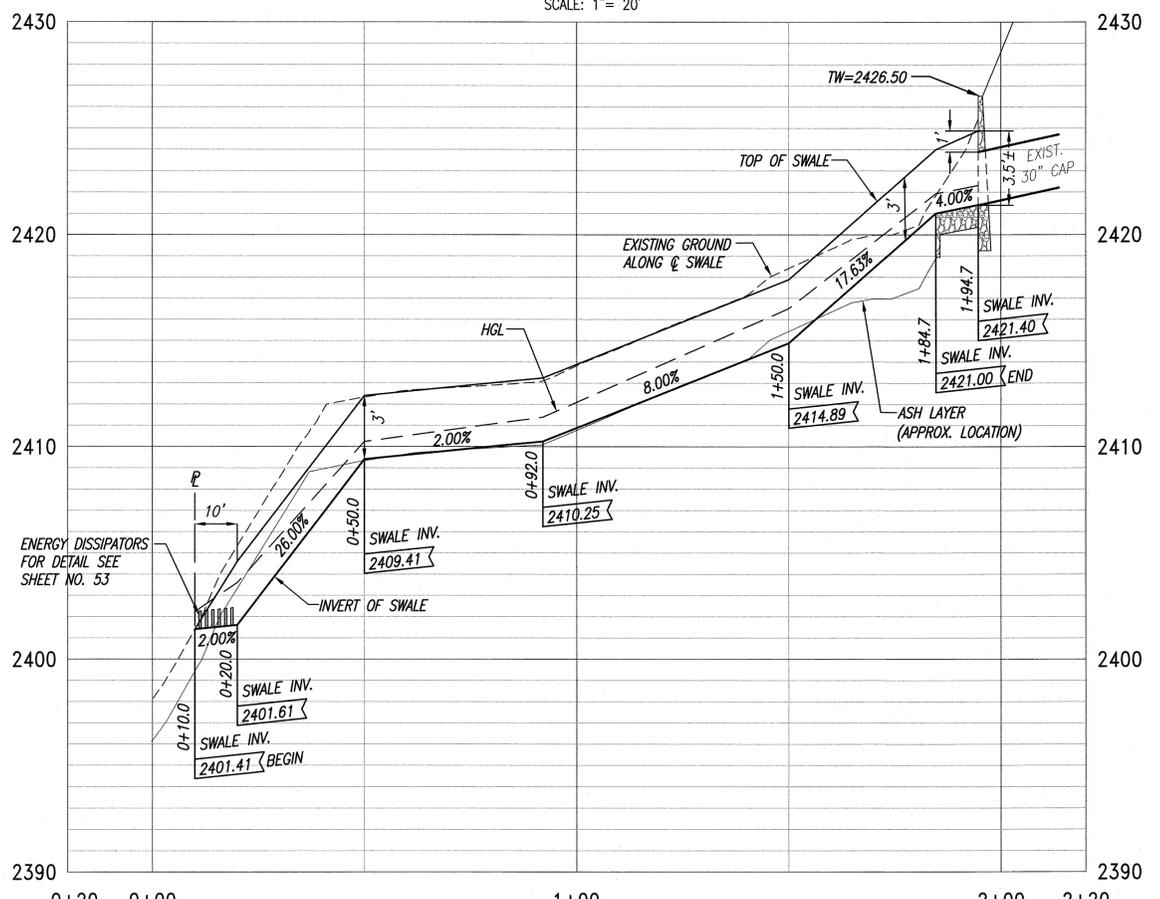
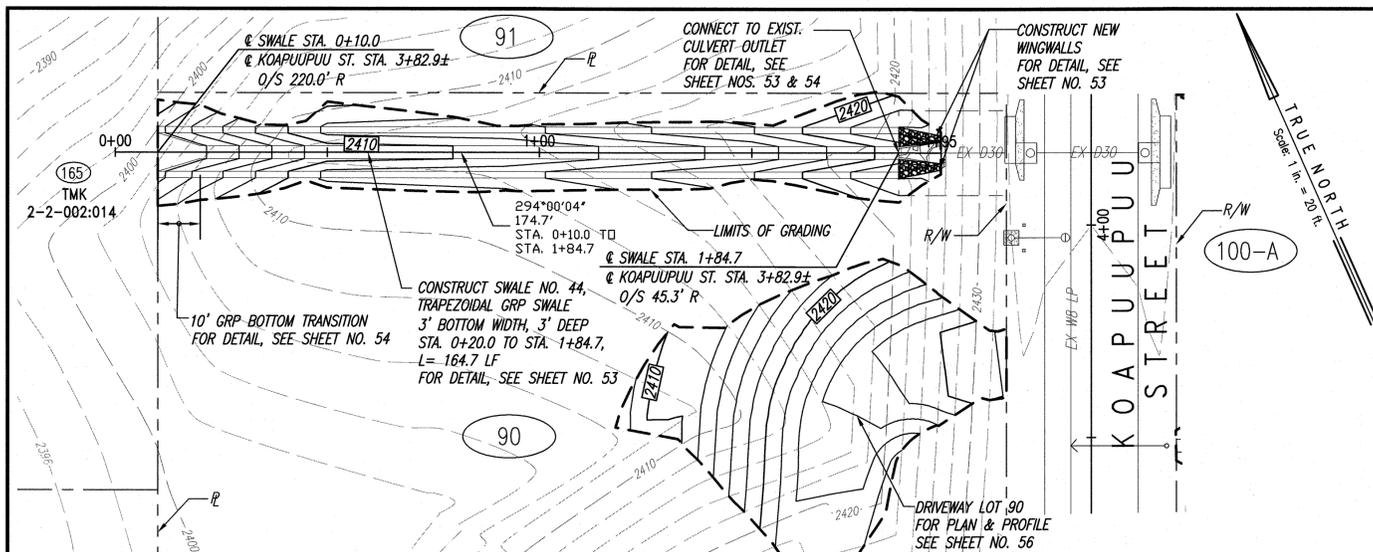
**CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A**  
KEOKEA & WAIOHULI, MAKAWAO, MAUI  
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
TAX MAP KEYS: (1) 2-2-033: 021 TO 038 & 058-074 AND (2) 2-2-34: 001 TO 016, 026 & 029

**PLAN AND PROFILE SWALE NO. 41**

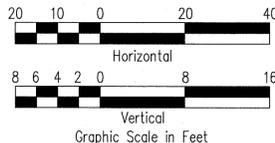
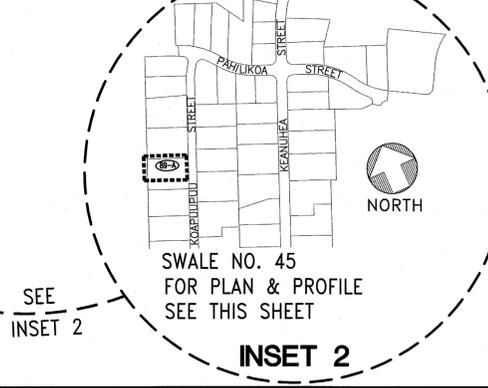
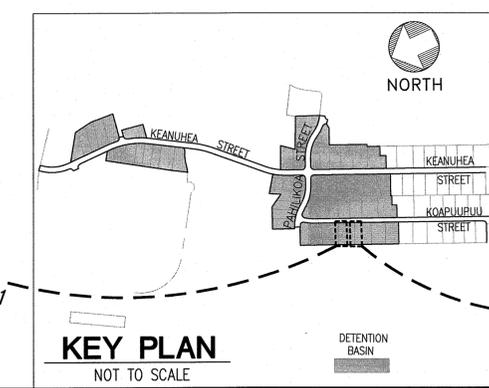
DRAWN BY: KWNW ENGINEER: KWNW/MFC CHECKED BY: RYS

P:\Land Projects\DHHL Keokea Ph. 1, 2 & 4\DWG\Increment 1\Current\46-46 P&P Swale 36-41.dwg, 11/14/2014 4:19:15 PM, 1:1





- LEGEND**
- LIMITS OF GRADING
  - - - - - EXISTING GROUND CONTOUR
  - 2450 — FINISH GRADE CONTOUR
  - — — — — PROPERTY LINE
  - ... OLD PROPERTY LINE
  - (140-A) LOT NUMBER
  - (165) EXISTING LOT NUMBER



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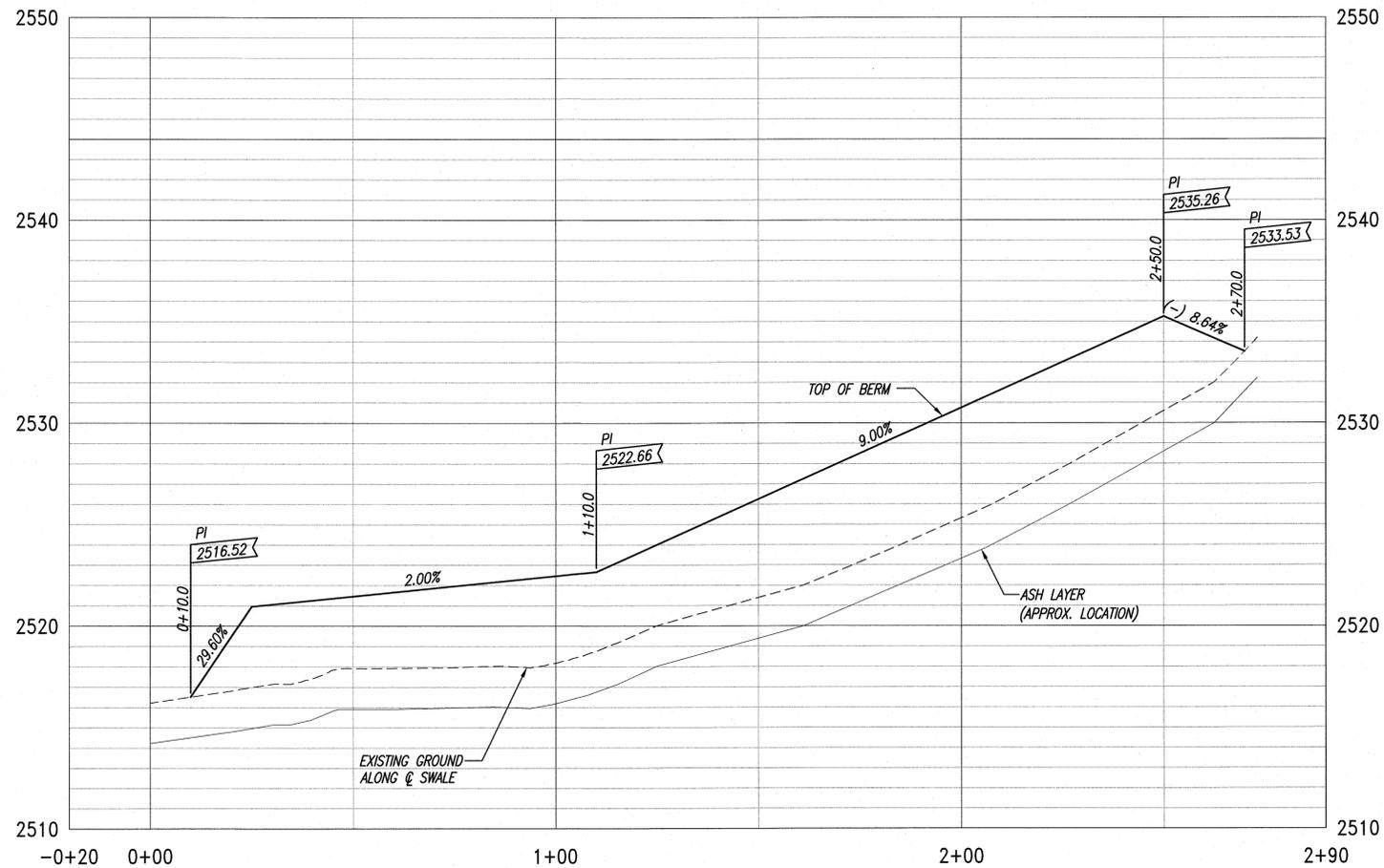
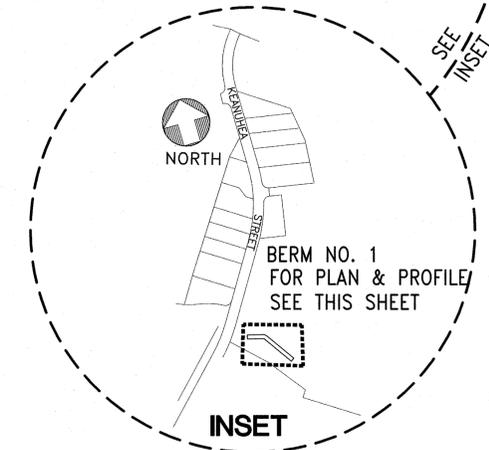
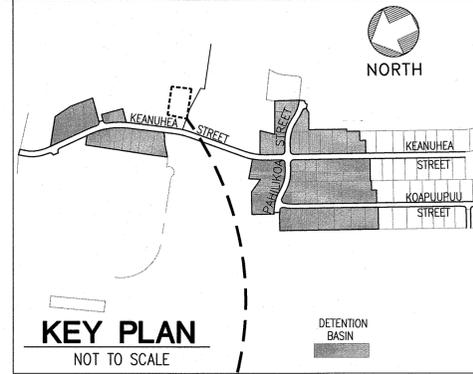
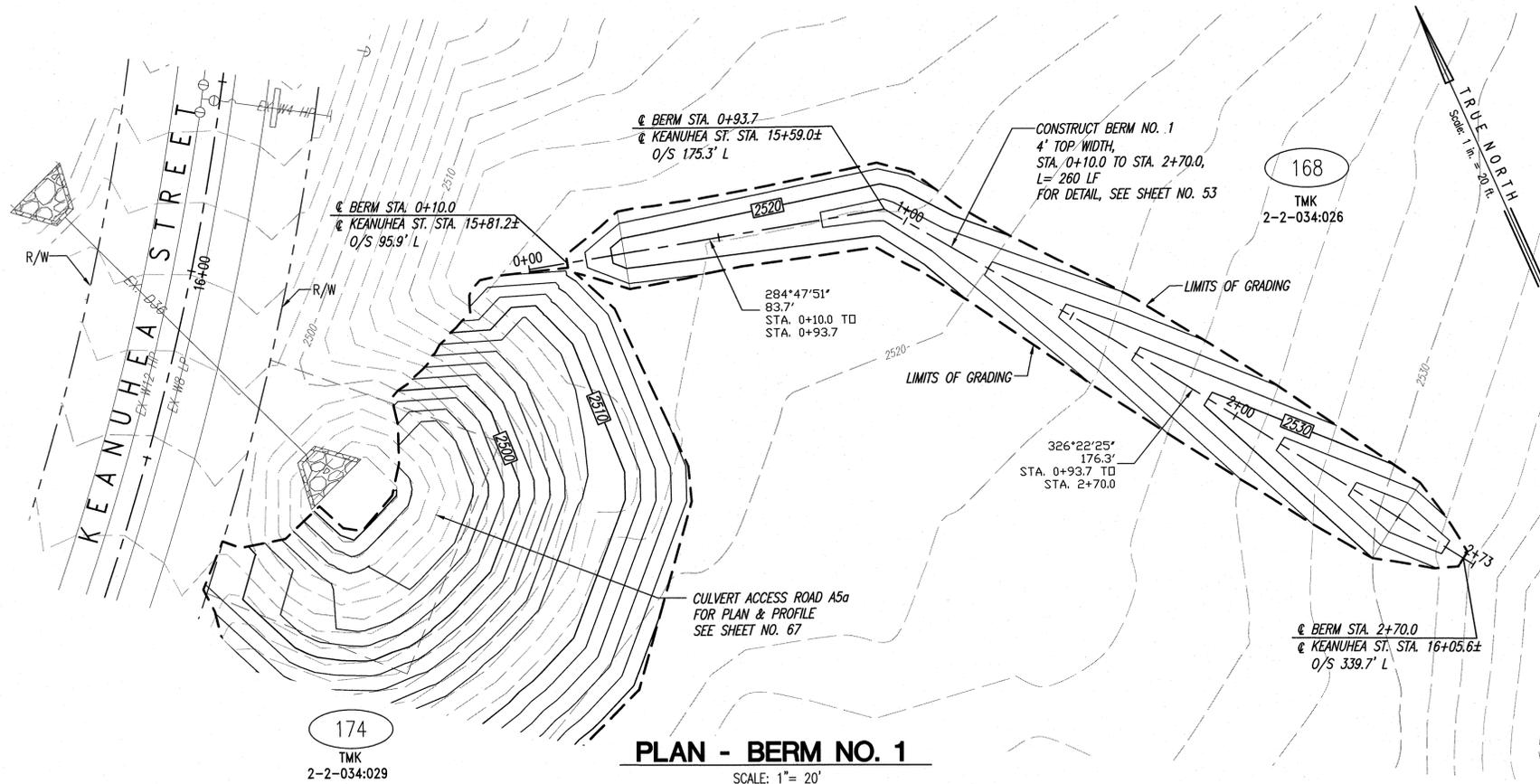
REVISION DATE	DESCRIPTION	MADE BY	APPROVED
<p><b>Community Planning and Engineering, Inc.</b>            Engineering Design   Construction Management   Infrastructure Planning            1286 Queen Emma Street, Third Floor   Honolulu, Hawaii</p> <p><b>CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A</b>            KEOKEA &amp; WAIOHULI, MAKAWAO, MAUI            OWNER &amp; DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS            TAX MAP KEYS: (2) 2-2-033: 021 TO 038 &amp; 058-074            AND (2) 2-2-34: 001 TO 016, 026 &amp; 029</p> <p><b>PLAN AND PROFILE SWALE NO. 44 AND SWALE NO. 45</b></p>			
DRAWN BY: KWNW	ENGINEER: KWNW/MFC	CHECKED BY: RYS	



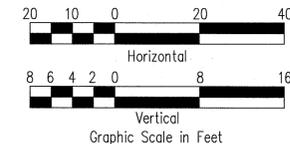
175  
TMK  
2-2-033:074

174  
TMK  
2-2-034:029

168  
TMK  
2-2-034:026

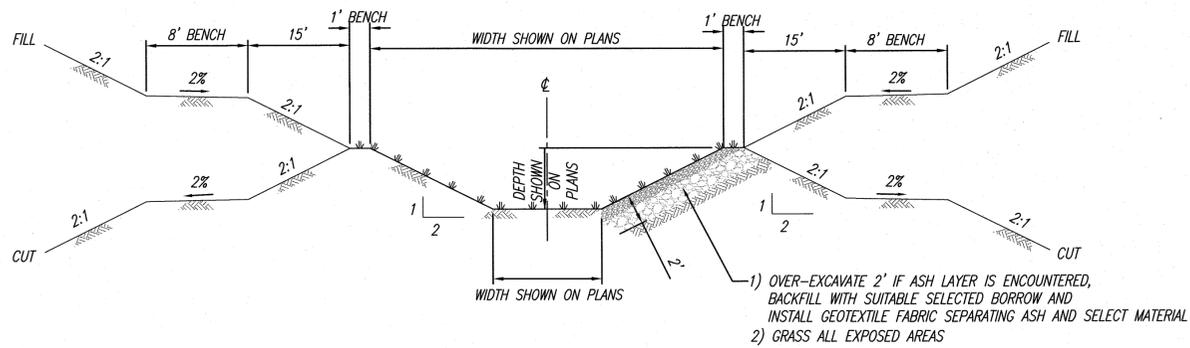


- LEGEND**
- LIMITS OF GRADING
  - - - EXISTING GROUND CONTOUR
  - 2450 — FINISH GRADE CONTOUR
  - — — PROPERTY LINE
  - ... OLD PROPERTY LINE
  - (140-A) LOT NUMBER
  - (165) EXISTING LOT NUMBER
- TMK  
2-2-002:014

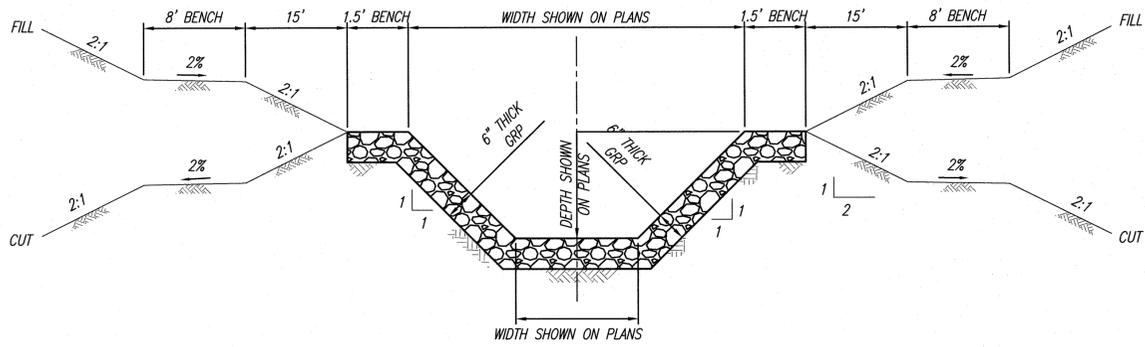


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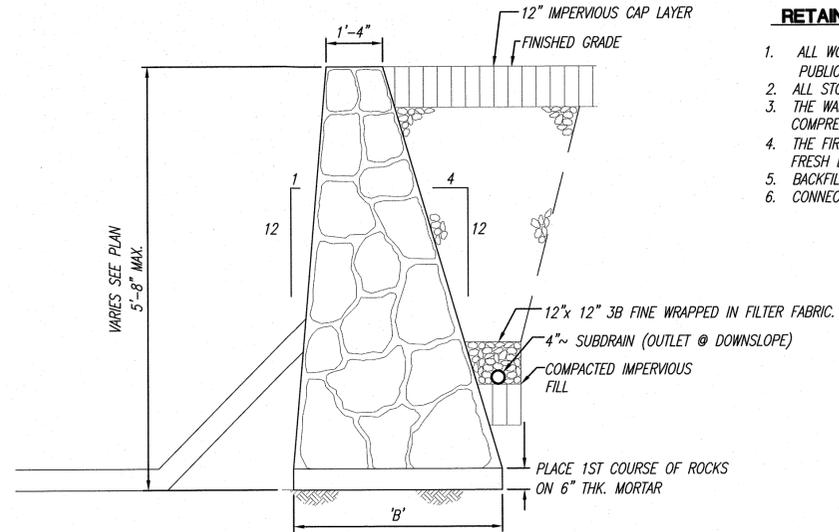
REVISION DATE	DESCRIPTION	MADE BY	APPROVED
<p><b>Community Planning and Engineering, Inc.</b> Engineering Design   Construction Management   Infrastructure Planning 1286 Queen Emma Street, Third Floor Honolulu, Hawaii</p> <p><b>CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A</b> KEOKEA &amp; WAIOHULI, MAKAWAO, MAUI OWNER &amp; DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS TAX MAP KEYS: (2) 2-2-033: 021 TO 038 &amp; 058-074 AND (2) 2-2-34: 001 TO 016, 026 &amp; 029</p> <p><b>PLAN AND PROFILE BERM NO. 1</b></p>			
DRAWN BY: KWNW	ENGINEER: KWNW/MFC	CHECKED BY: RYS	



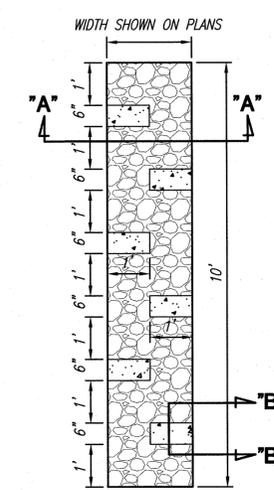
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NOT TO SCALE



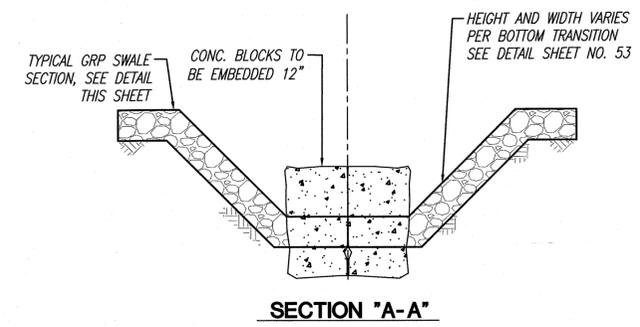
**TYPICAL GRP SWALE SECTION**  
NOT TO SCALE



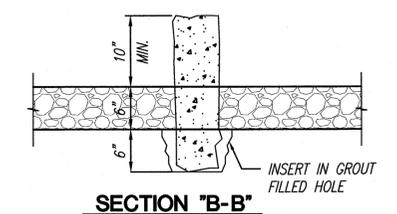
**RETAINING WING WALL**  
NOT TO SCALE



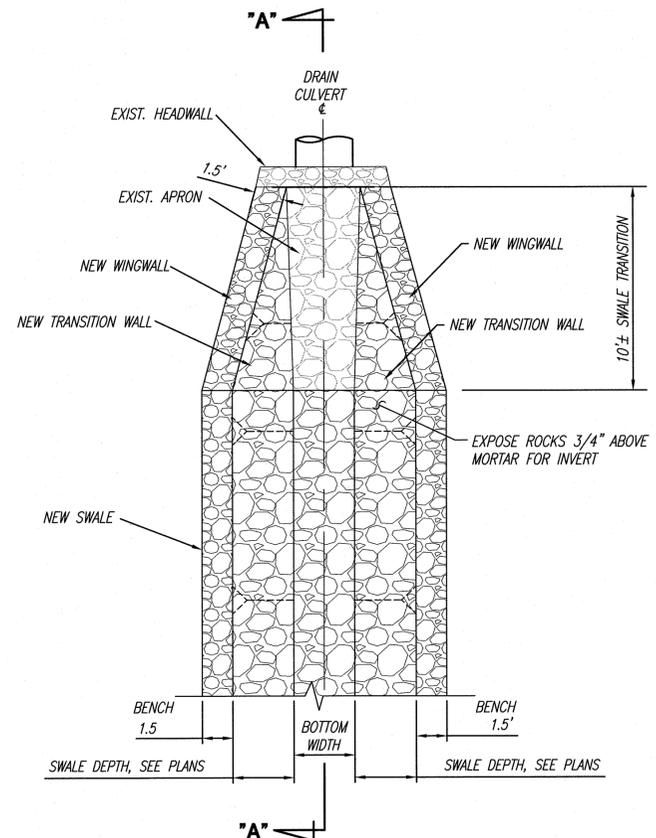
**ENERGY DISSIPATOR**  
NOT TO SCALE



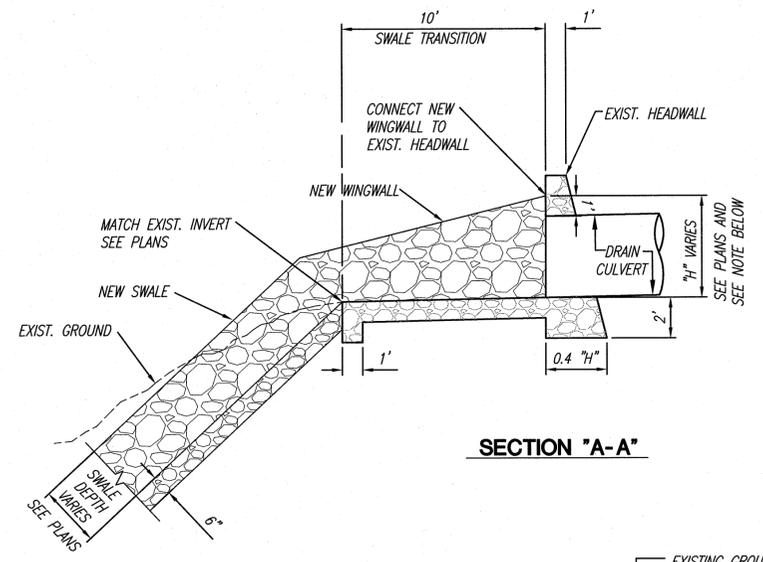
**SECTION 'A-A'**



**SECTION 'B-B'**

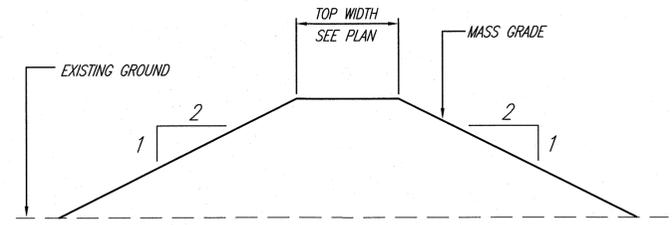


**SWALE CONNECTION TO EXIST. CULVERT DETAIL**  
WITH NEW WINGWALL  
NOT TO SCALE



**SECTION 'A-A'**

**NOTE:**  
"H" = PIPE DIA. PLUS 1 FEET OR HEIGHT OF EXIST. HEADWALL WHICHEVER IS GREATER



**TYPICAL EARTH BERM**  
NOT TO SCALE



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- RETAINING WALL NOTES:**
1. ALL WORK SHALL CONFORM TO THE "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OF THE CITY AND COUNTY OF HONOLULU" (LATEST).
  2. ALL STONES SHALL BE CLEAN AND FREE FROM DIRT OR LOOSE MATERIAL.
  3. THE WALL SHALL BE GROUTED SOLID. GROUT AND MORTAR SHALL HAVE MINIMUM COMPRESSIVE STRENGTH OF 2,000 PSI AT 28 DAYS.
  4. THE FIRST COURSE OF STONES SHALL BE SET INTO A 6" MINIMUM THICK LAYER OF FRESH BEDDING MORTAR.
  5. BACKFILL SHALL BE PRE-APPROVED IN ACCORDANCE WITH THE GEOTECHNICAL REPORT.
  6. CONNECT NEW RETAINING WALL TO THE EXISTING HEADWALL WITH A FULL MORTAR JOINT.

REVISION DATE	DESCRIPTION	MADE BY	APPROVED

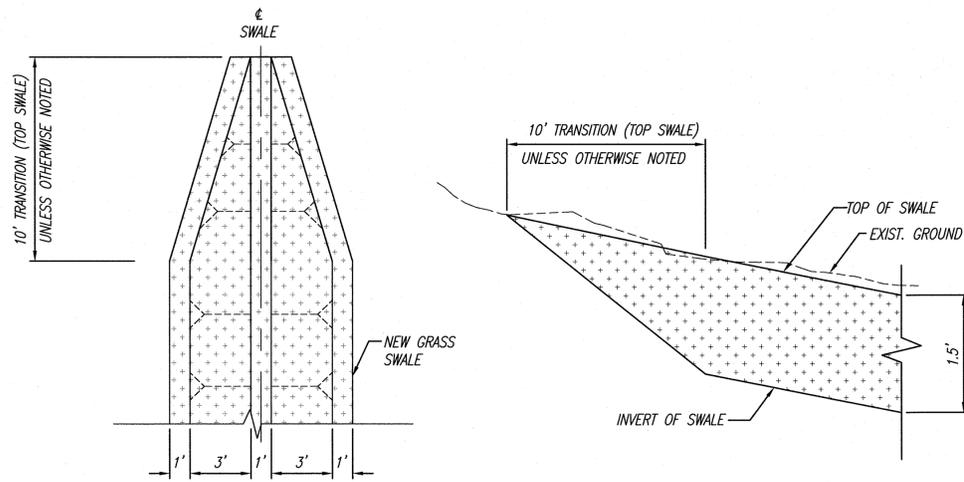
**Community Planning and Engineering, Inc.**  
Engineering Design | Construction Management | Infrastructure Planning  
1288 Queen Emma Street, Third Floor Honolulu, Hawaii

**CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A**  
KEOKEA & WAIOHULI, MAKAWAO, MAUI  
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
TAX MAP KEYS: (2) 2-2-033; 021 TO 038 & 058-074 AND (2) 2-2-34; 001 TO 016, 026 & 029

**SWALE AND BERM DETAILS - 1**

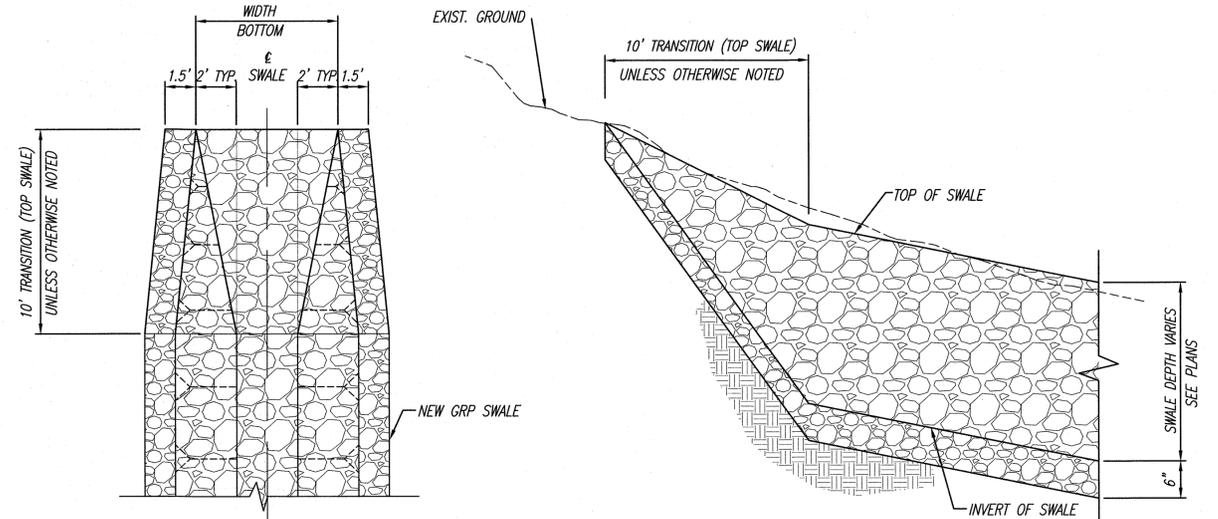
DRAWN BY: KINW	ENGINEER: KINW/MFC	CHECKED BY: RYS
APPROVED:		

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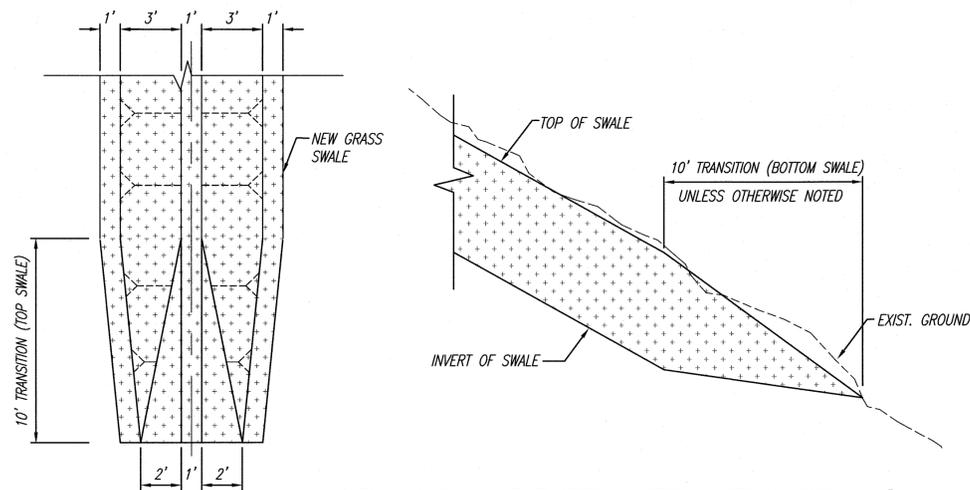
**GRASS SWALE TOP TRANSITION DETAILS**

NOT TO SCALE



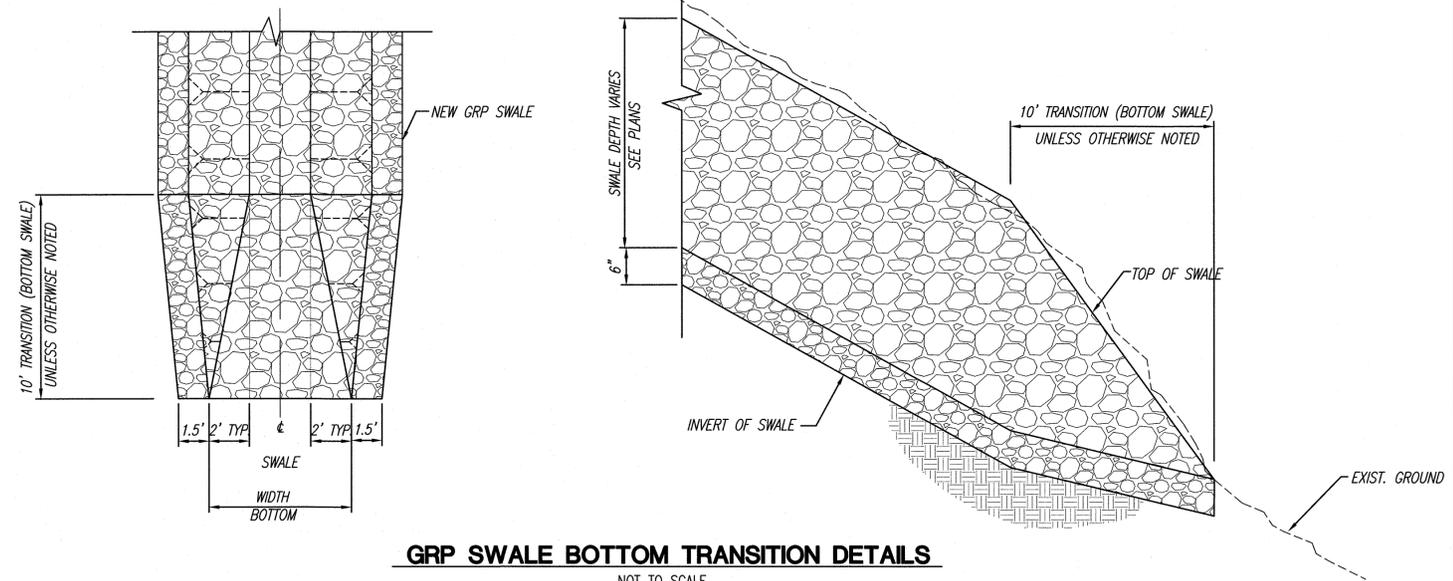
**GRP SWALE TOP TRANSITION DETAILS**

NOT TO SCALE



**GRASS SWALE BOTTOM TRANSITION DETAILS**

NOT TO SCALE



**GRP SWALE BOTTOM TRANSITION DETAILS**

NOT TO SCALE



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REVISION DATE	DESCRIPTION	MADE BY	APPROVED

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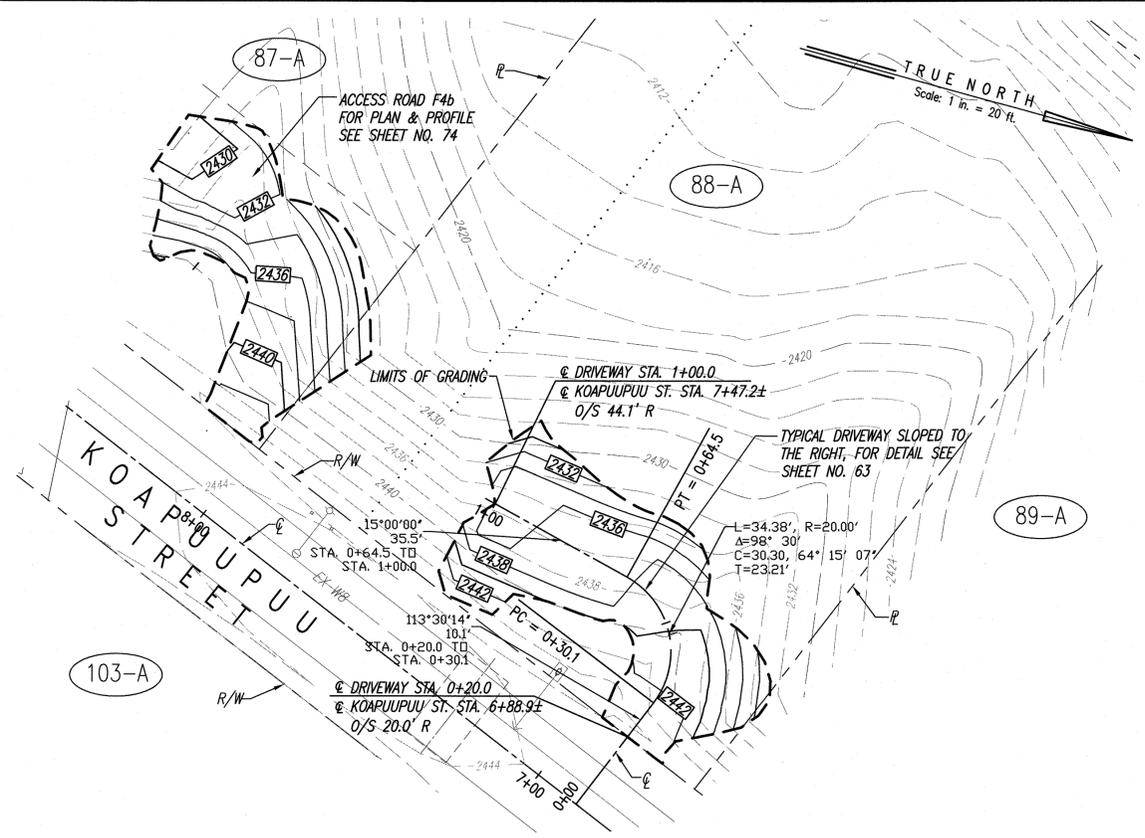
**CONSOLIDATION / RE-SUBDIVISION  
 KEOKEA-WAIOHULI DEVELOPMENT  
 PHASE 1A**  
 KEOKEA & WAIOHULI, MAKAWAO, MAUI  
 OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
 TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074  
 AND (2) 2-2-34: 001 TO 016, 026 & 029

**SWALE AND BERM DETAILS - 2**

DRAWN BY: KWNW    ENGINEER: KWNW/MFC    CHECKED BY: RYS

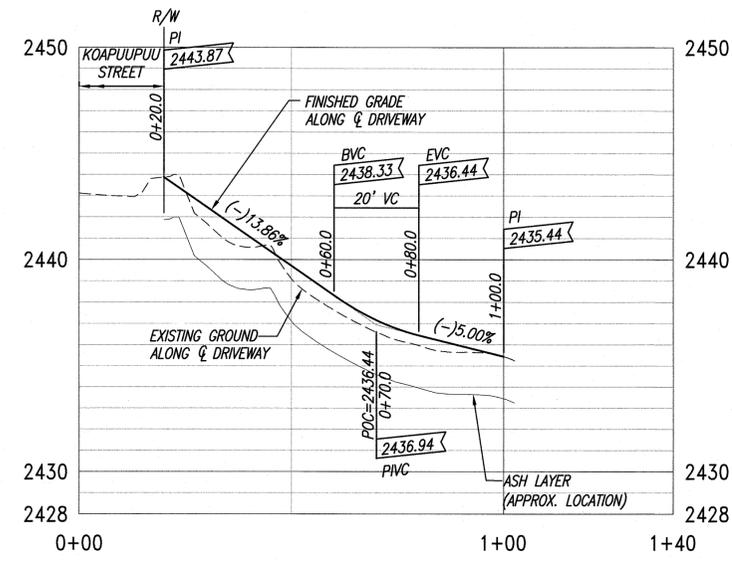
APPROVED: \_\_\_\_\_

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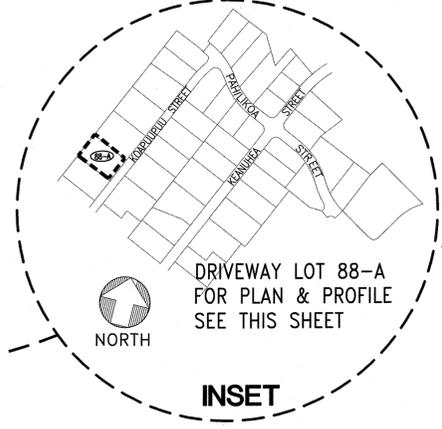
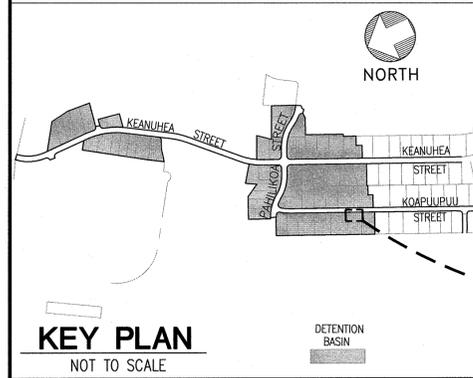
**PLAN - DRIVEWAY LOT 88-A**

SCALE: 1" = 20'

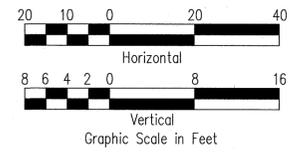


**PROFILE - DRIVEWAY LOT 88-A**

SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'



- LEGEND**
- LIMITS OF GRADING
  - - - 2500 EXISTING GROUND CONTOUR
  - FINISH GRADE CONTOUR
  - PROPERTY LINE
  - ..... OLD PROPERTY LINE
  - LIMITS OF 100 YEAR STORM
  - (140-A) LOT NUMBER
  - (165) EXISTING LOT NUMBER
  - TMK 2-2-002:014



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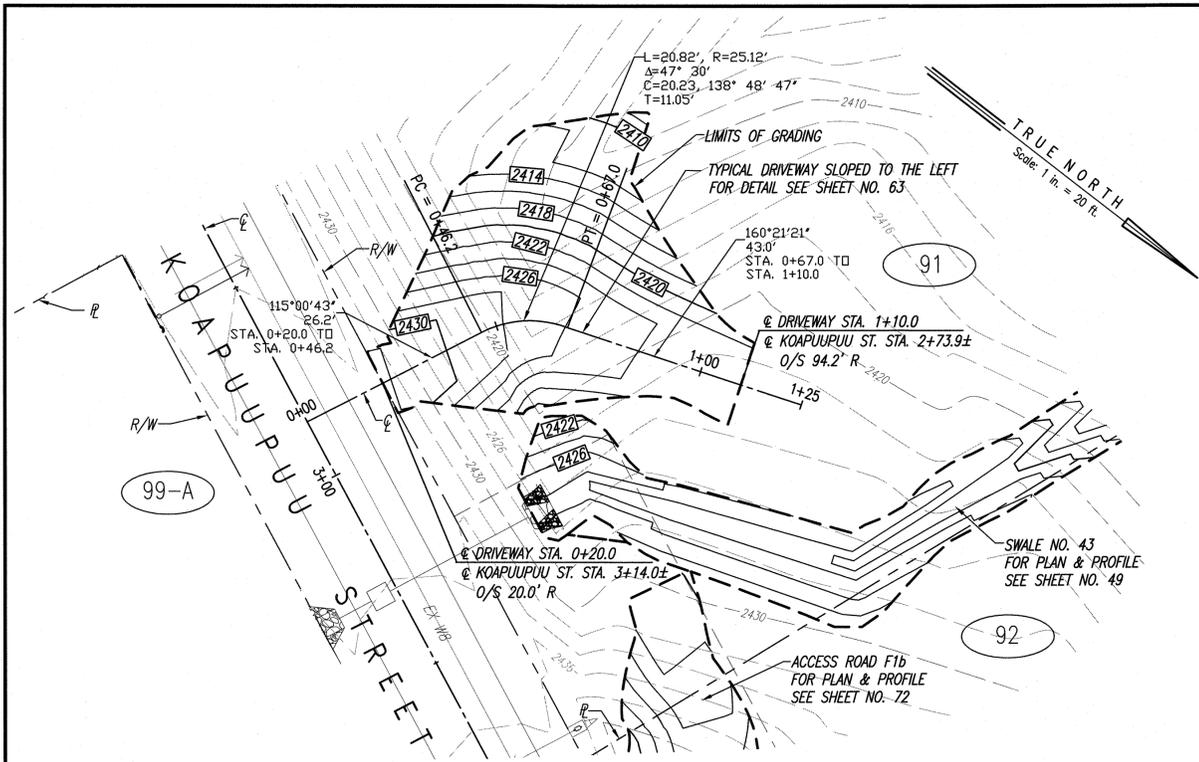
**Community Planning and Engineering, Inc.**  
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 1286 Queen Emma Street, Third Floor Honolulu, Hawaii

**CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A**  
 KEOKEA & WAIOHULI, MAKAWAO, MAUI  
 OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
 TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074 AND (2) 2-2-34: 001 TO 016, 026 & 029

**PLAN AND PROFILE DRIVEWAY LOT 88-A**

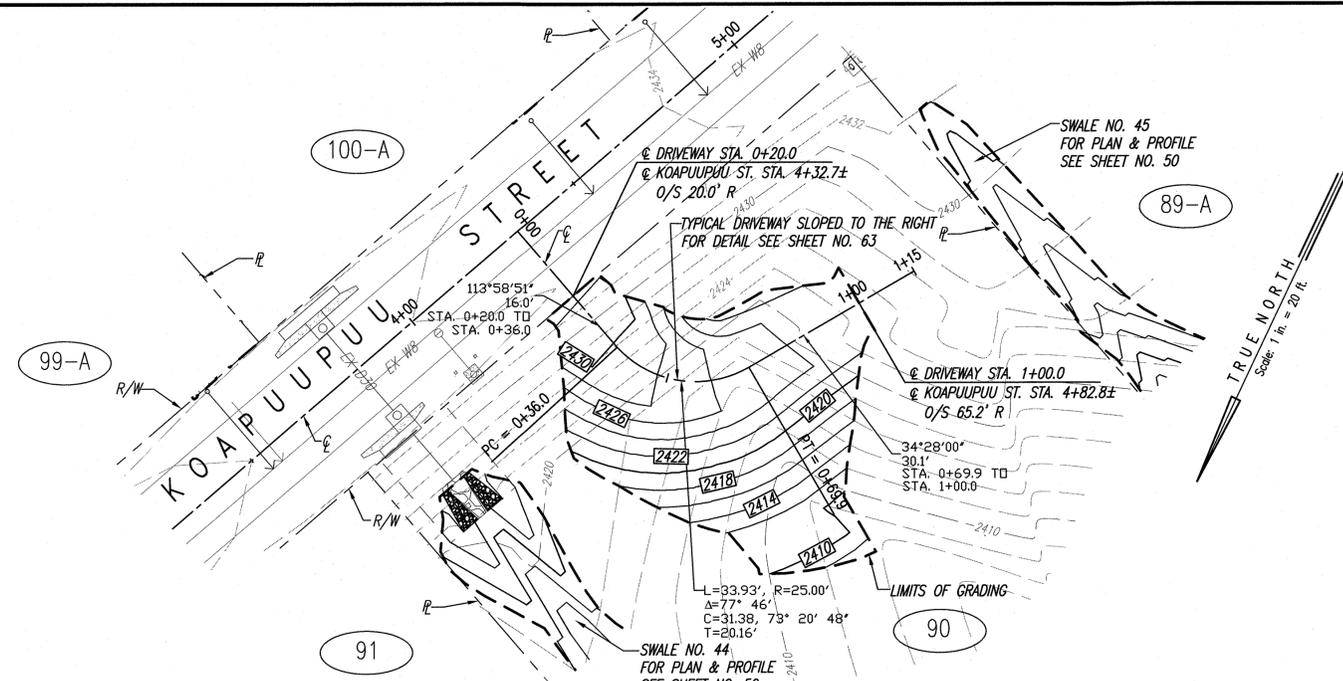
DRAWN BY: JSO	ENGINEER: KWNW/MFC	CHECKED BY: RYS
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FILE	POCKET	FOLDER	NO.



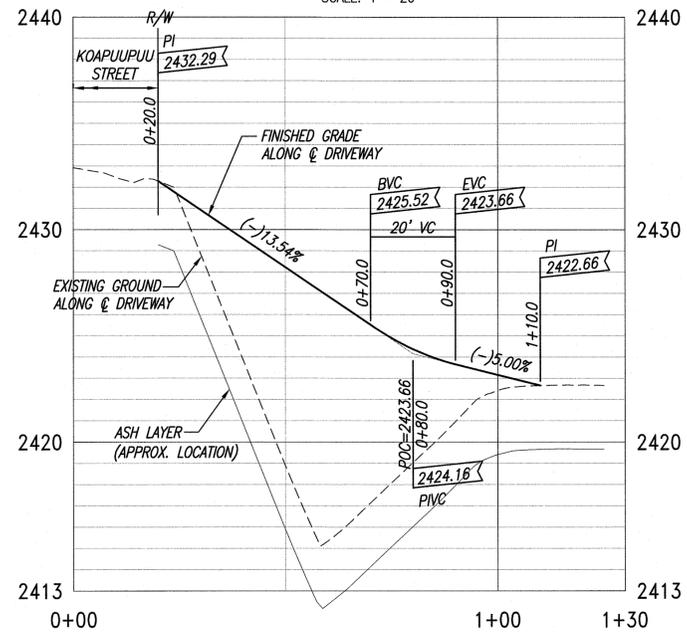
**PLAN - DRIVEWAY LOT 91**

SCALE: 1" = 20'



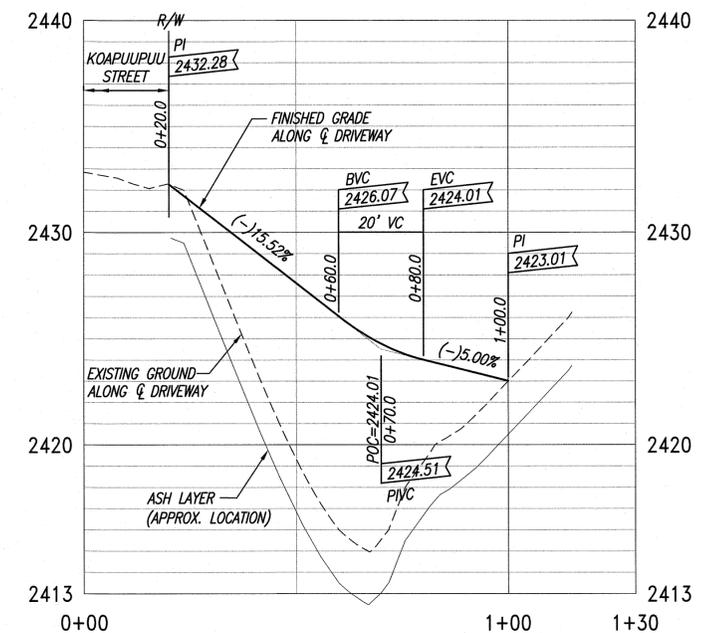
**PLAN - DRIVEWAY LOT 90**

SCALE: 1" = 20'



**PROFILE - DRIVEWAY LOT 91**

SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'



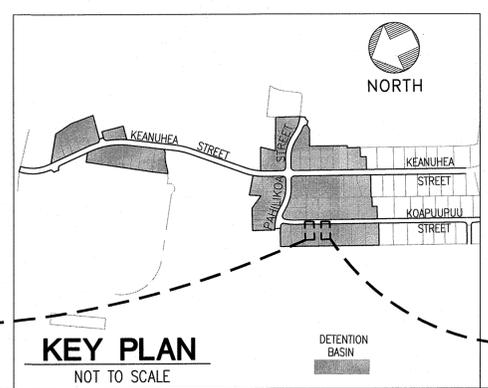
**PROFILE - DRIVEWAY LOT 90**

SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'

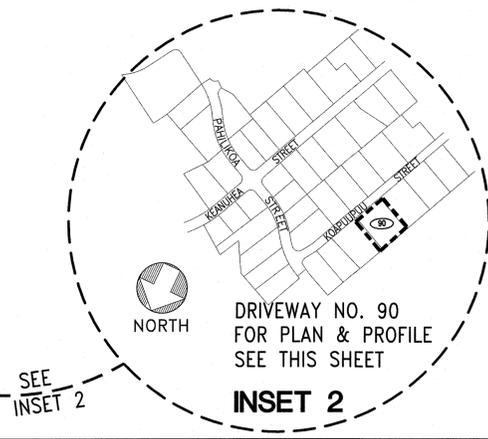
- LEGEND**
- LIMITS OF GRADING
  - - - EXISTING GROUND CONTOUR
  - FINISH GRADE CONTOUR
  - PROPERTY LINE
  - OLD PROPERTY LINE
  - LIMITS OF 100 YEAR STORM
  - (140-A) LOT NUMBER
  - (165) EXISTING LOT NUMBER
  - TMK 2-2-002:014



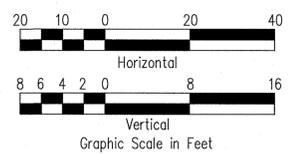
**INSET 1**



**KEY PLAN**  
NOT TO SCALE

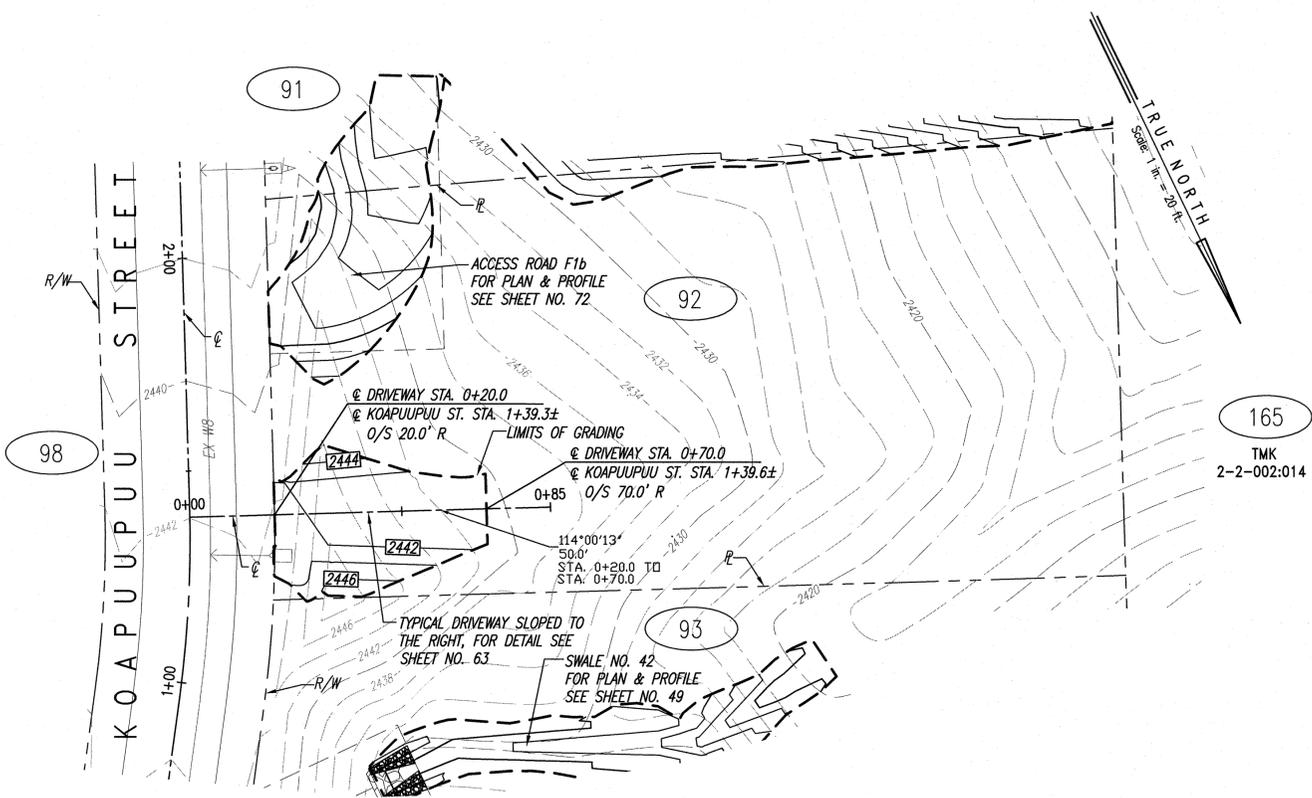


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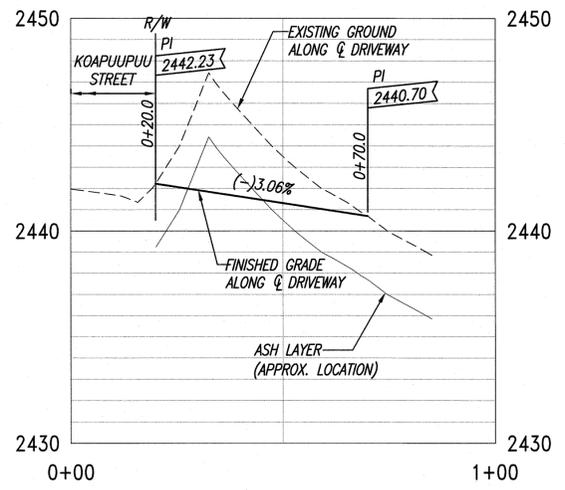


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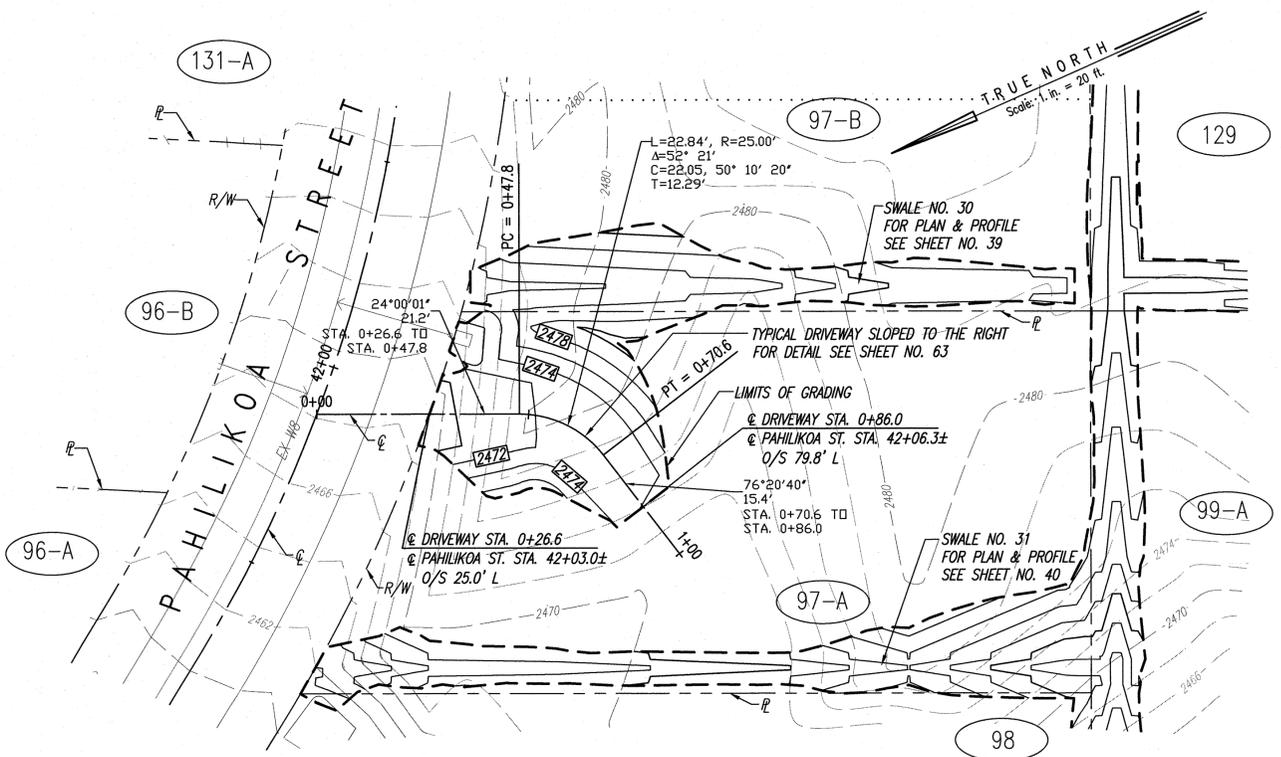
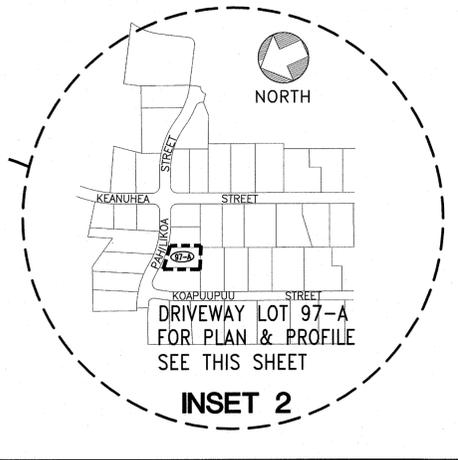
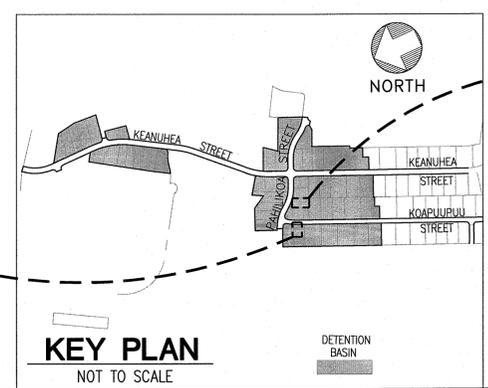
REVISION DATE	DESCRIPTION	MADE BY	APPROVED
<b>Community Planning and Engineering, Inc.</b> Engineering Design   Construction Management   Infrastructure Planning 1288 Queen Emma Street, Third Floor   Honolulu, Hawaii			
<b>CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A</b> KEOKEA & WAIOHULI, MAKAWAO, MAUI OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074 AND (2) 2-2-34: 001 TO 016, 026 & 029			
<b>PLAN AND PROFILE DRIVEWAY LOT 90 &amp; DRIVEWAY LOT 91</b>			
DRAWN BY: JSD	ENGINEER: KWN/MFC	CHECKED BY: RYS	



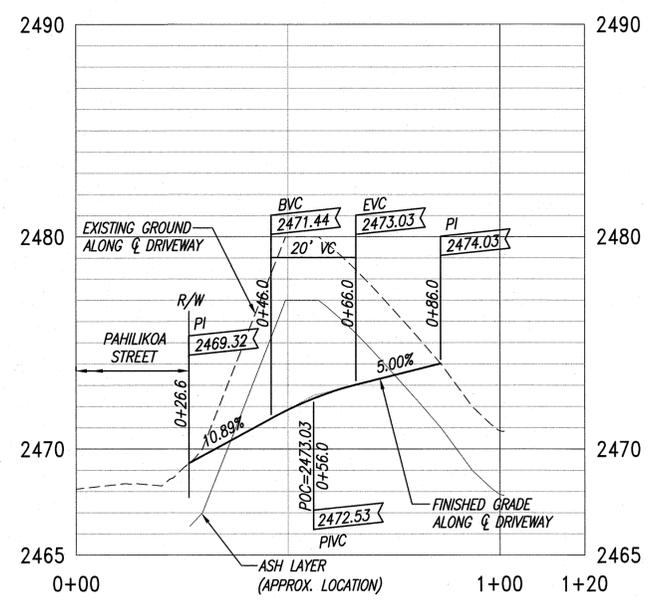
**PLAN - DRIVEWAY LOT 92**  
SCALE: 1" = 20'



**PROFILE - DRIVEWAY LOT 92**  
SCALES: HORIZ. 1"=20'  
VERT. 1"= 8'

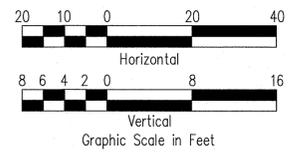


**PLAN - DRIVEWAY LOT 97-A**  
SCALE: 1" = 20'



**PROFILE - DRIVEWAY LOT 97-A**  
SCALES: HORIZ. 1"=20'  
VERT. 1"= 8'

- LEGEND**
- LIMITS OF GRADING
  - - - - - EXISTING GROUND CONTOUR
  - FINISH GRADE CONTOUR
  - PROPERTY LINE
  - OLD PROPERTY LINE
  - LIMITS OF 100 YEAR STORM
  - (140-A) LOT NUMBER
  - (165) EXISTING LOT NUMBER
- TMK 2-2-002:014



**RICHARD Y. SAVIDE**  
LICENSED PROFESSIONAL ENGINEER  
No. 8955-C  
HAWAII, U.S.A.

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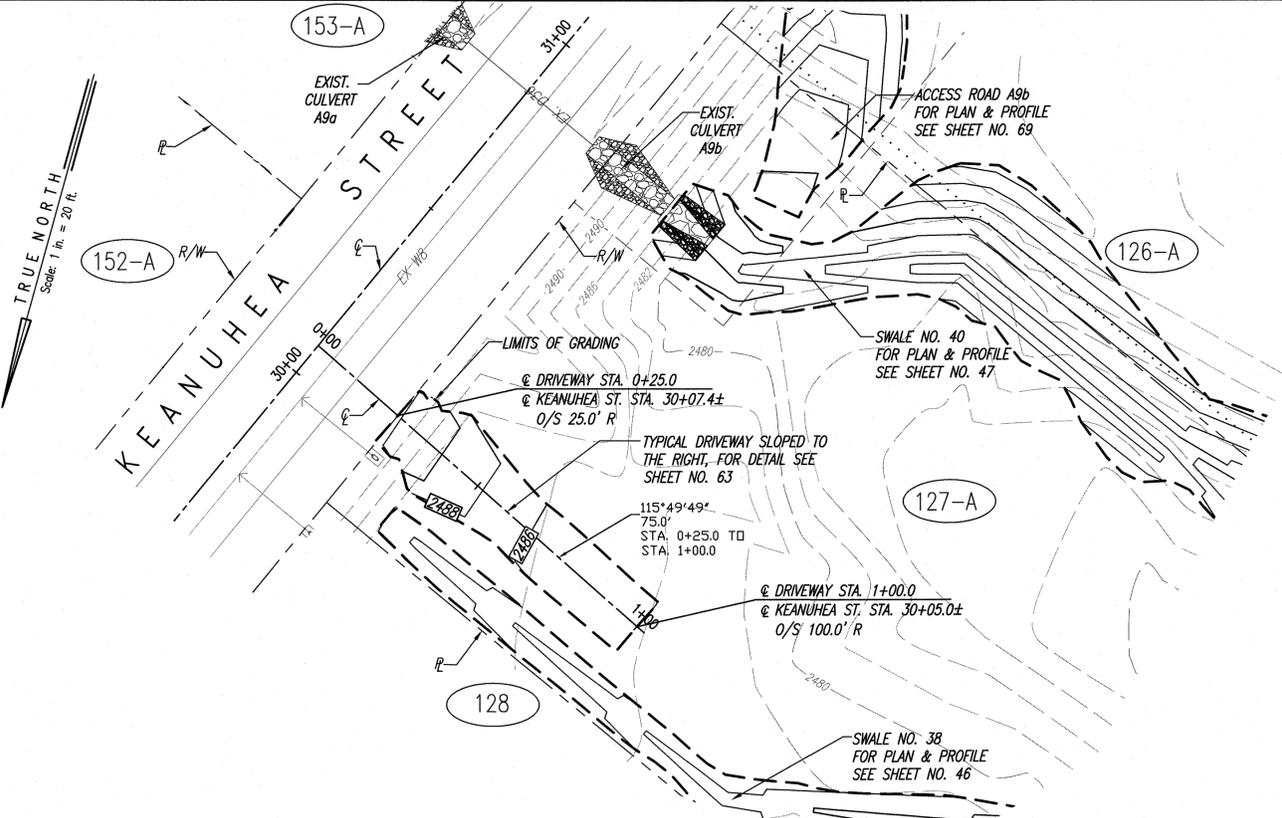
REVISION DATE	DESCRIPTION	MADE BY	APPROVED

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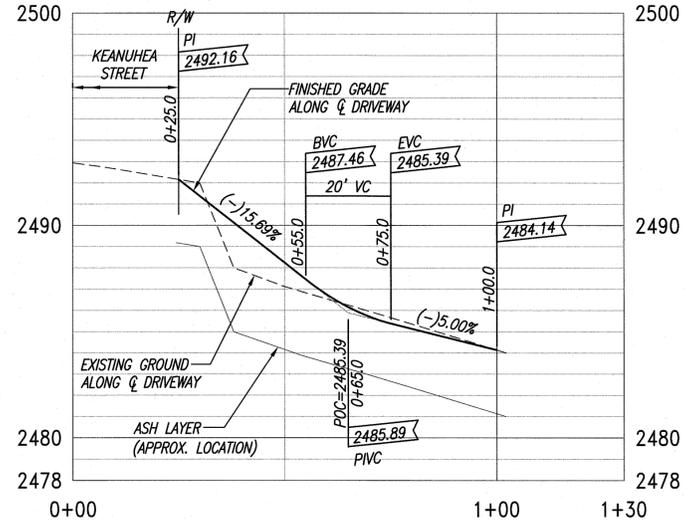
**CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A**  
KEOKEA & WAIOHULI, MAKAWAO, MAUI  
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074 AND (2) 2-2-34: 001 TO 016, 026 & 029

**PLAN AND PROFILE DRIVEWAY LOT 92 & DRIVEWAY LOT 97-A**

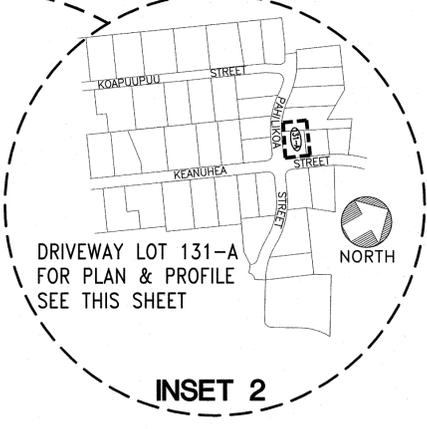
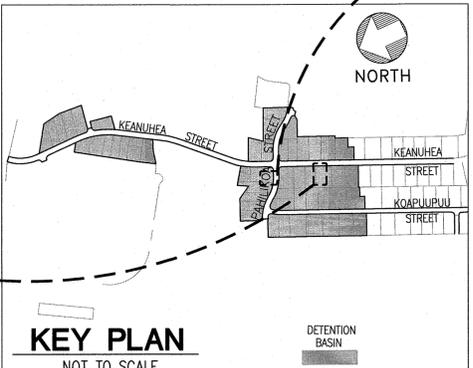
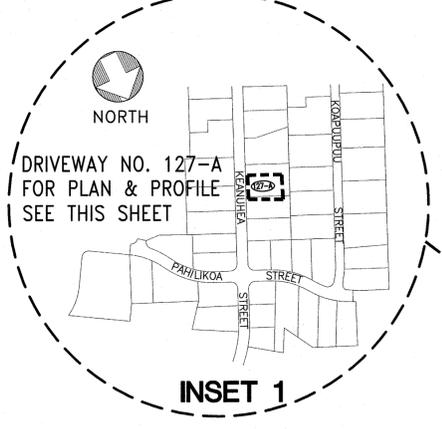
DRAWN BY: JSO	ENGINEER: KWNW/MFC	CHECKED BY: RYS
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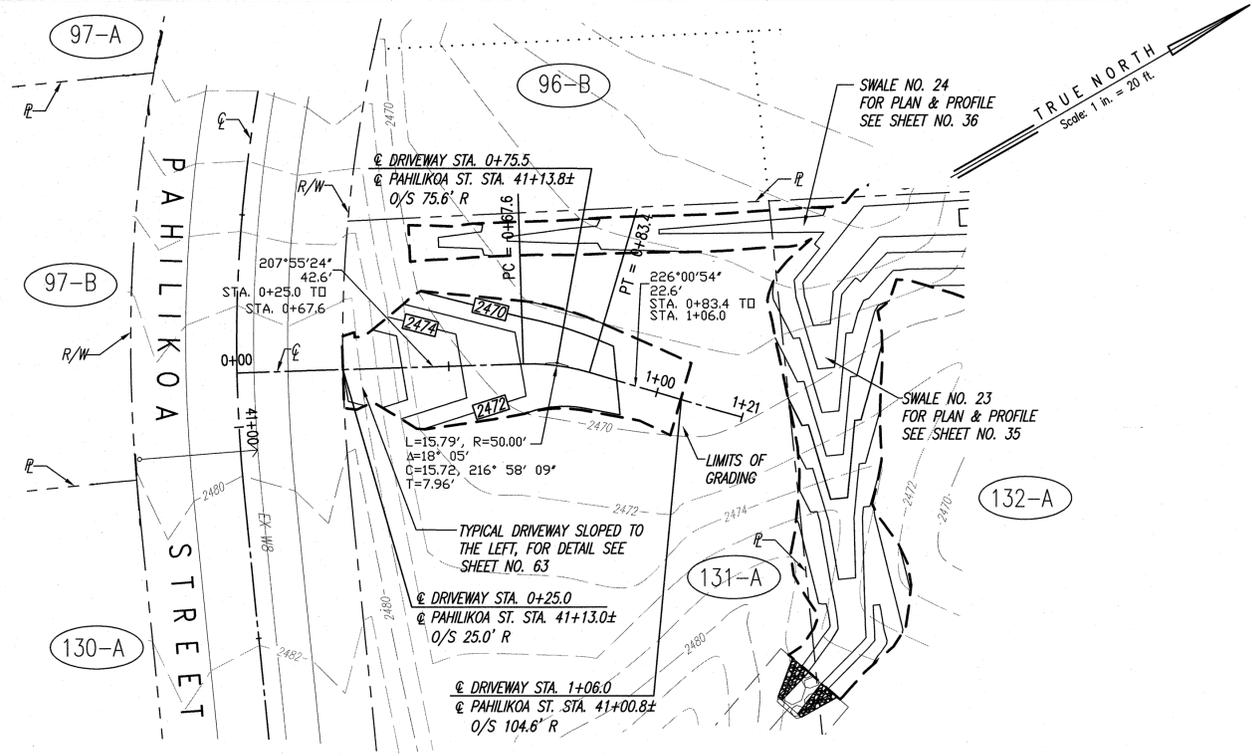
**PLAN - DRIVEWAY LOT 127-A**  
SCALE: 1" = 20'



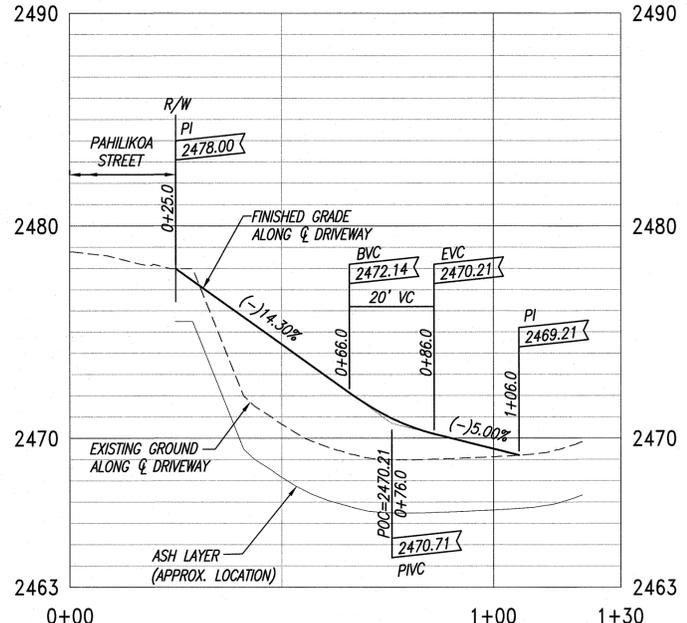
**PROFILE - DRIVEWAY LOT 127-A**  
SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'



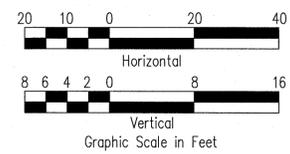
- LEGEND**
- LIMITS OF GRADING
  - - - - - EXISTING GROUND CONTOUR
  - 2450 FINISH GRADE CONTOUR
  - PROPERTY LINE
  - ... OLD PROPERTY LINE
  - LIMITS OF 100 YEAR STORM
  - (140-A) LOT NUMBER
  - (165) EXISTING LOT NUMBER
  - TMK 2-2-002:014



**PLAN - DRIVEWAY LOT 131-A**  
SCALE: 1" = 20'



**PROFILE - DRIVEWAY LOT 131-A**  
SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'



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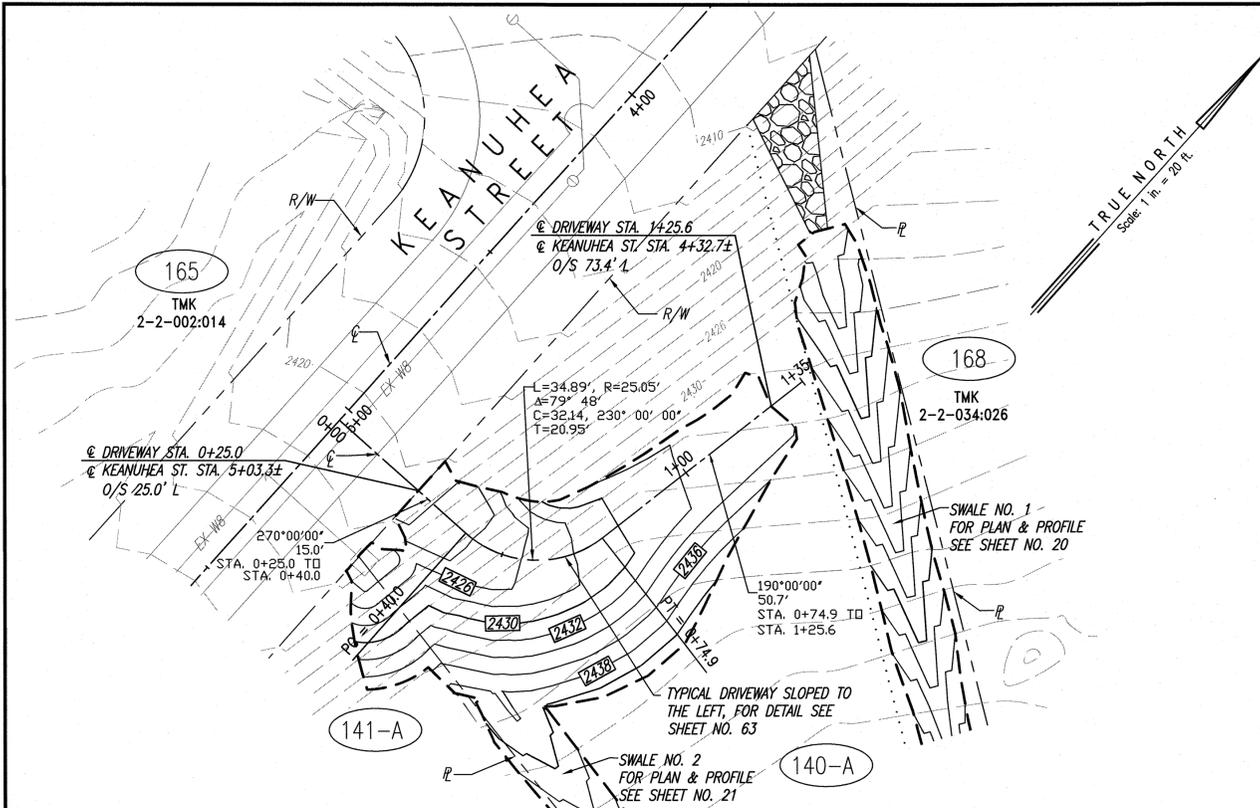
REVISION DATE	DESCRIPTION	MADE BY	APPROVED

**Community Planning and Engineering, Inc.**  
Engineering Design | Construction Management | Infrastructure Planning  
1286 Queen Emma Street, Third Floor Honolulu, Hawaii

**CONSOLIDATION / RE-SUBDIVISION  
KEOKEA-WAIOHULI DEVELOPMENT  
PHASE 1A**  
KEOKEA & WAIOHULI, MAKAWAO, MAUI  
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074  
AND (2) 2-2-34: 001 TO 016, 026 & 029

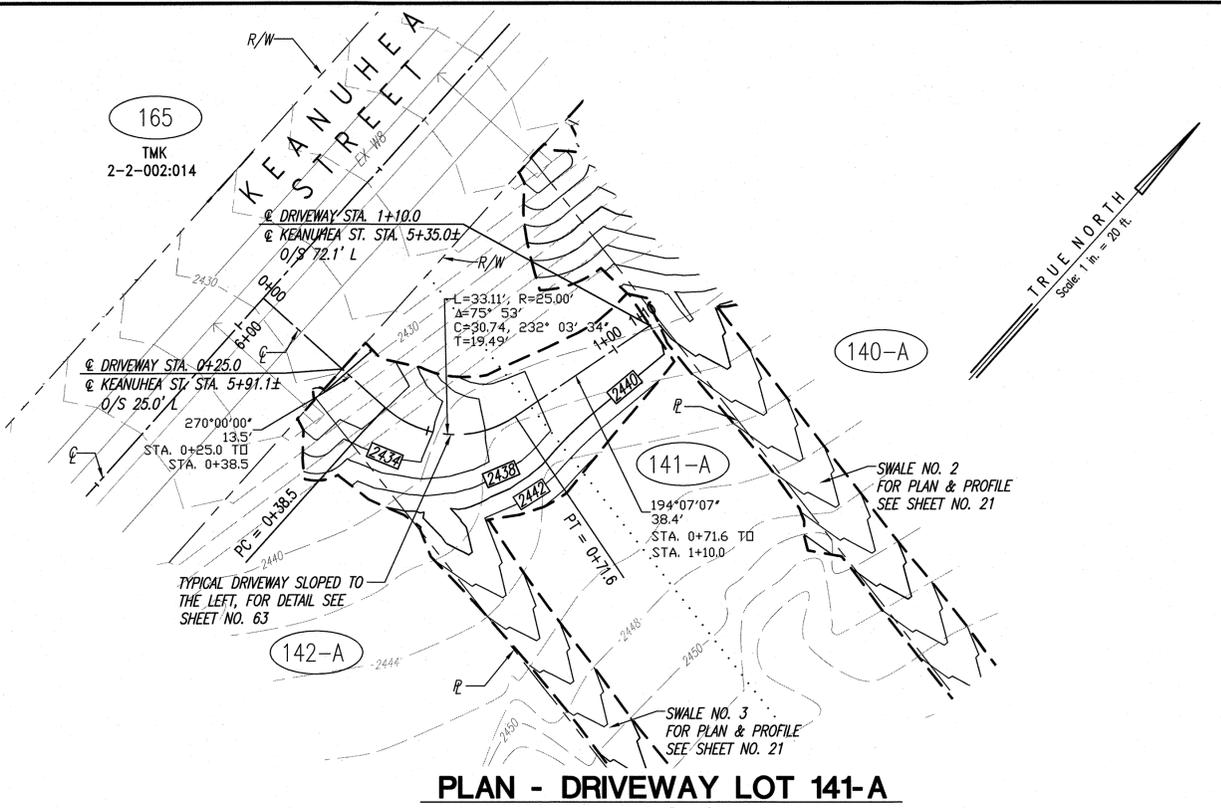
**PLAN AND PROFILE  
DRIVEWAY LOT 127-A  
& DRIVEWAY LOT 131-A**

DRAWN BY: JSO ENGINEER: KWNW/MFC CHECKED BY: RYS



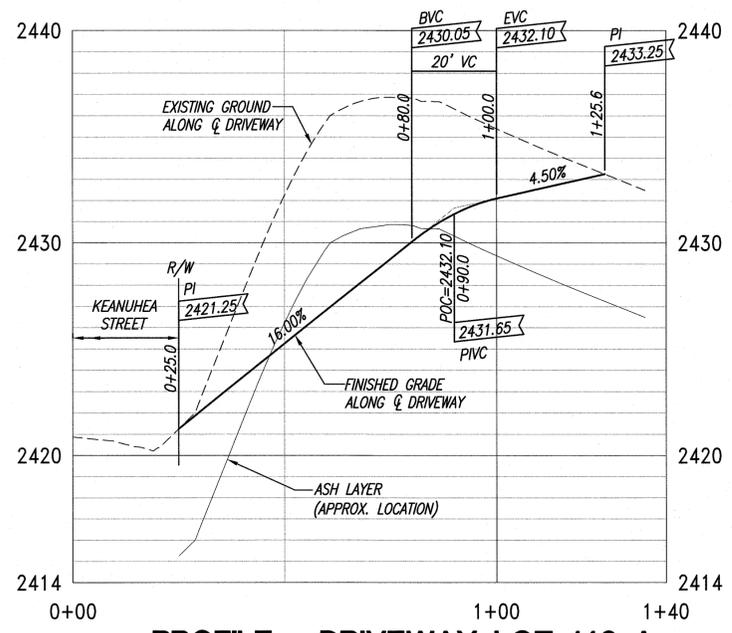
**PLAN - DRIVEWAY LOT 140-A**

SCALE: 1" = 20'



**PLAN - DRIVEWAY LOT 141-A**

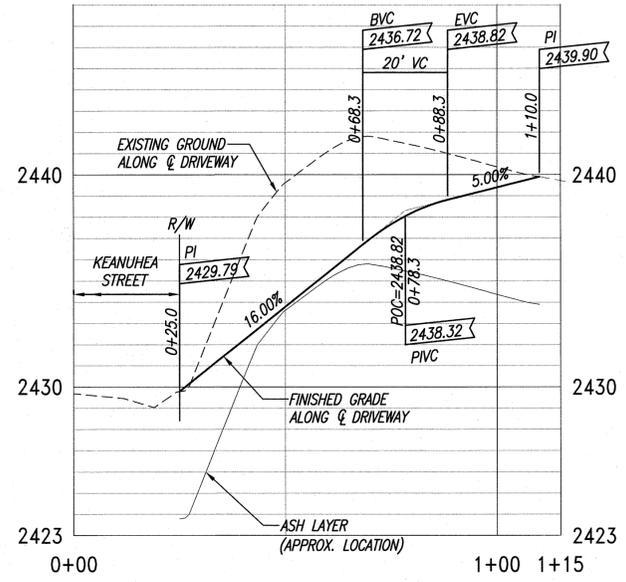
SCALE: 1" = 20'



**PROFILE - DRIVEWAY LOT 140-A**

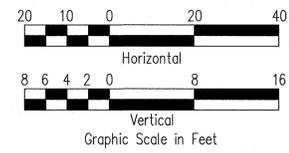
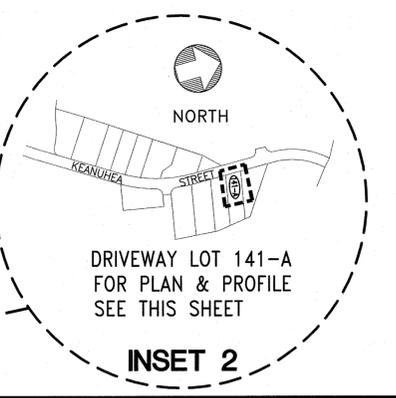
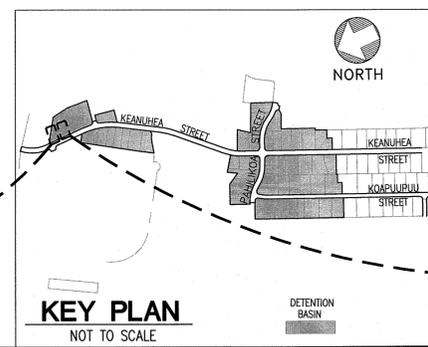
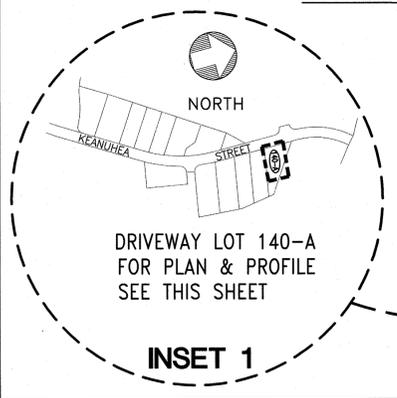
SCALES: HORIZ. 1"=20'  
VERT. 1"= 8'

- LEGEND**
- LIMITS OF GRADING
  - - - 2500' EXISTING GROUND CONTOUR
  - FINISH GRADE CONTOUR
  - PROPERTY LINE
  - OLD PROPERTY LINE
  - LIMITS OF 100 YEAR STORM
  - (140-A) LOT NUMBER
  - (165) EXISTING LOT NUMBER
  - TMK 2-2-002:014



**PROFILE - DRIVEWAY LOT 141-A**

SCALES: HORIZ. 1"=20'  
VERT. 1"= 8'



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REVISION DATE	DESCRIPTION	MADE BY	APPROVED

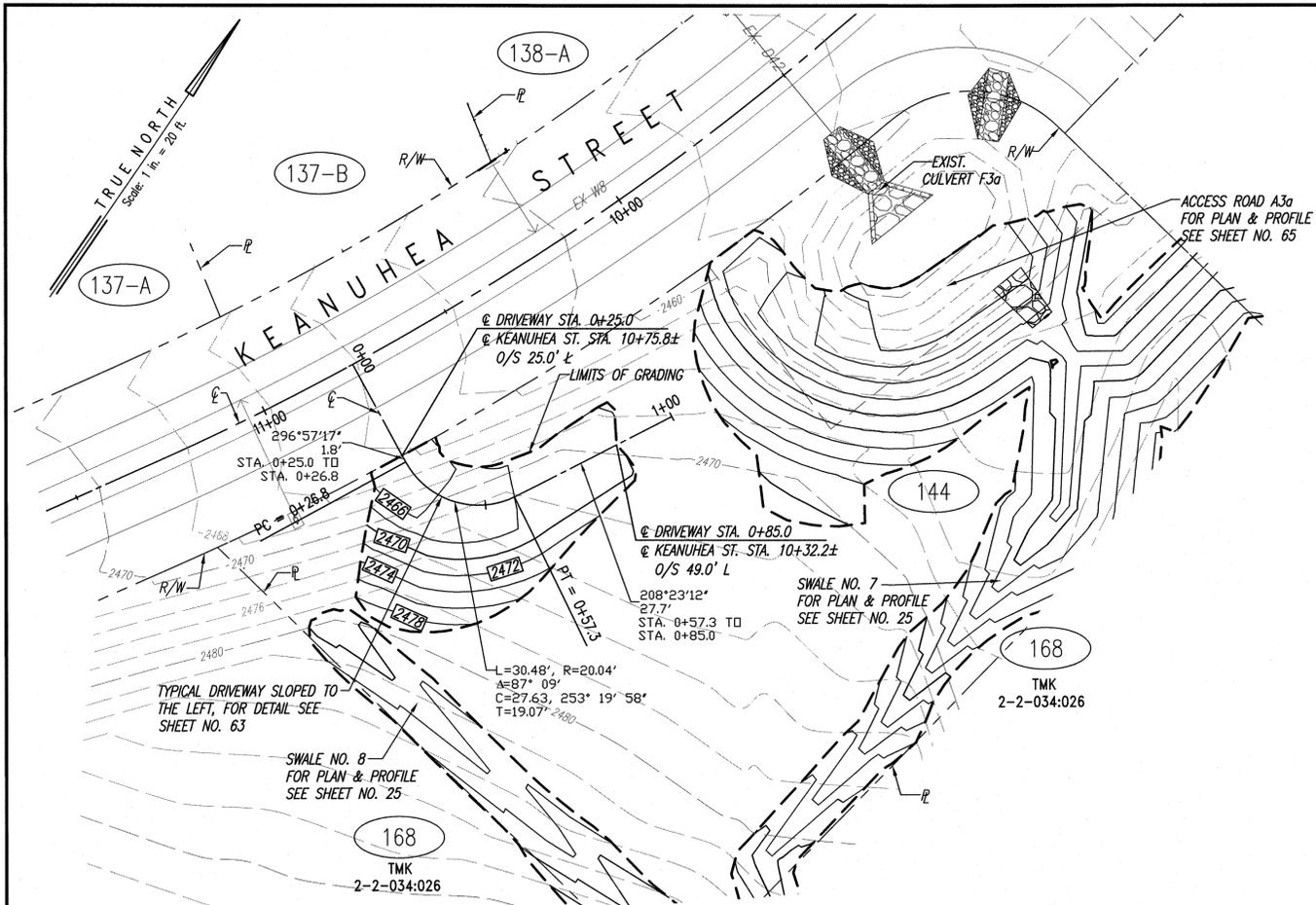
**Community Planning and Engineering, Inc.**  
Engineering Design | Construction Management | Infrastructure Planning  
1286 Queen Emma Street, Third Floor Honolulu, Hawaii

**CONSOLIDATION / RE-SUBDIVISION  
KEOKEA-WAIOHULI DEVELOPMENT  
PHASE 1A**  
KEOKEA & WAIHOLI, MAKAWAO, MAUI  
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074  
AND (2) 2-2-34: 001 TO 016, 026 & 029

**PLAN AND PROFILE  
DRIVEWAY LOT 140-A  
& DRIVEWAY LOT 141-A**

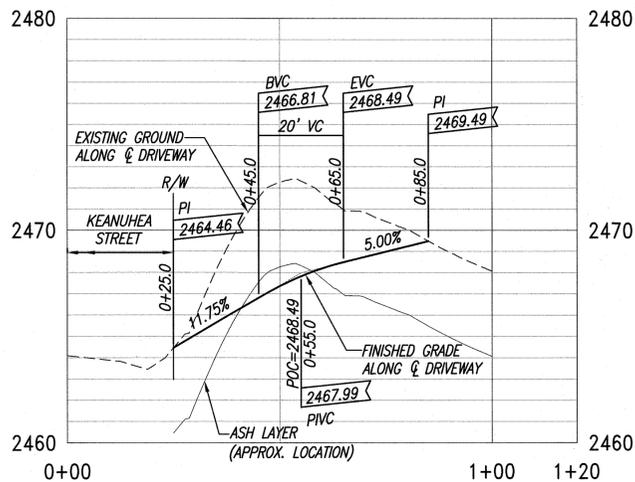
DRAWN BY: JSD      ENGINEER: KINW/MFC      CHECKED BY: RYS

FILE	POCKET	FOLDER	NO.



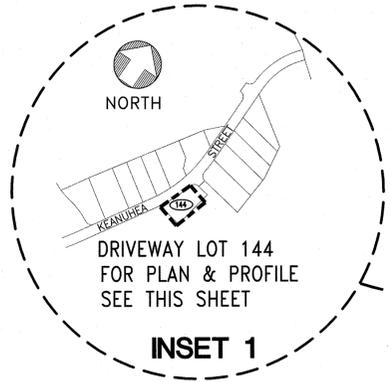
**PLAN - DRIVEWAY LOT 144**

SCALE: 1"= 20'

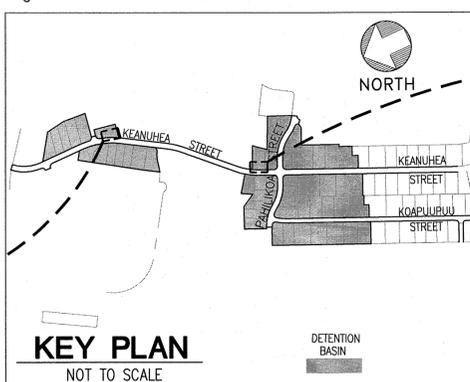


**PROFILE - DRIVEWAY LOT 144**

SCALES: HORIZ. 1"=20'  
VERT. 1"= 8'

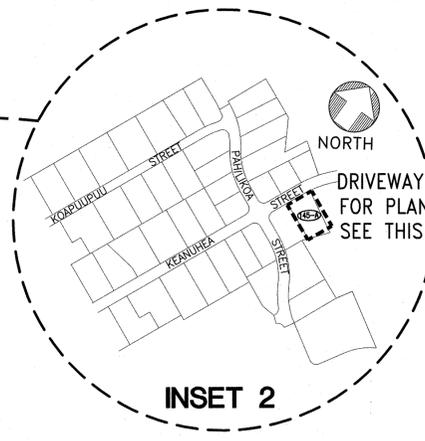


**INSET 1**

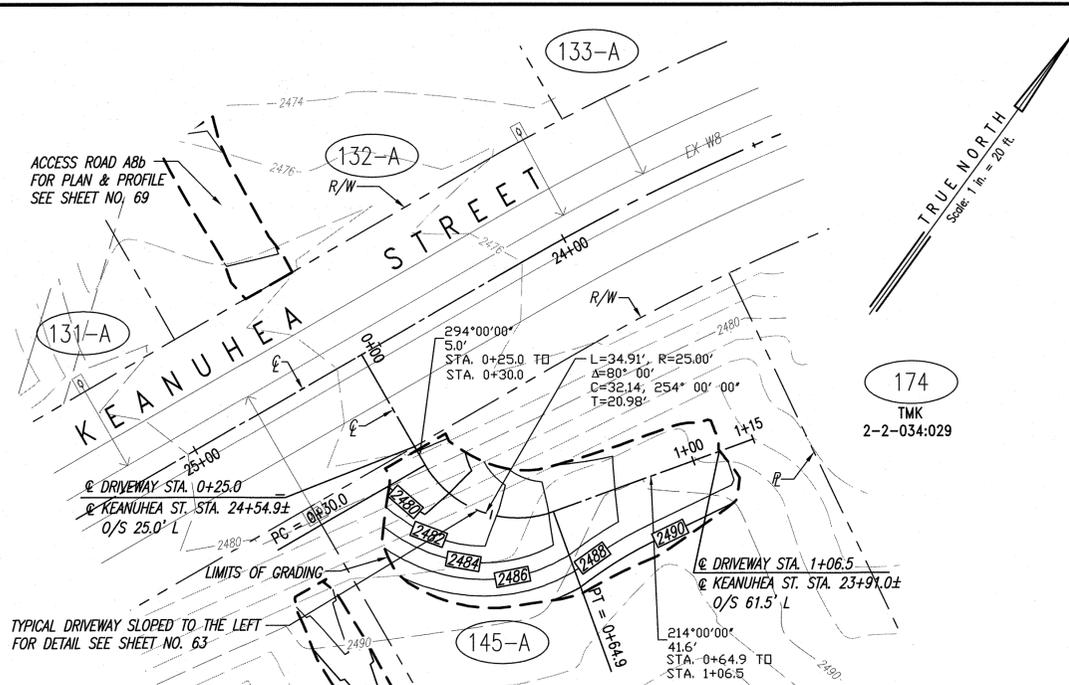


**KEY PLAN**  
NOT TO SCALE

SEE INSET 2

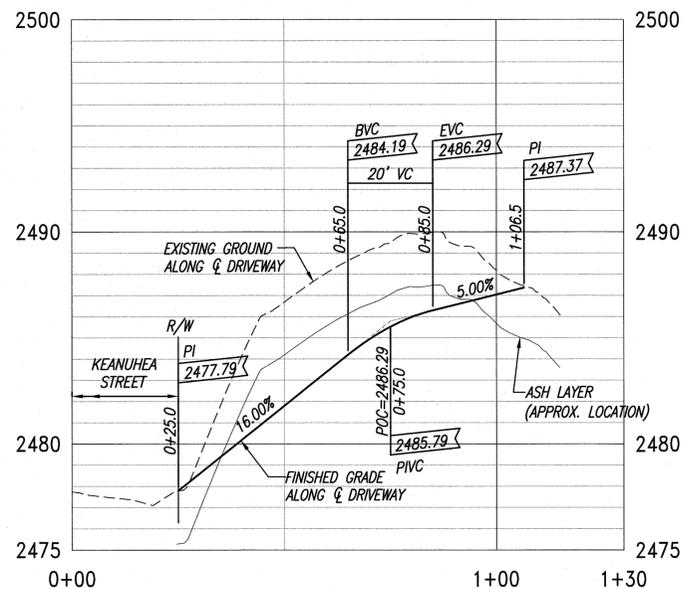


**INSET 2**



**PLAN - DRIVEWAY LOT 145-A**

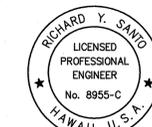
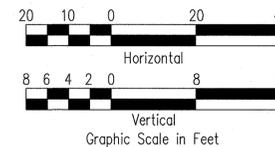
SCALE: 1"= 20'



**PROFILE - DRIVEWAY LOT 145-A**

SCALES: HORIZ. 1"=20'  
VERT. 1"= 8'

- LEGEND**
- LIMITS OF GRADING
  - - - - - EXISTING GROUND CONTOUR
  - 2450 — FINISH GRADE CONTOUR
  - — — — — PROPERTY LINE
  - - - - - OLD PROPERTY LINE
  - - - - - LIMITS OF 100 YEAR STORM
  - (140-A) LOT NUMBER
  - (165) EXISTING LOT NUMBER
- TMK  
2-2-002:014



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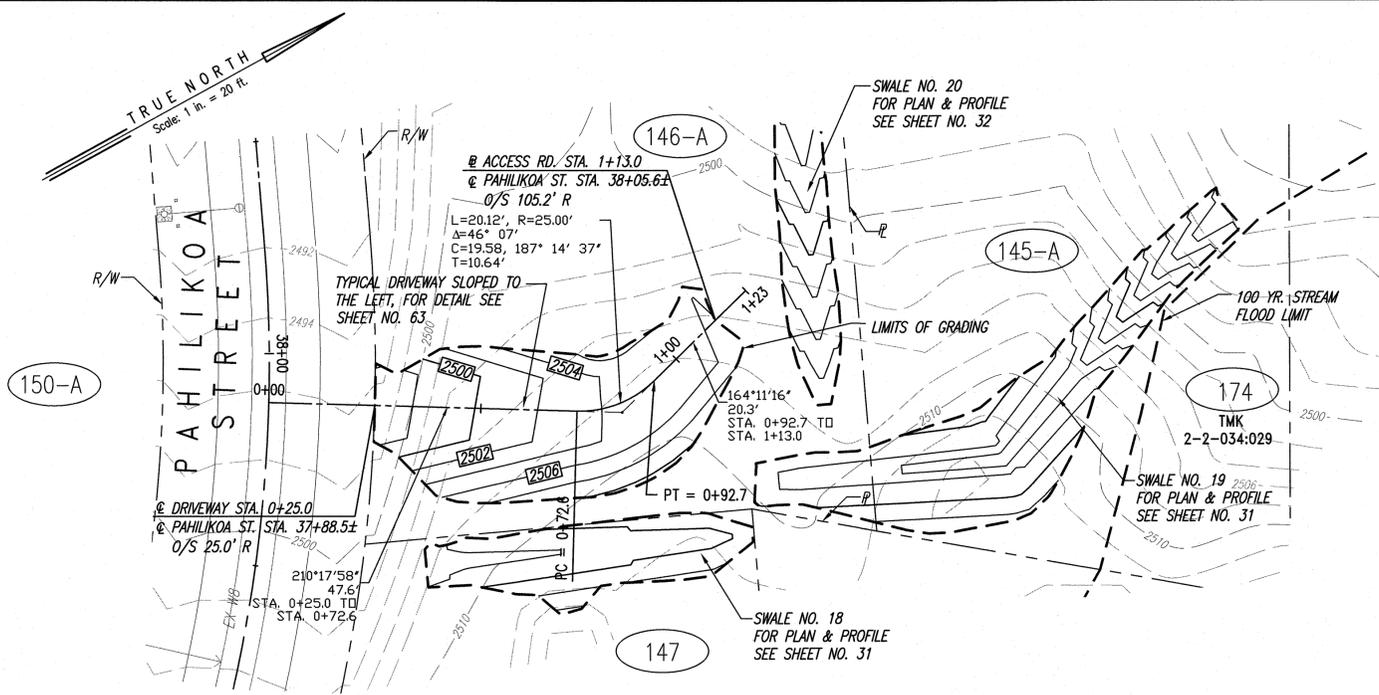
REVISION DATE	DESCRIPTION	MADE BY	APPROVED

**Community Planning and Engineering, Inc.**  
Engineering Design | Construction Management | Infrastructure Planning  
1288 Queen Emma Street, Third Floor Honolulu, Hawaii

**CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A**  
KEOKEA & WAIOHULI, MAKAWAO, MAUI  
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074 AND (2) 2-2-34: 001 TO 016, 026 & 029

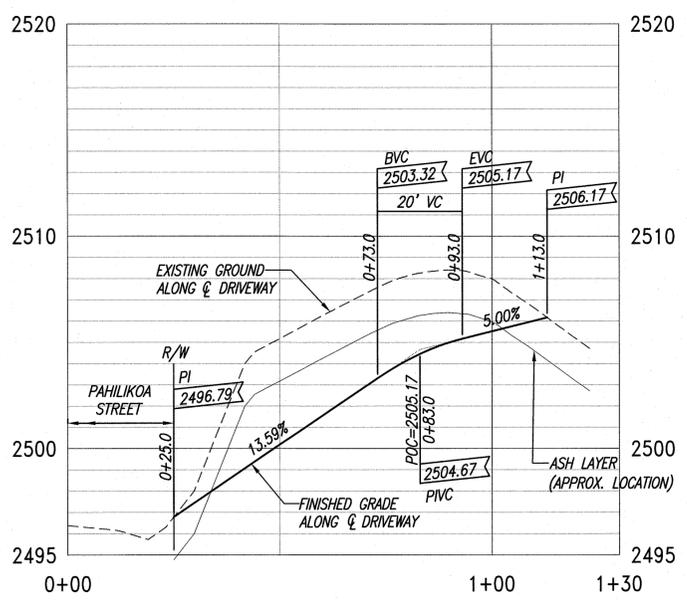
**PLAN AND PROFILE DRIVEWAY LOT 144 & DRIVEWAY LOT 145-A**

DRAWN BY: JSO ENGINEER: KWNW/MFC CHECKED BY: RYS



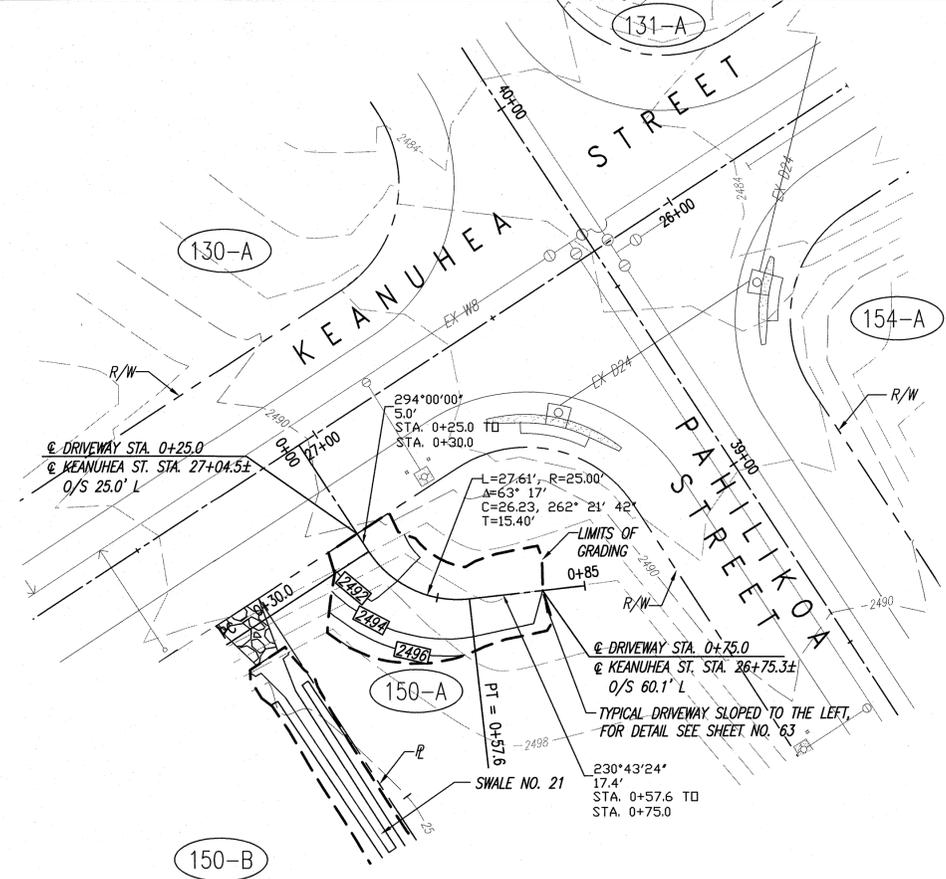
**PLAN - DRIVEWAY LOT 146-A**

SCALE: 1" = 20'



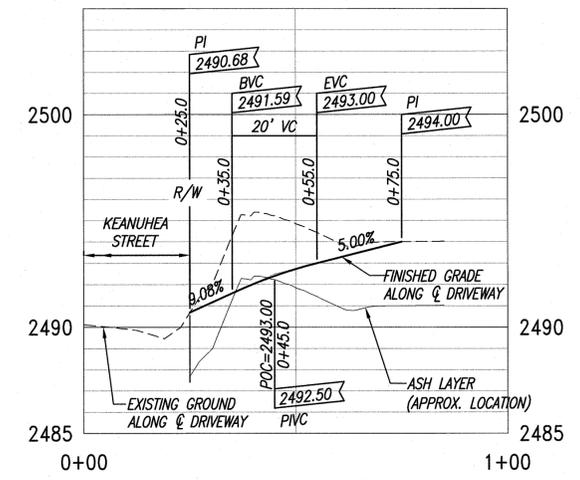
**PROFILE - DRIVEWAY LOT 146-A**

SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'



**PLAN - DRIVEWAY LOT 150-A**

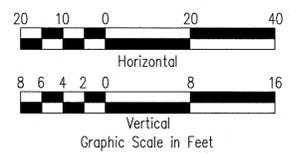
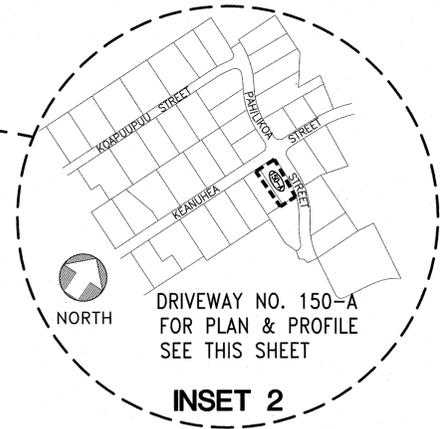
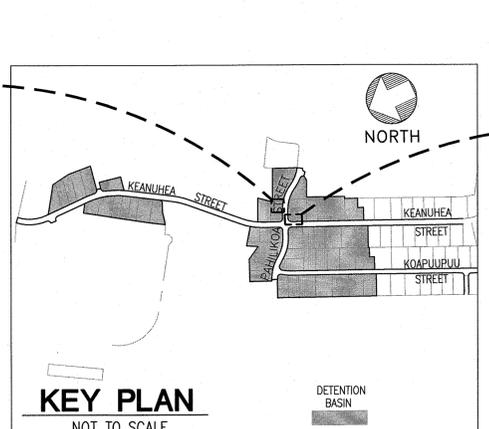
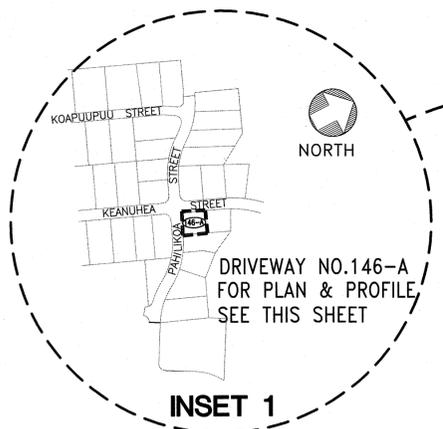
SCALE: 1" = 20'



**PROFILE - DRIVEWAY LOT 150-A**

SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'

- LEGEND**
- LIMITS OF GRADING
  - - - - - EXISTING GROUND CONTOUR
  - FINISH GRADE CONTOUR
  - PROPERTY LINE
  - OLD PROPERTY LINE
  - LIMITS OF 100 YEAR STORM
  - LOT NUMBER
  - EXISTING LOT NUMBER
  - TMK 2-2-002:014



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REVISION DATE	DESCRIPTION	MADE BY	APPROVED

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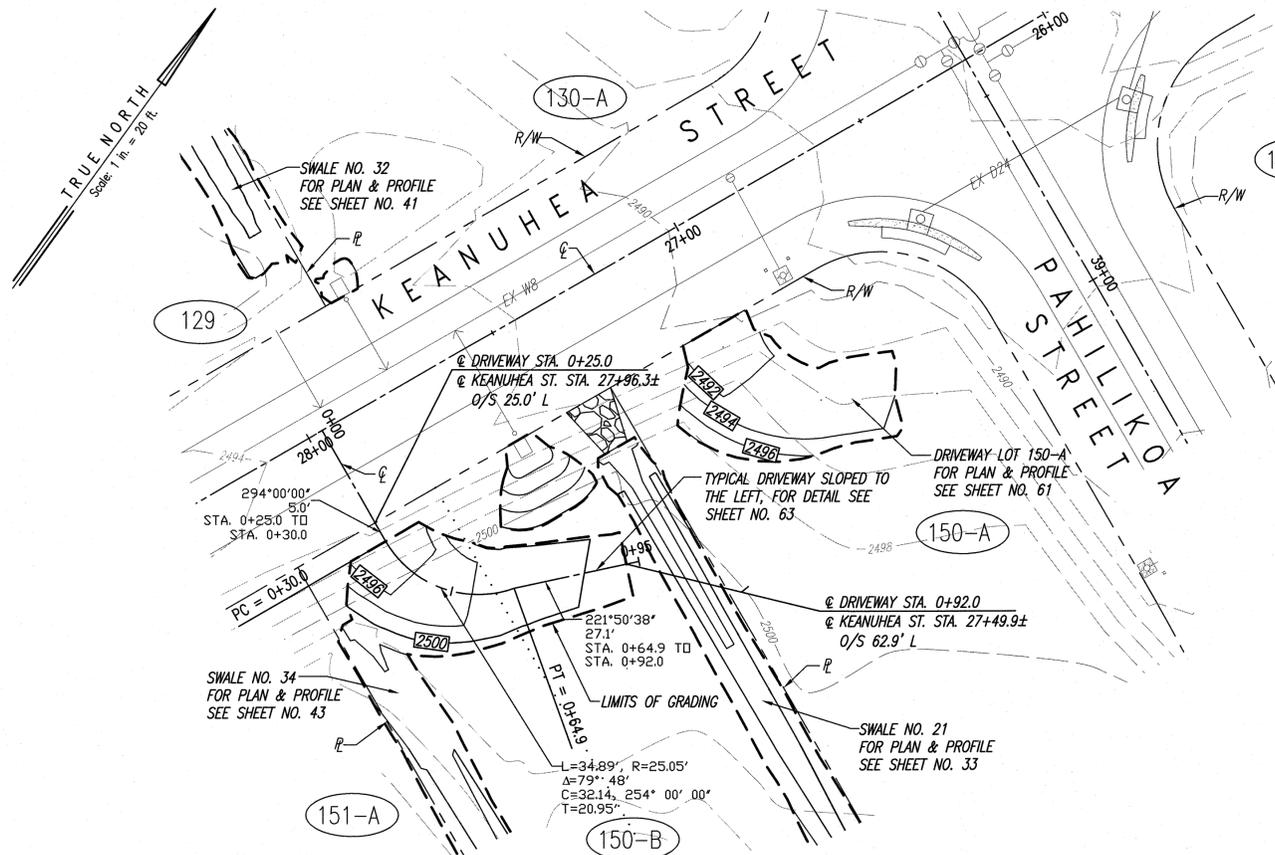
**CONSOLIDATION / RE-SUBDIVISION  
KEOKEA-WAIOHULI DEVELOPMENT  
PHASE 1A**

KEOKEA & WAIOHULI, MAKAWAO, MAUI  
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074  
AND (2) 2-2-34: 001 TO 016, 026 & 029

**PLAN AND PROFILE  
DRIVEWAY LOT 146-A  
& DRIVEWAY LOT 150-A**

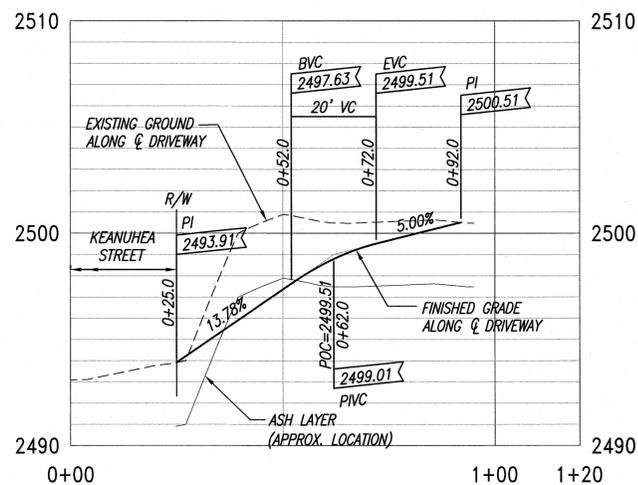
DRAWN BY: JSO    ENGINEER: KWN/MFC    CHECKED BY: RYS

FILE    PROJECT    FOLDER    NO.



**PLAN - DRIVEWAY LOT 150-B**

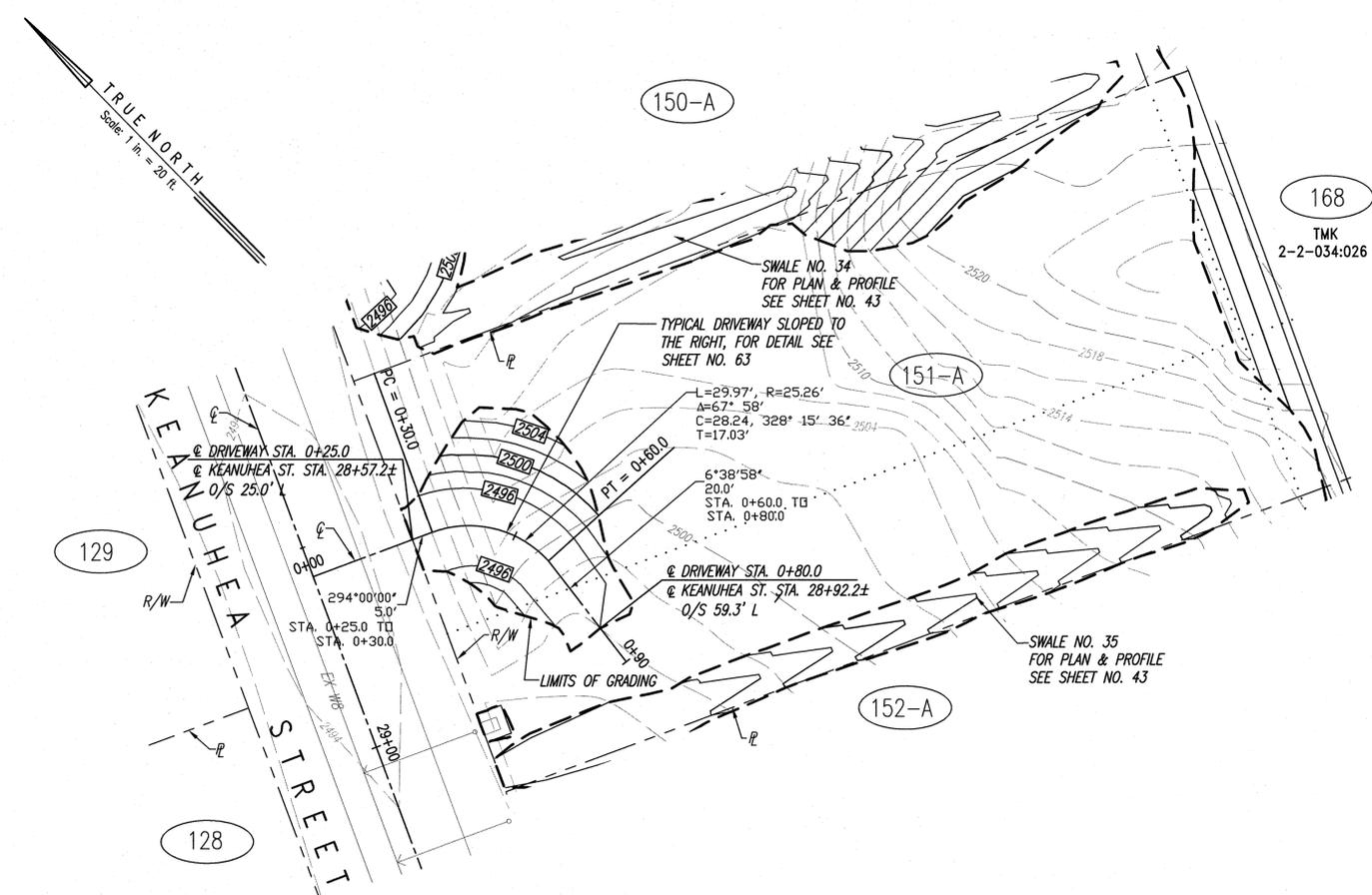
SCALE: 1" = 20'



**PROFILE - DRIVEWAY LOT 150-B**

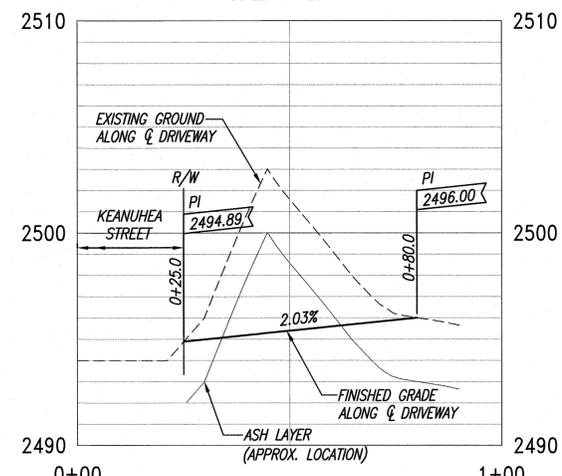
SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'

- LEGEND**
- LIMITS OF GRADING
  - - - - EXISTING GROUND CONTOUR
  - FINISH GRADE CONTOUR
  - PROPERTY LINE
  - OLD PROPERTY LINE
  - LIMITS OF 100 YEAR STORM
  - (140-A) LOT NUMBER
  - (165) EXISTING LOT NUMBER
- TMK  
2-2-002:014



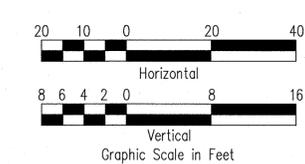
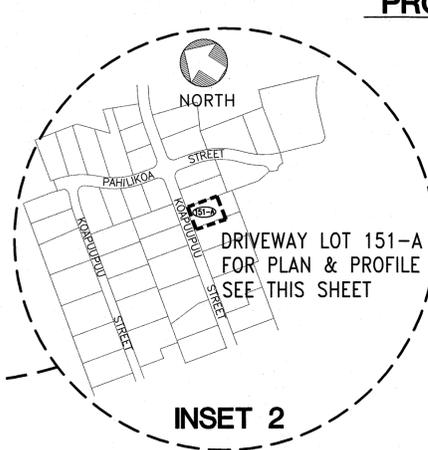
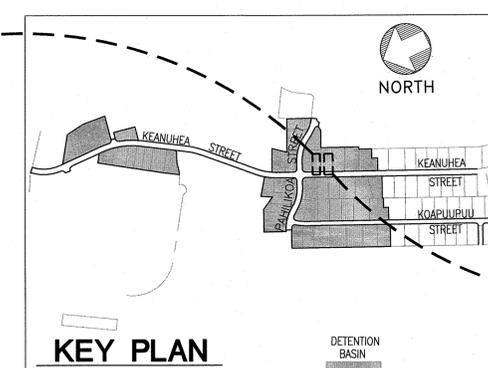
**PLAN - DRIVEWAY LOT 151-A**

SCALE: 1" = 20'



**PROFILE - DRIVEWAY LOT 151-A**

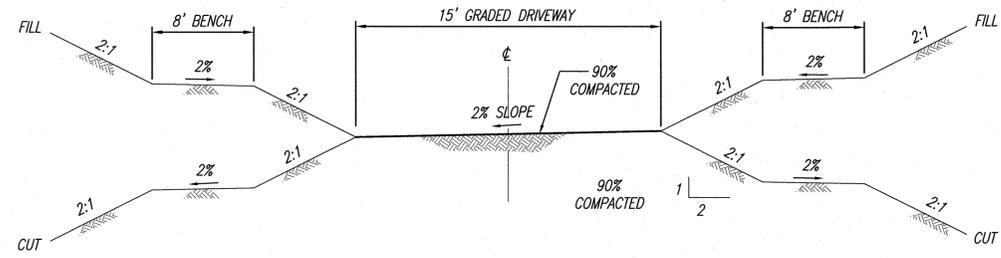
SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'



RICHARD Y. SANDO  
LICENSED PROFESSIONAL ENGINEER  
No. 8955-C  
HAWAII, U.S.A.

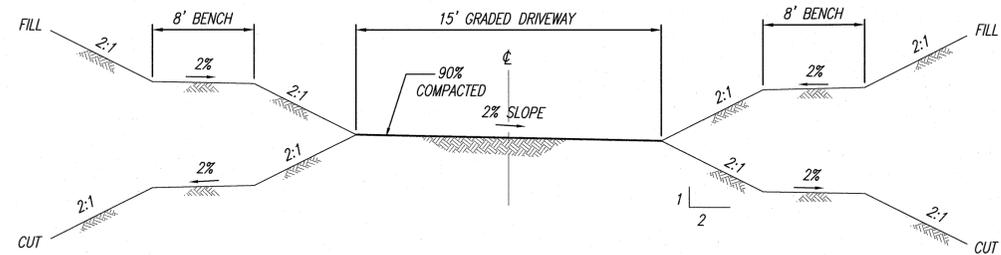
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.  
LICENSE EXPIRATION DATE: 04/30/16

REVISION DATE	DESCRIPTION	MADE BY	APPROVED
<b>Community Planning and Engineering, Inc.</b> Engineering Design   Construction Management   Infrastructure Planning 1288 Queen Emma Street, Third Floor Honolulu, Hawaii			
<b>CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A</b> KEOKEA & WAIOHULI, MAKAWAO, MAUI OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074 AND (2) 2-2-34: 001 TO 016, 026 & 029			
<b>PLAN AND PROFILE DRIVEWAY LOT 150-B &amp; DRIVEWAY LOT 151-A</b>			
DRAWN BY: JSO	ENGINEER: KWN/WFC	CHECKED BY: RYS	



**DRIVEWAY SLOPED TO THE LEFT  
TYPICAL SECTION**

NOT TO SCALE



**DRIVEWAY SLOPED TO THE RIGHT  
TYPICAL SECTION**

NOT TO SCALE



*[Signature]*  
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CONSTRUCTION OF THIS PROJECT  
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LICENSE EXPIRATION DATE: 04/30/16

REVISION DATE	DESCRIPTION	MADE BY	APPROVED

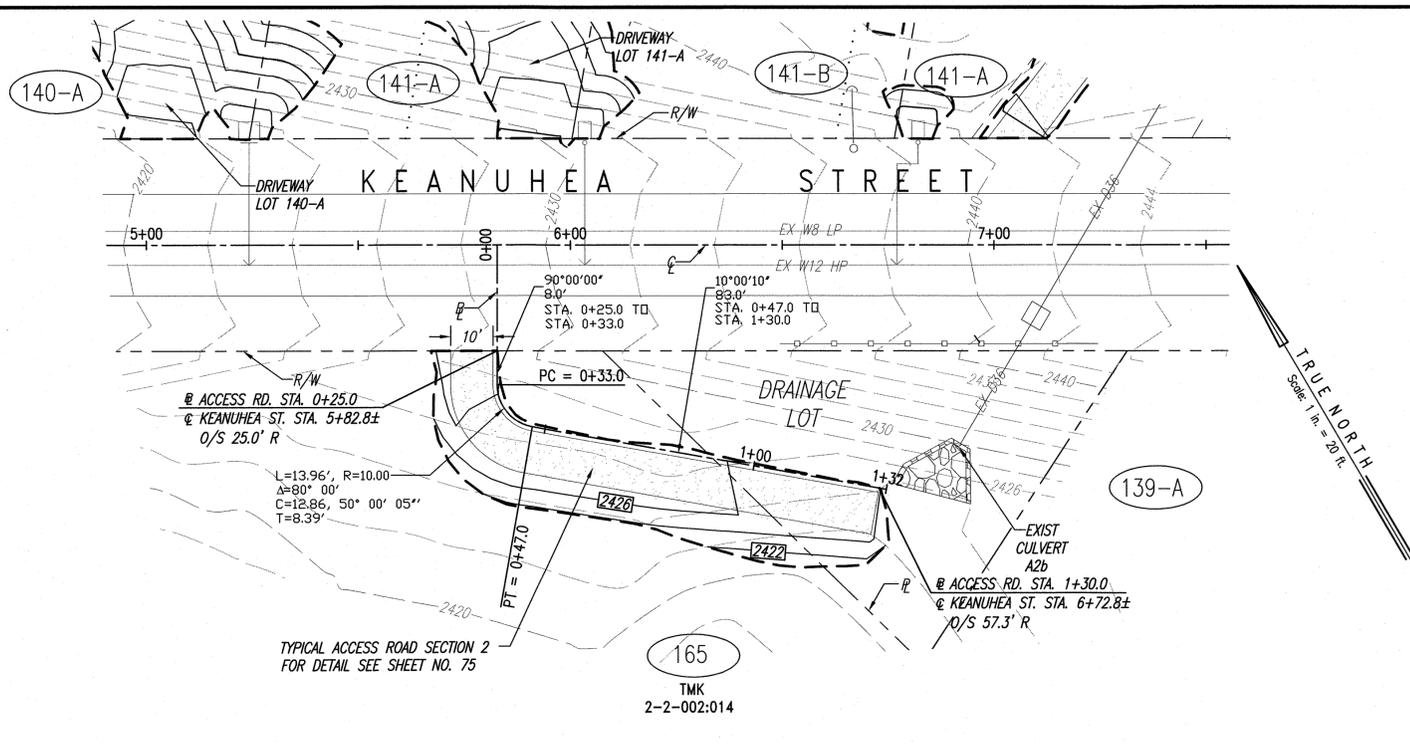
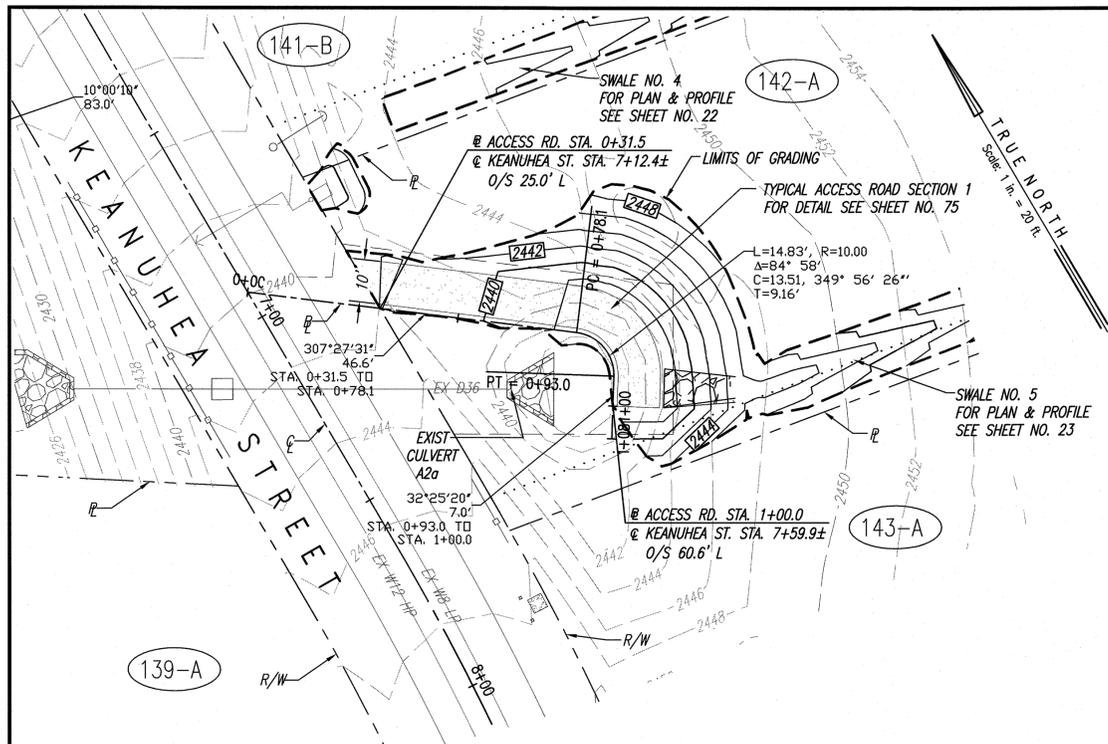
**Community Planning and Engineering, Inc.**  
 Engineering Design | Construction Management | Infrastructure Planning  
 1286 Queen Emma Street, Third Floor Honolulu, Hawaii

**CONSOLIDATION / RE-SUBDIVISION  
KEOKEA-WAIOHULI DEVELOPMENT  
PHASE 1A**  
 KEOKEA & WAIOHULI, MAKAWAO, MAUI  
 OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
 TAX MAP KEYS: (2) 2-2-033; 021 TO 038 & 058-074  
 AND (2) 2-2-34: 001 TO 016, 026 & 029

**TYPICAL DRIVEWAY SECTION DETAILS**

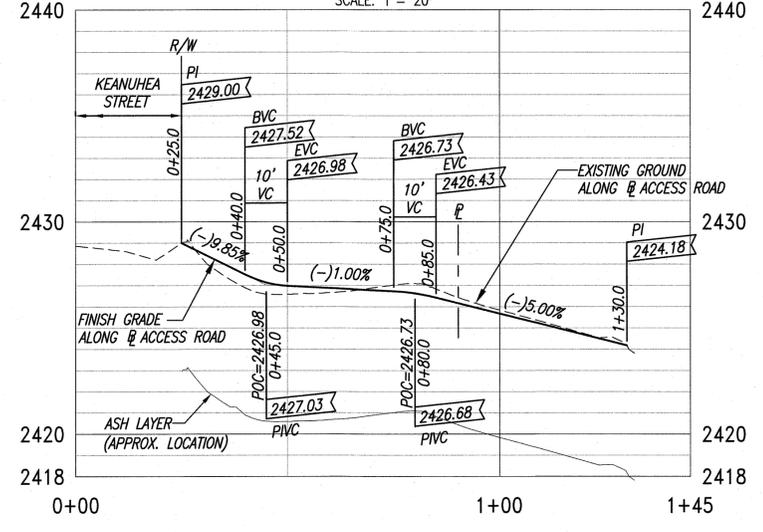
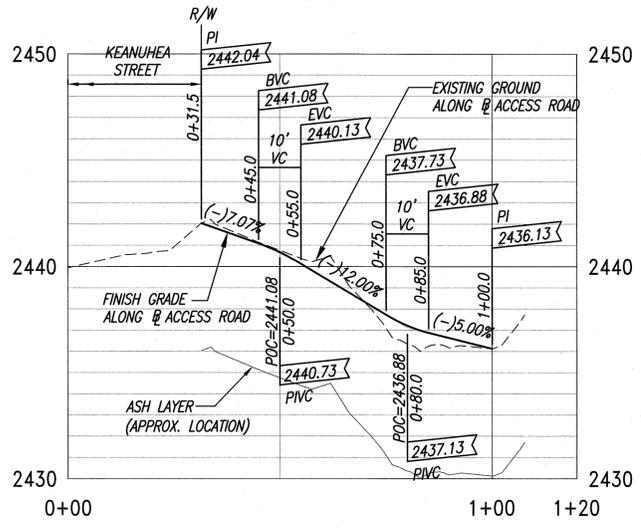
DRAWN BY: KINW	ENGINEER: KINW/MFC	CHECKED BY: RYS
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P:\Land Projects\DHHH KEOKEA Ph 1.2 & 4A\DWG\Increment 1\Current\64 Typical Driveway Section Details.dwg, 11/17/2014 7:22:13 AM, 1:1



PLAN - CULVERT ACCESS ROAD A2a (LOT 142-A)  
SCALE: 1" = 20'

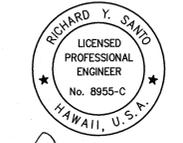
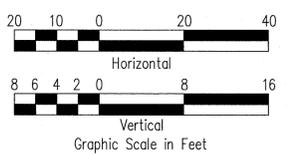
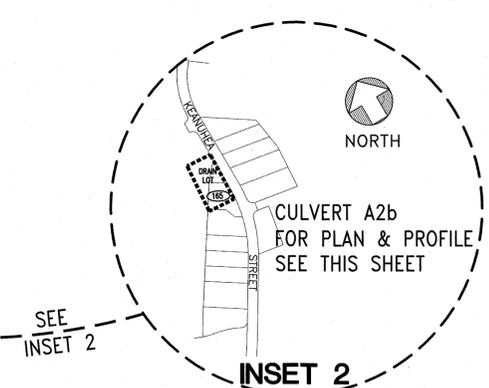
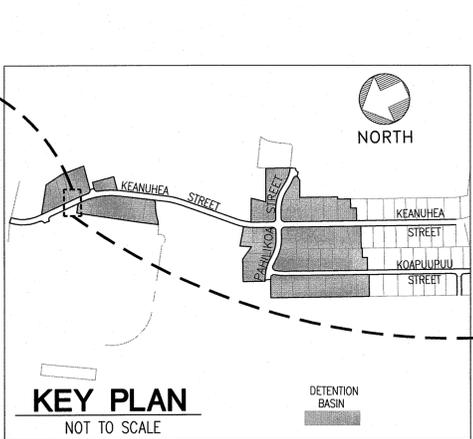
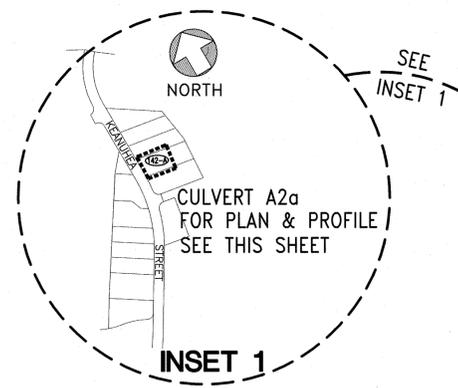
PLAN - CULVERT ACCESS ROAD A2b (LOT 165 & DRAINAGE LOT)  
SCALE: 1" = 20'



PROFILE - CULVERT ACCESS ROAD A2a (LOT 142-A)  
SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'

PROFILE - CULVERT ACCESS ROAD A2b (LOT 165 & DRAINAGE LOT)  
SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'

- LEGEND**
- LIMITS OF GRADING
  - - - - - 2500 --- EXISTING GROUND CONTOUR
  - 2450 --- FINISH GRADE CONTOUR
  - PROPERTY LINE
  - OLD PROPERTY LINE
  - EXISTING GUARD RAIL
  - LIMITS OF 100 YEAR STORM
  - 140-A --- LOT NUMBER
  - 165 --- EXISTING LOT NUMBER
  - TMK 2-2-002:014



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REVISION DATE	DESCRIPTION	MADE BY	APPROVED

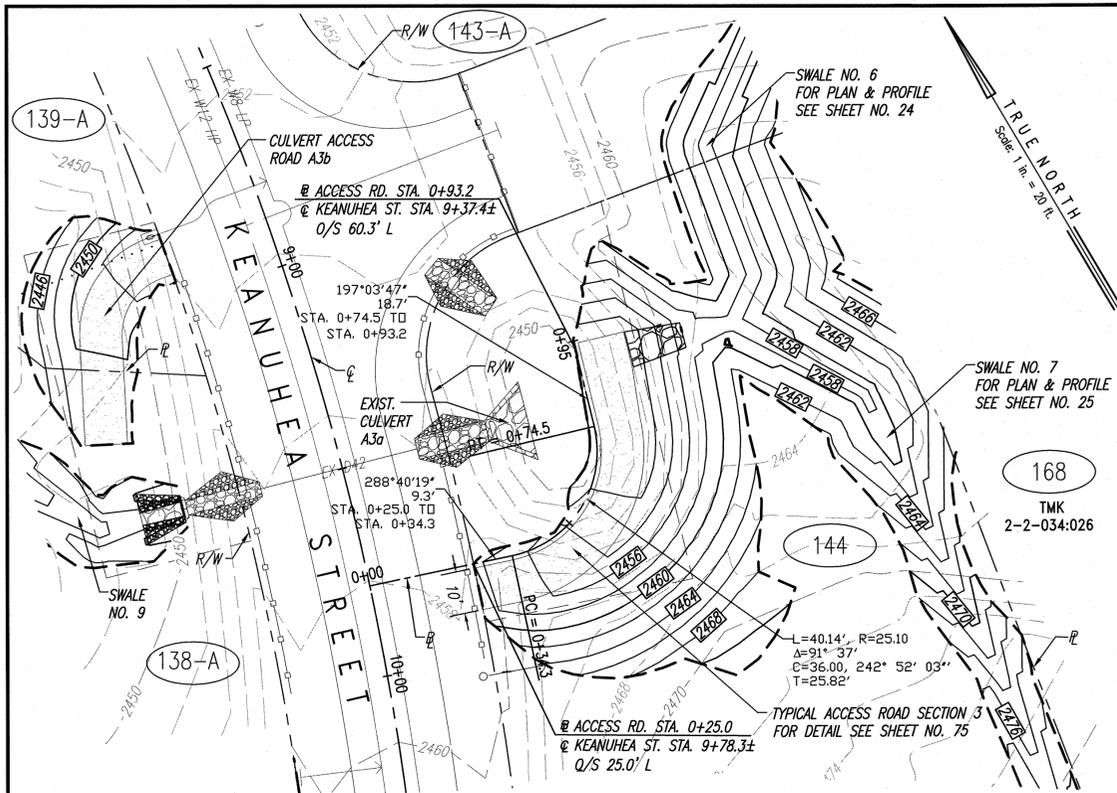
**Community Planning and Engineering, Inc.**  
Engineering Design | Construction Management | Infrastructure Planning  
1288 Queen Emma Street, Third Floor Honolulu, Hawaii

**CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A**  
KEOKEA & WAIOHULI, MAKAWAO, MAUI  
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074 AND (2) 2-2-34: 001 TO 016, 026 & 029

**PLAN AND PROFILE CULVERT ACCESS ROAD DRAIN CULVERTS A2a & A2b**

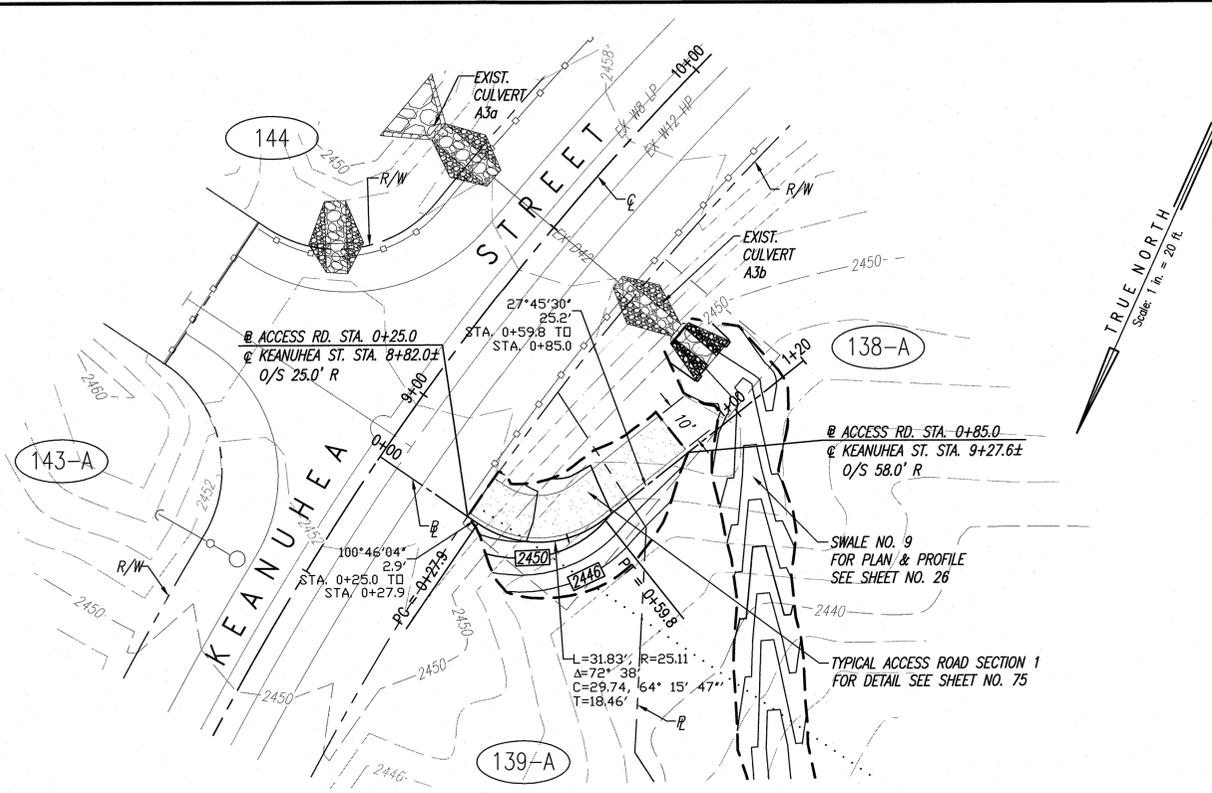
DRAWN BY: KWNW ENGINEER: KWNW/MFC CHECKED BY: RYS

FILE PROCKET FOLDER NO.



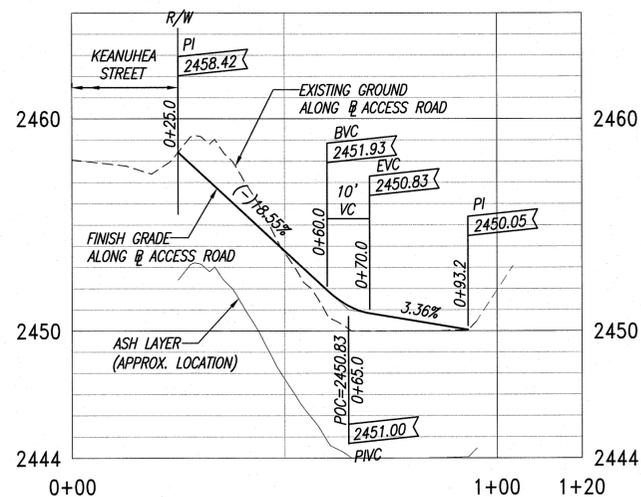
**PLAN - CULVERT ACCESS ROAD A3a (LOT 144)**

SCALE: 1" = 20'



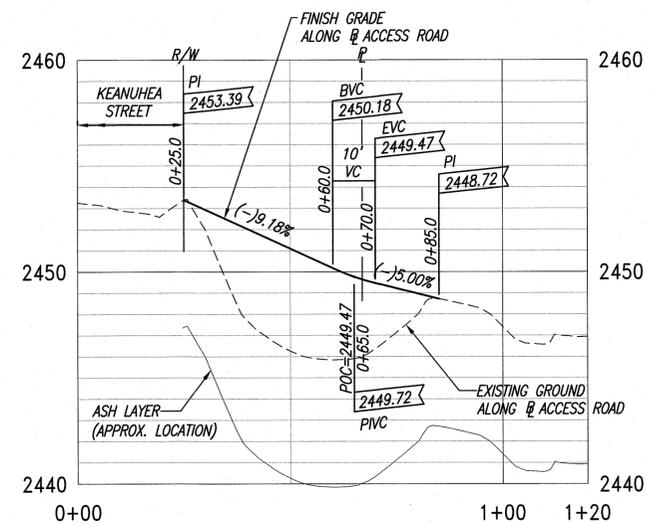
**PLAN - CULVERT ACCESS ROAD A3b (LOTS 139-A & 138-A)**

SCALE: 1" = 20'



**PROFILE - CULVERT ACCESS ROAD A3a (LOT 144)**

SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'

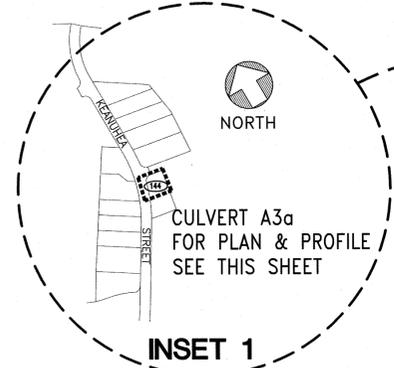


**PROFILE - CULVERT ACCESS ROAD A3b (LOTS 139-A & 138-A)**

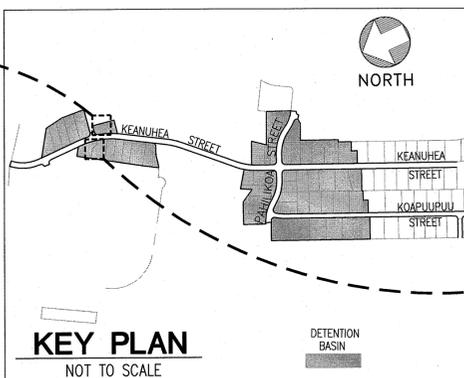
SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'

**LEGEND**

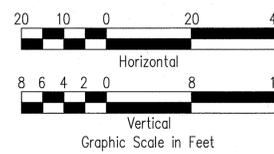
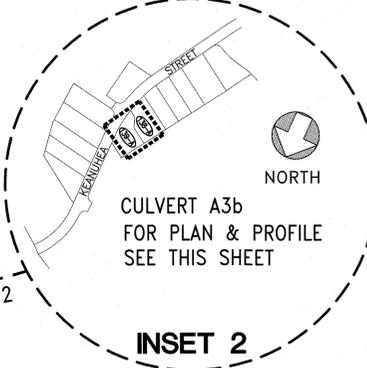
- LIMITS OF GRADING
- - - 2500 --- EXISTING GROUND CONTOUR
- [2450] - FINISH GRADE CONTOUR
- PROPERTY LINE
- OLD PROPERTY LINE
- EXISTING GUARD RAIL
- LIMITS OF 100 YEAR STORM
- (140-A) LOT NUMBER
- (165) EXISTING LOT NUMBER
- TMK 2-2-002:014



SEE INSET 1



SEE INSET 2



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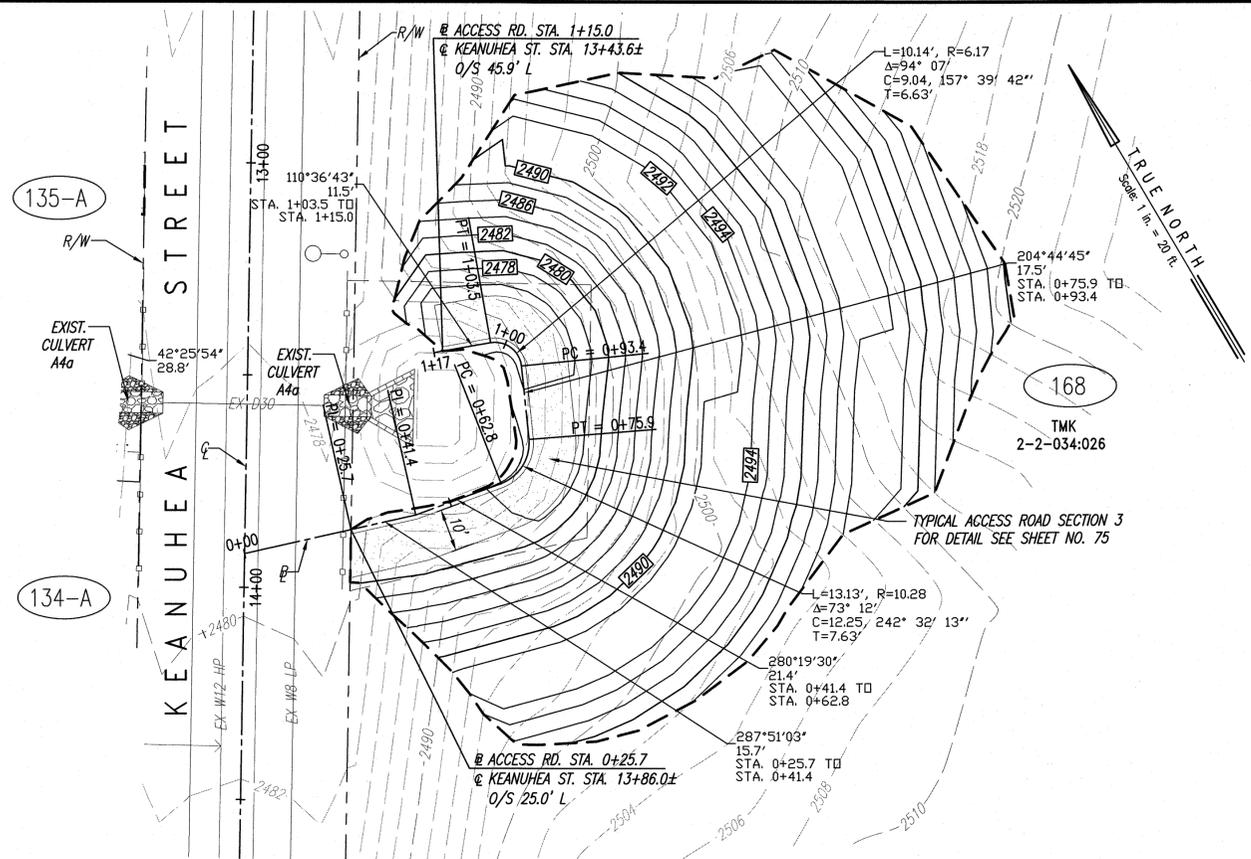
REVISION DATE	DESCRIPTION	MADE BY	APPROVED

**Community Planning and Engineering, Inc.**  
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 1288 Queen Emma Street, Third Floor | Honolulu, Hawaii

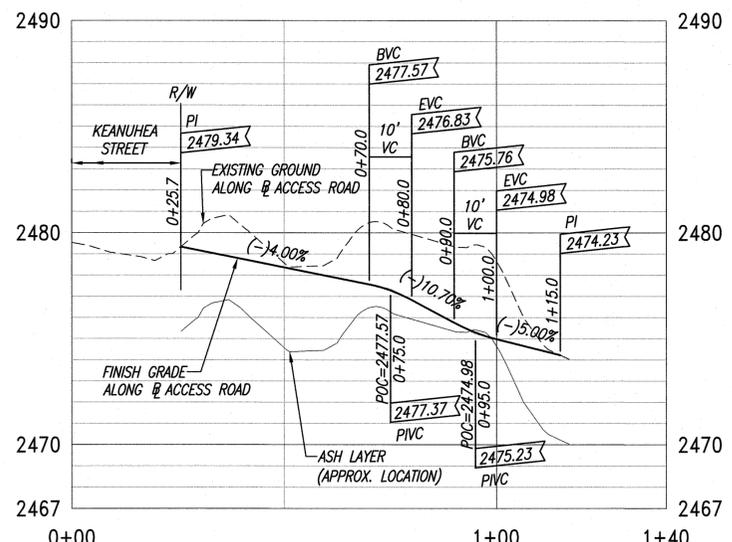
**CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A**  
 KEOKEA & WAIOHULI, MAKAWAO, MAUI  
 OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
 TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074 AND (2) 2-2-34: 001 TO 016, 026 & 029

**PLAN AND PROFILE CULVERT ACCESS ROAD DRAIN CULVERTS A3a & A3b**

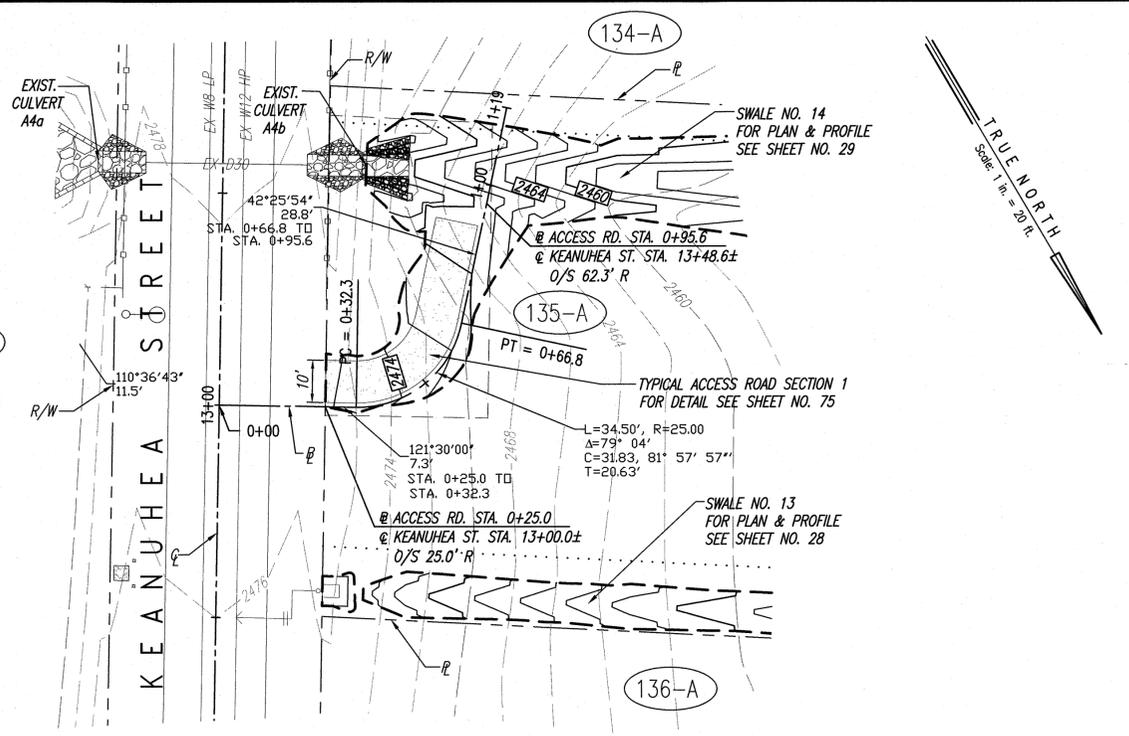
DRAWN BY: KWNW | ENGINEER: KWNW/MFC | CHECKED BY: RYS



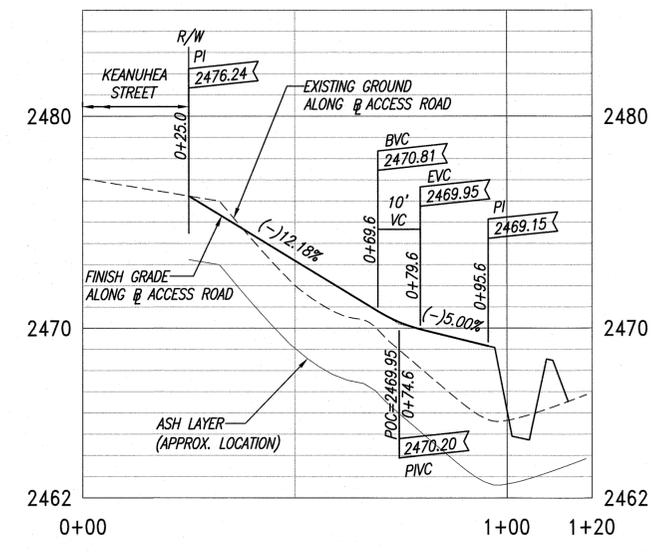
**PLAN - CULVERT ACCESS ROAD A4a (LOT 168)**  
SCALE: 1" = 20'



**PROFILE - CULVERT ACCESS ROAD A4a (LOT 168)**  
SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'



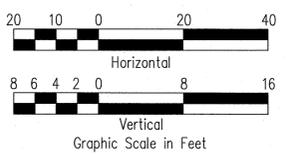
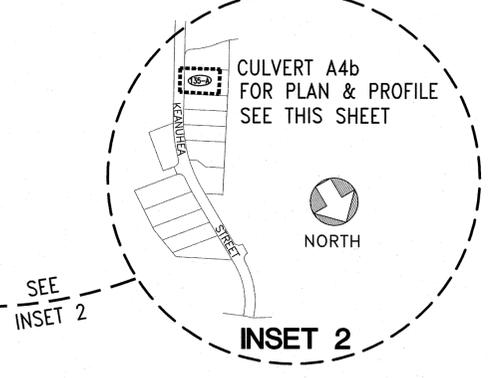
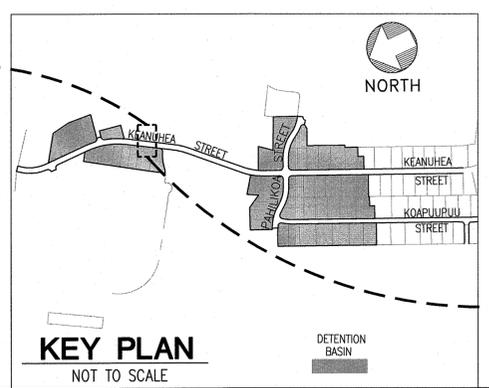
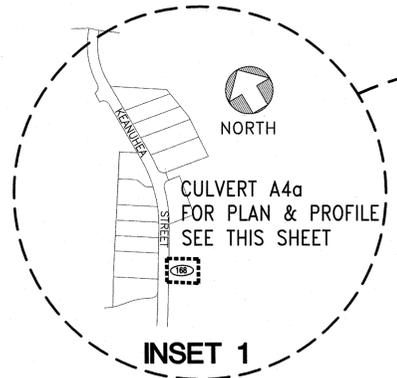
**PLAN - CULVERT ACCESS ROAD A4b (LOT 135-A)**  
SCALE: 1" = 20'



**PROFILE - CULVERT ACCESS ROAD A4b (LOT 135-A)**  
SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'

**LEGEND**

- LIMITS OF GRADING
- - - 2500 EXISTING GROUND CONTOUR
- - - 2450 FINISH GRADE CONTOUR
- PROPERTY LINE
- ..... OLD PROPERTY LINE
- - - EXISTING GUARD RAIL
- - - LIMITS OF 100 YEAR STORM
- (140-A) LOT NUMBER
- (165) EXISTING LOT NUMBER
- TMK 2-2-002:014



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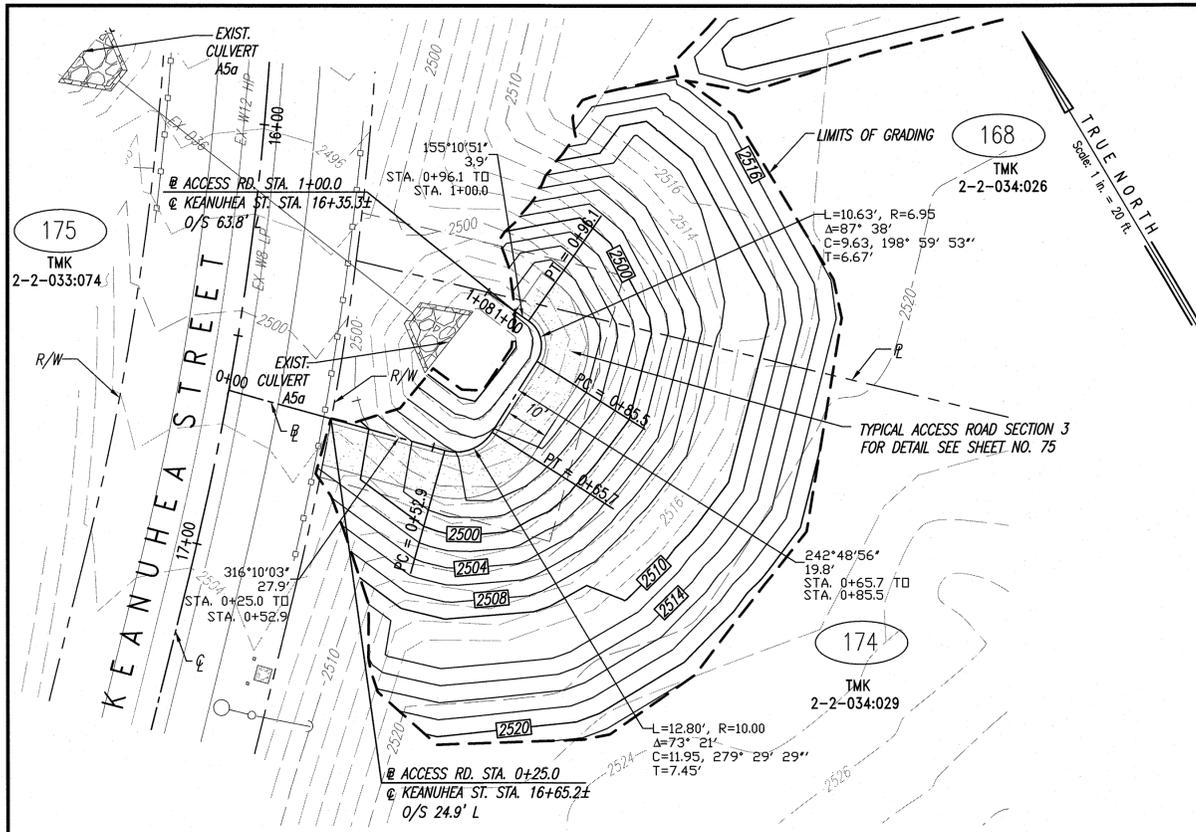
REVISION DATE	DESCRIPTION	MADE BY	APPROVED

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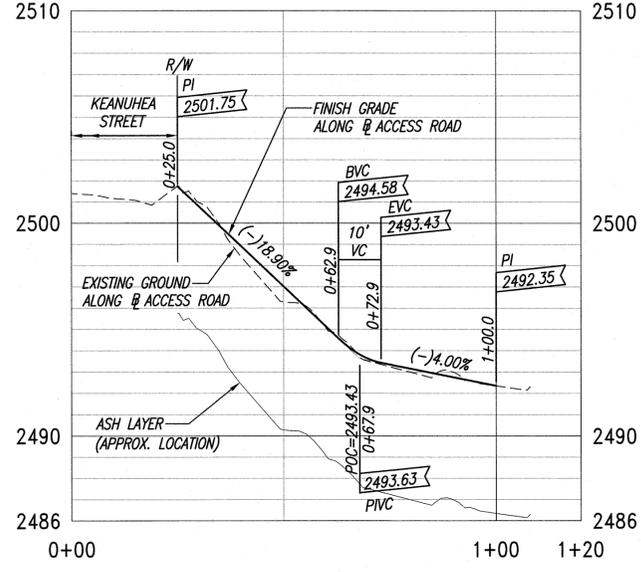
**CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A**  
KEOKEA & WAIOHULI, MAKAWAO, MAUI  
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074 AND (2) 2-2-34: 001 TO 016, 026 & 029

**ACCESS ROAD PLAN AND PROFILE DRAIN CULVERTS A4a & A4b**

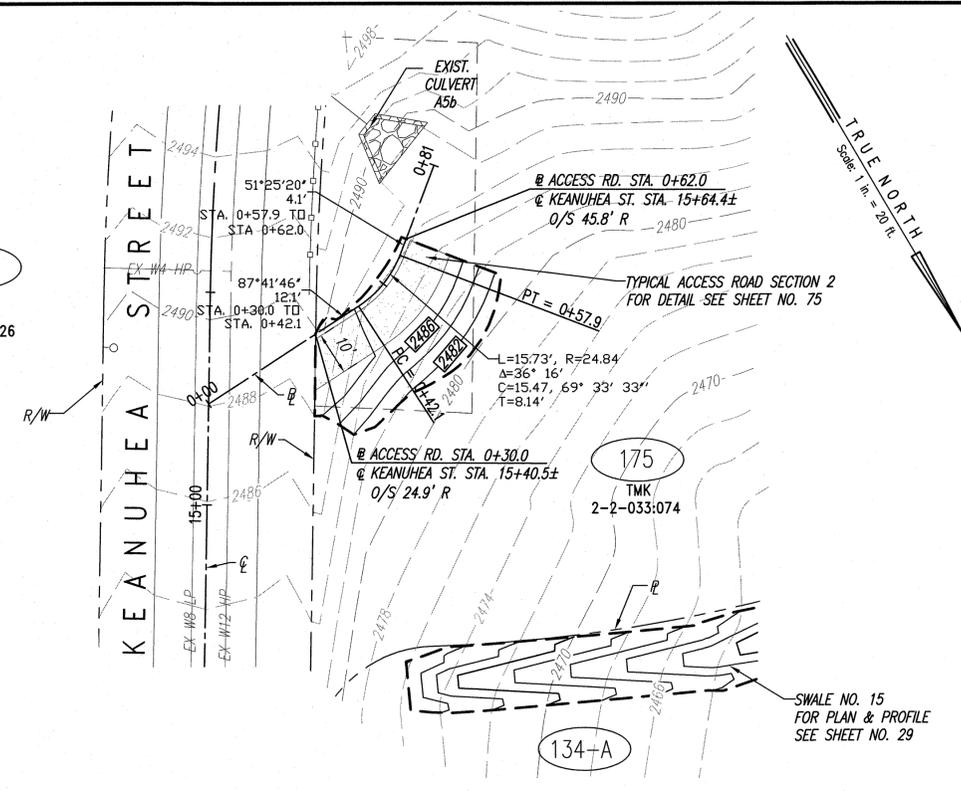
DRAWN BY: KWNW ENGINEER: KWNW/MFC CHECKED BY: RYS



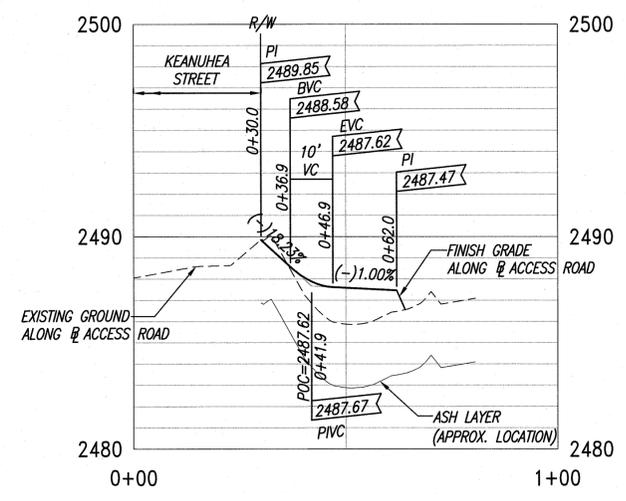
**PLAN - CULVERT ACCESS ROAD A5a (LOTS 174 & 168)**  
 SCALE: 1" = 20'



**PROFILE - CULVERT ACCESS ROAD A5a (LOTS 174 & 168)**  
 SCALES: HORIZ. 1"=20'  
 VERT. 1"= 8'

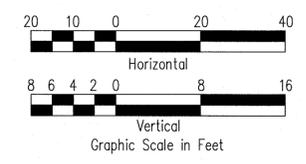
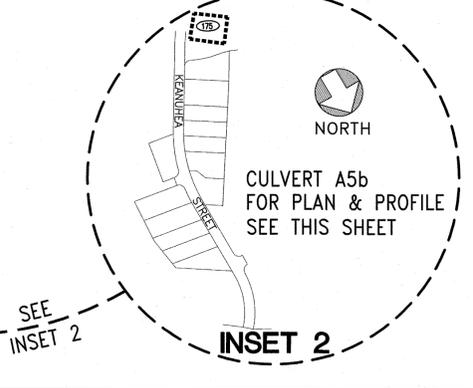
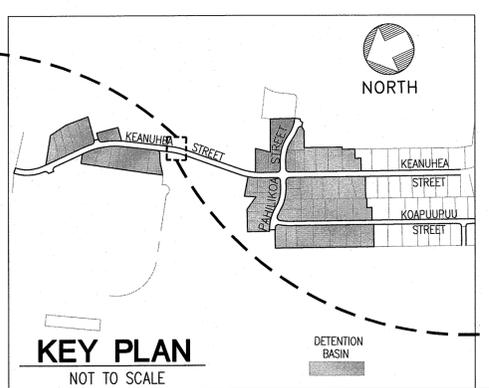
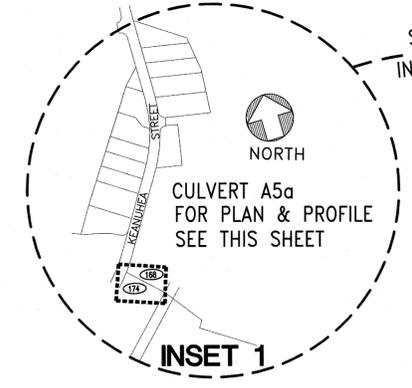


**PLAN - CULVERT ACCESS ROAD A5b (LOT 175)**  
 SCALE: 1" = 20'



**PROFILE - CULVERT ACCESS ROAD A5b (LOT 175)**  
 SCALES: HORIZ. 1"=20'  
 VERT. 1"= 8'

- LEGEND**
- LIMITS OF GRADING
  - - - EXISTING GROUND CONTOUR
  - FINISH GRADE CONTOUR
  - PROPERTY LINE
  - ..... OLD PROPERTY LINE
  - EXISTING GUARD RAIL
  - LIMITS OF 100 YEAR STORM
  - LOT NUMBER
  - EXISTING LOT NUMBER
- 140-A  
 165  
 TMK  
 2-2-002:014



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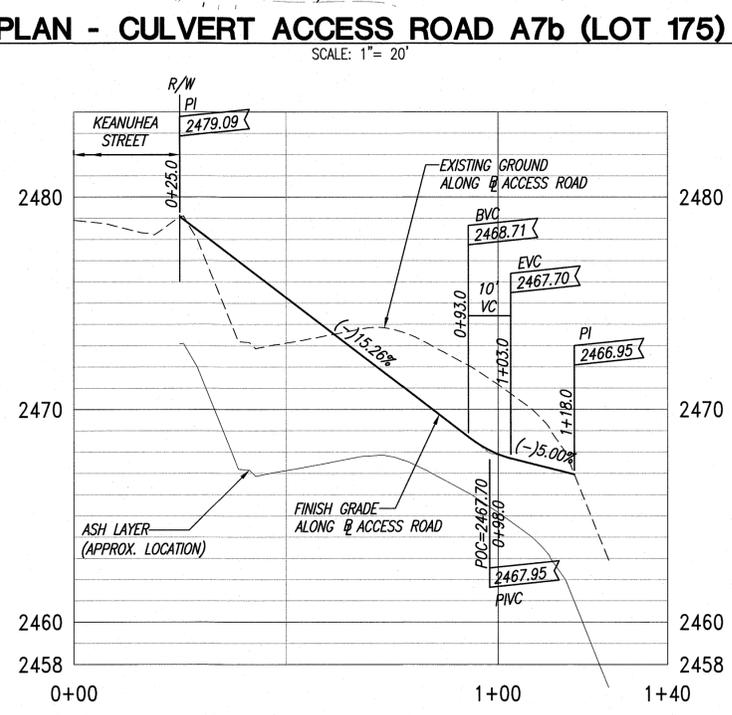
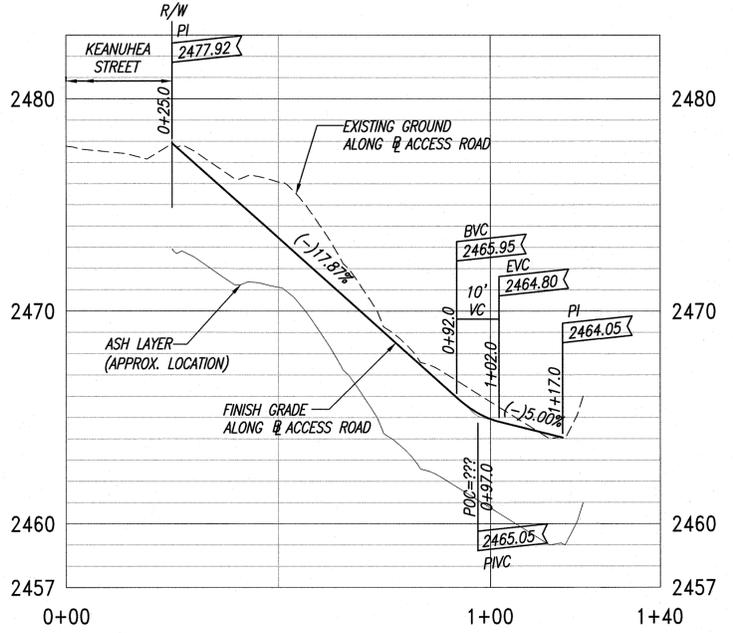
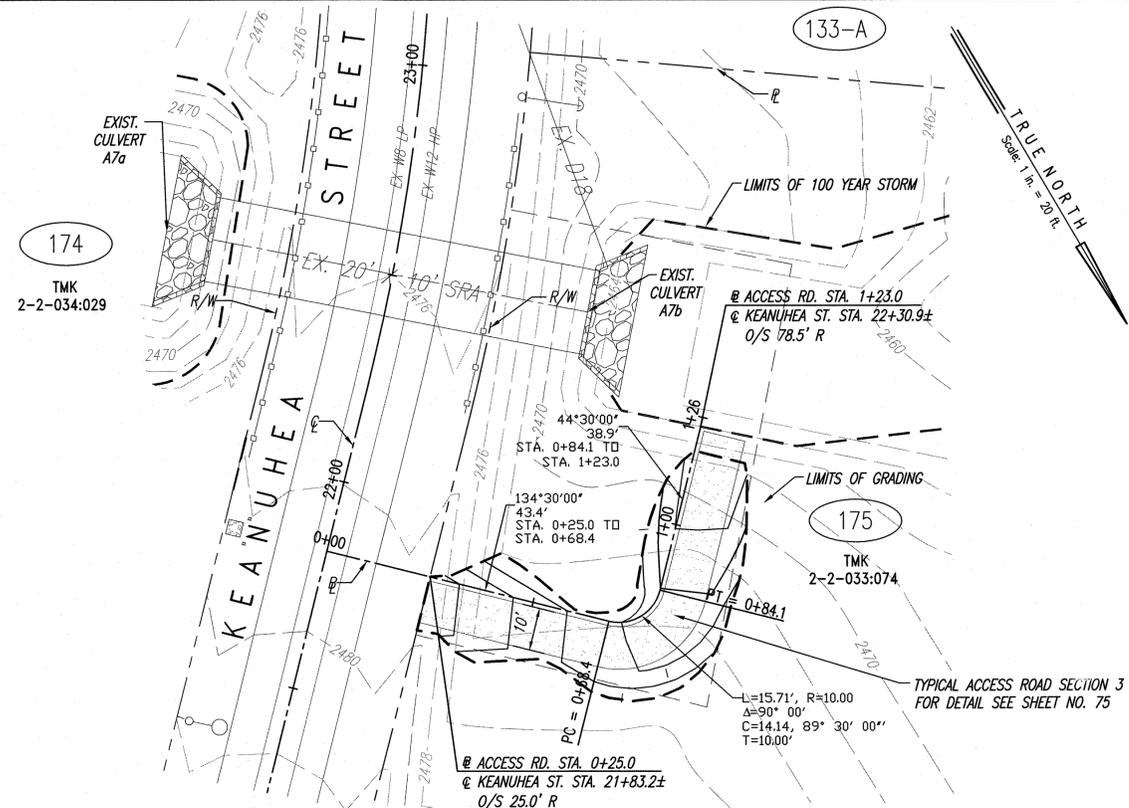
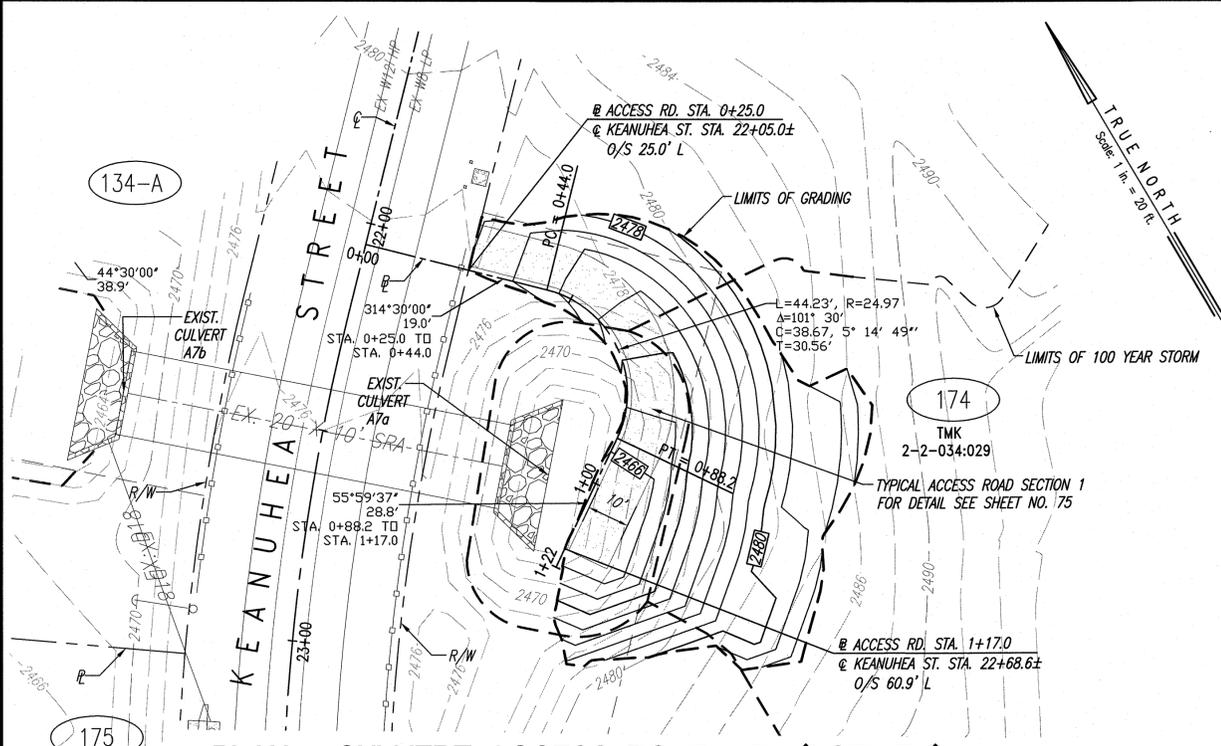
REVISION DATE	DESCRIPTION	MADE BY	APPROVED

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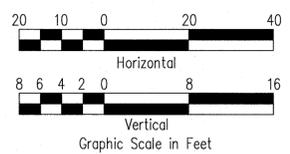
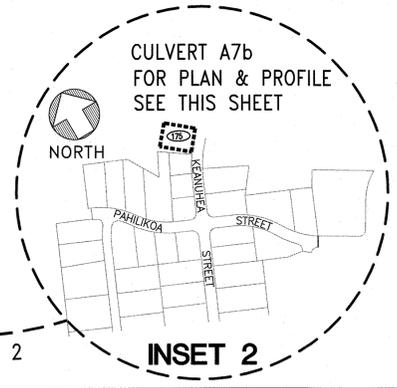
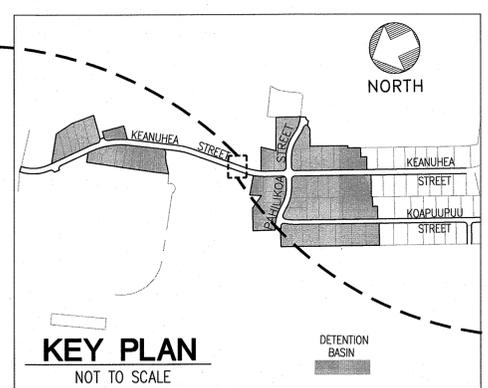
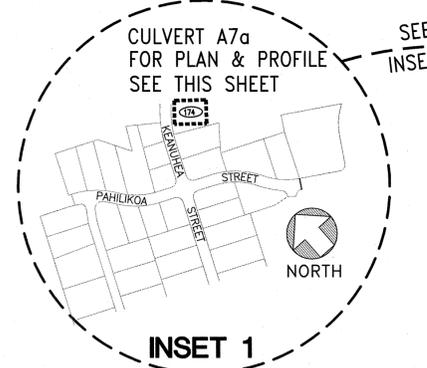
**CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A**  
 KEOKEA & WAIOHULI, MAKAWAO, MAUI  
 OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
 TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074 AND (2) 2-2-34: 001 TO 016, 026 & 029

**PLAN AND PROFILE CULVERT ACCESS ROAD DRAIN CULVERTS A5a & A5b**

DRAWN BY: KWNW ENGINEER: KWNW/MFC CHECKED BY: RYS



- LEGEND**
- LIMITS OF GRADING
  - 2500- EXISTING GROUND CONTOUR
  - 2450- FINISH GRADE CONTOUR
  - PROPERTY LINE
  - OLD PROPERTY LINE
  - EXISTING GUARD RAIL
  - LIMITS OF 100 YEAR STORM
  - 140-A LOT NUMBER
  - 165 EXISTING LOT NUMBER
  - TMK 2-2-002:014



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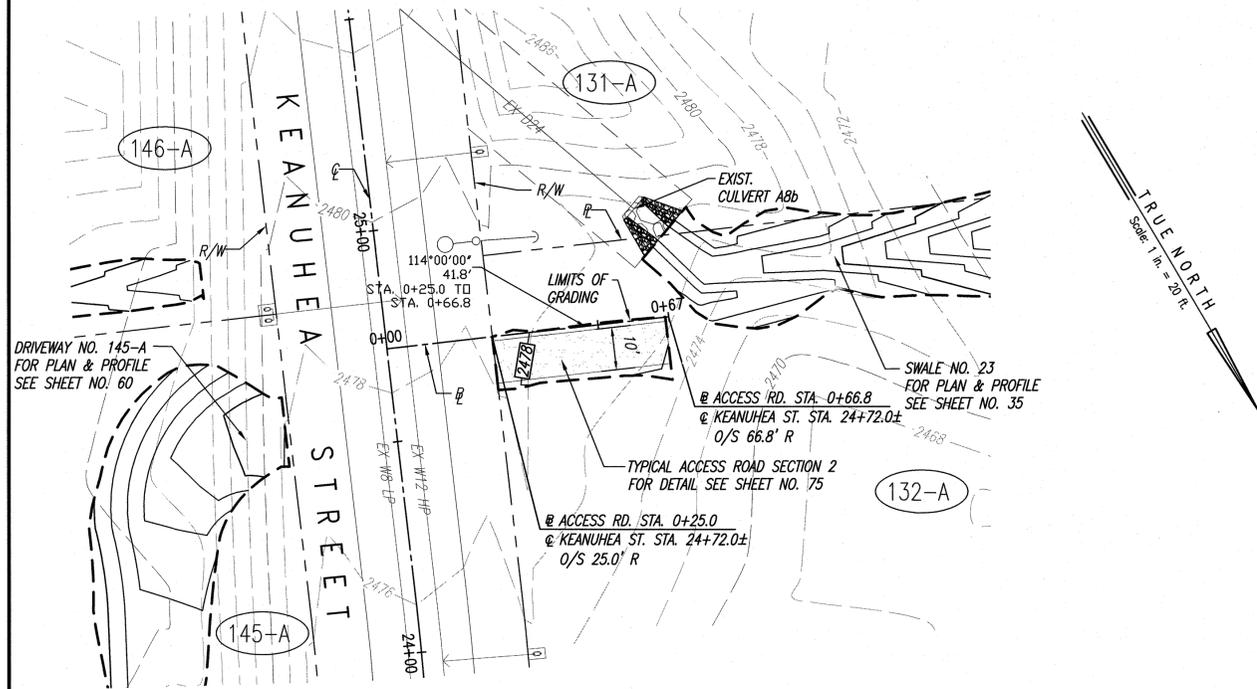
REVISION DATE	DESCRIPTION	MADE BY	APPROVED

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**CONSOLIDATION / RE-SUBDIVISION  
KEOKEA-WAIOHULI DEVELOPMENT  
PHASE 1A**  
KEOKEA & WAIOHULI, MAKAWAO, MAUI  
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074  
AND (2) 2-2-34: 001 TO 016, 026 & 029

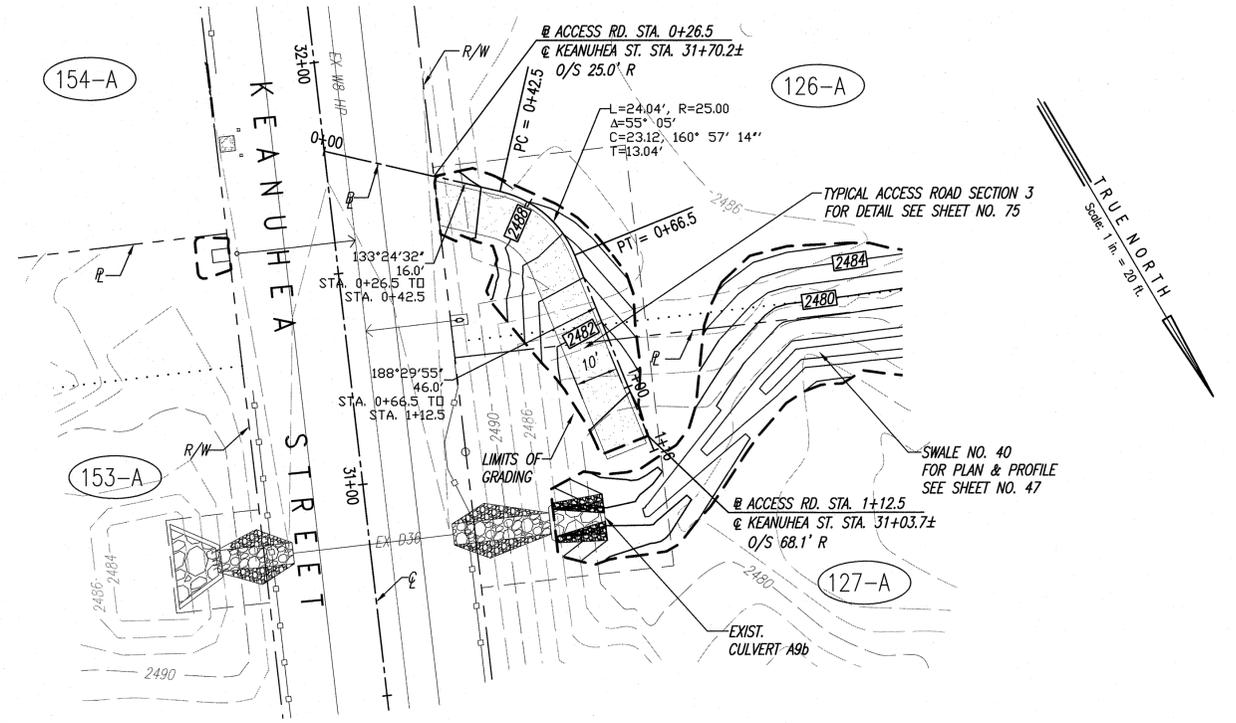
**PLAN AND PROFILE  
CULVERT ACCESS ROAD  
DRAIN CULVERTS A7a & A7b**

DRAWN BY: KWNW ENGINEER: KWNW/MFC CHECKED BY: RYS



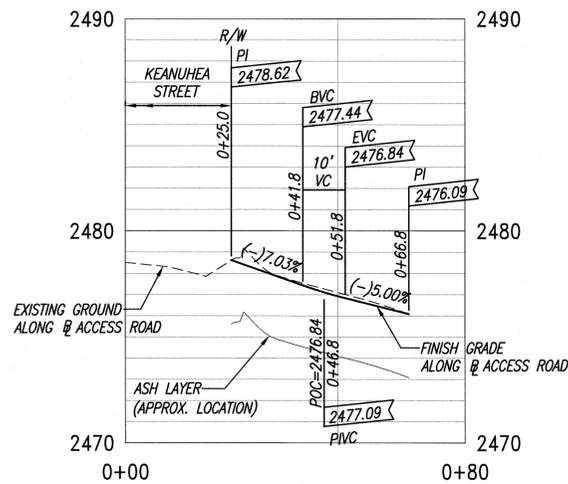
**PLAN - CULVERT ACCESS ROAD A8b (LOT 132-A)**

SCALE: 1" = 20'



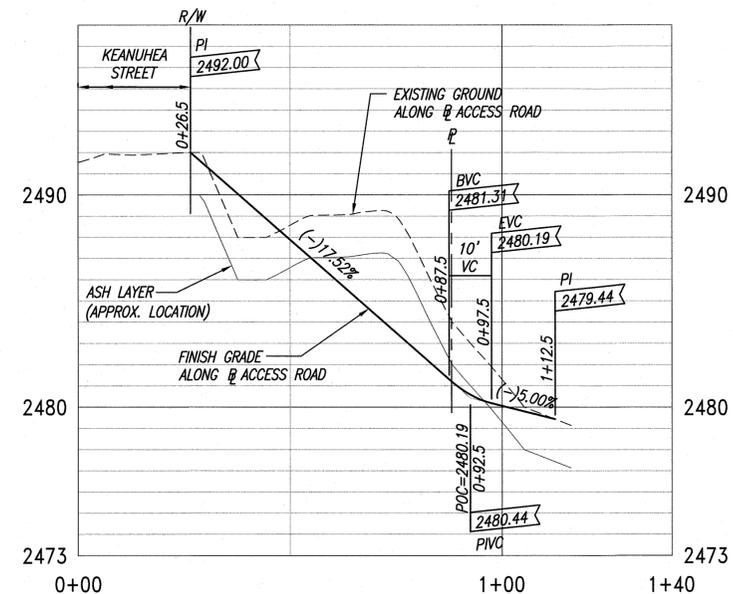
**PLAN - CULVERT ACCESS ROAD A9b (LOTS 126-A & 127-A)**

SCALE: 1" = 20'



**PROFILE - CULVERT ACCESS ROAD A8b (LOT 132-A)**

SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'

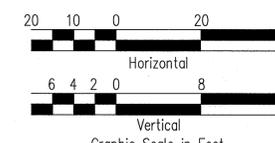
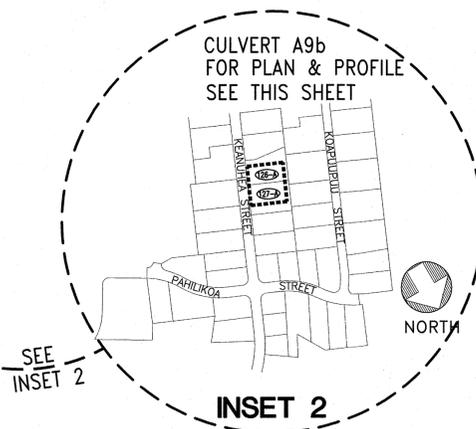
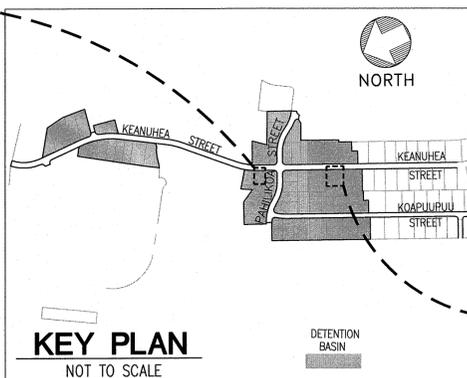
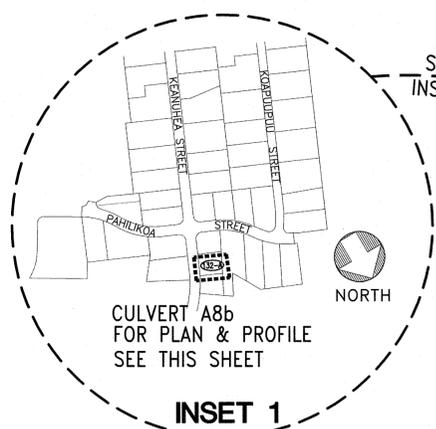


**PROFILE - CULVERT ACCESS ROAD A9b (LOTS 126-A & 127-A)**

SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'

**LEGEND**

- LIMITS OF GRADING
- 2500- EXISTING GROUND CONTOUR
- 2450- FINISH GRADE CONTOUR
- PROPERTY LINE
- OLD PROPERTY LINE
- EXISTING GUARD RAIL
- LIMITS OF 100 YEAR STORM
- 140-A LOT NUMBER
- 165 EXISTING LOT NUMBER
- TMK 2-2-002:014



**RICHARD Y. SAKO**  
LICENSED PROFESSIONAL ENGINEER  
No. 8955-C  
HAWAII, U.S.A.

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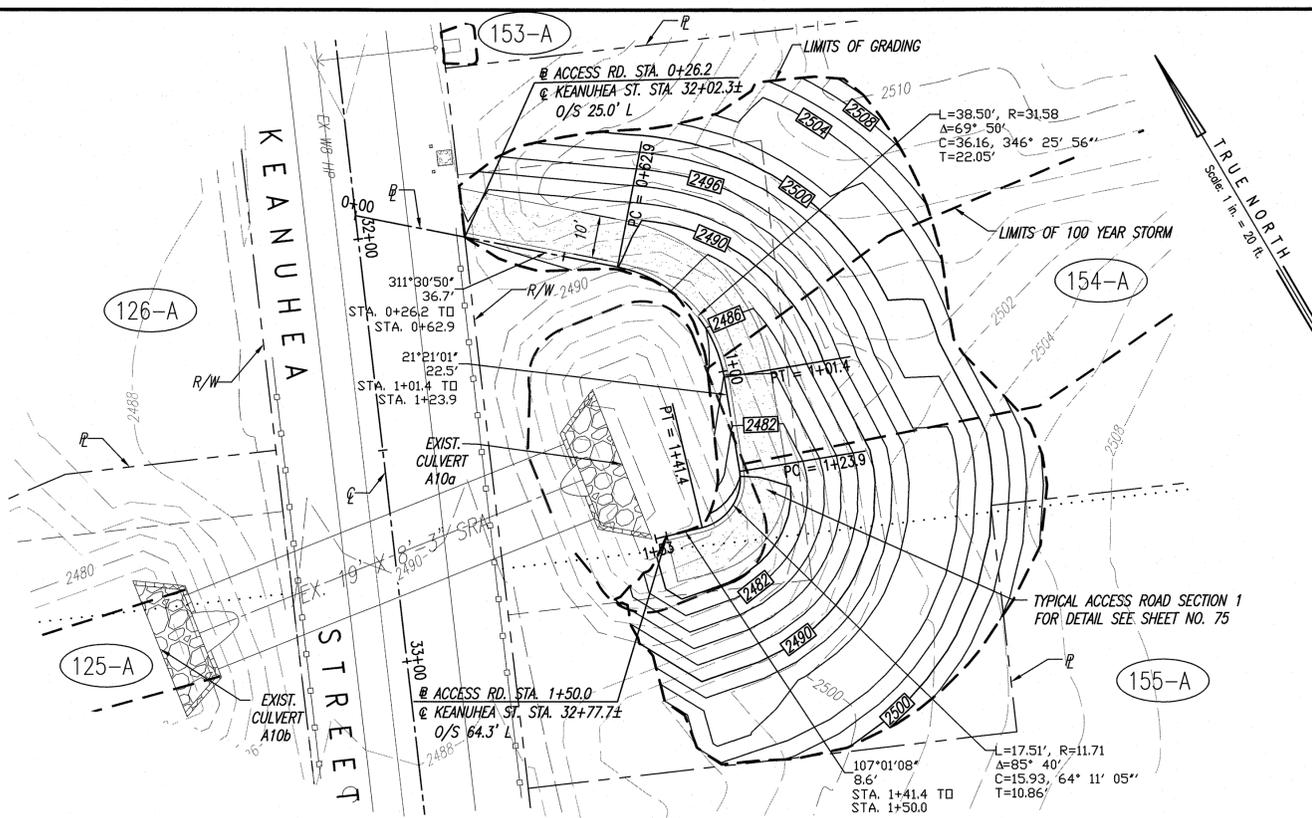
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**CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A**  
KEOKEA & WAIOHULI, MAKAWAO, MAUI  
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074 AND (2) 2-2-34: 001 TO 016, 026 & 029

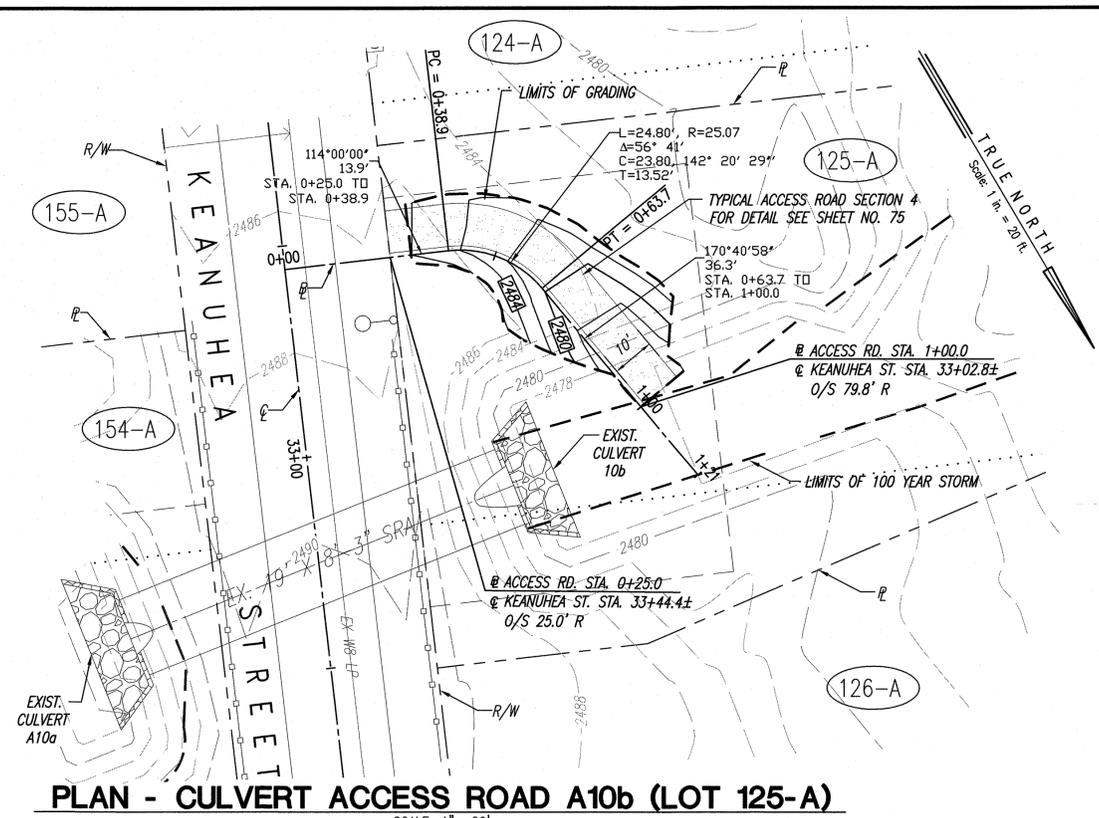
**PLAN AND PROFILE CULVERT ACCESS ROAD DRAIN CULVERTS A8b & A9b**

DRAWN BY: KWNW ENGINEER: KWNW/MFC CHECKED BY: RYS

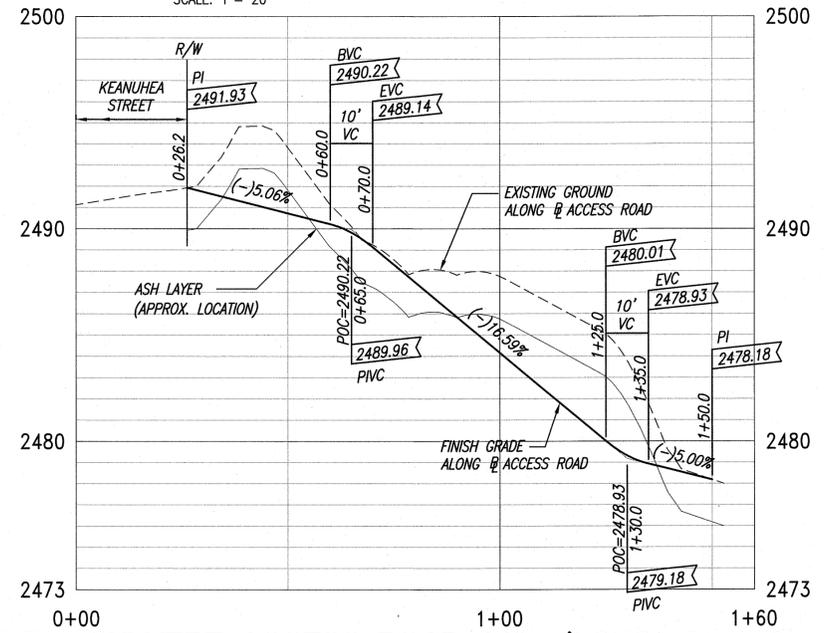
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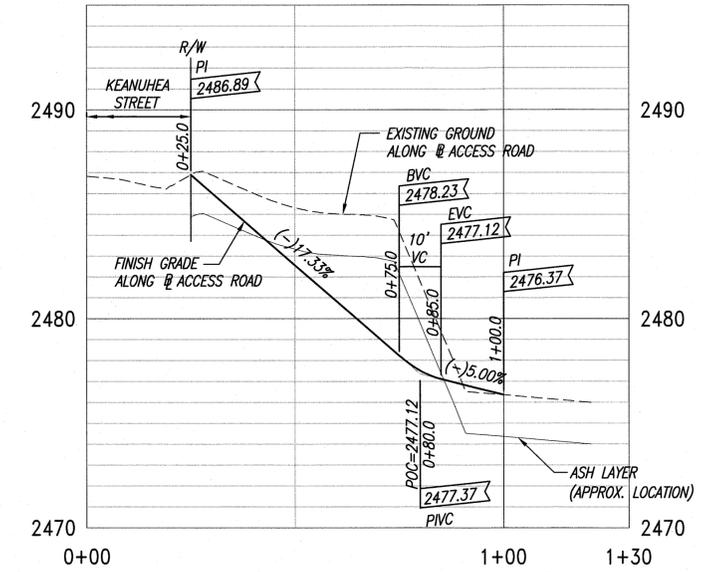
**PLAN - CULVERT ACCESS ROAD A10a (LOTS 154-A & 155-A)**  
SCALE: 1" = 20'



**PLAN - CULVERT ACCESS ROAD A10b (LOT 125-A)**  
SCALE: 1" = 20'

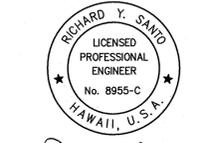
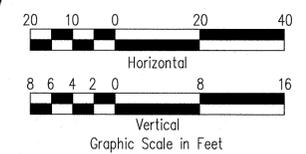
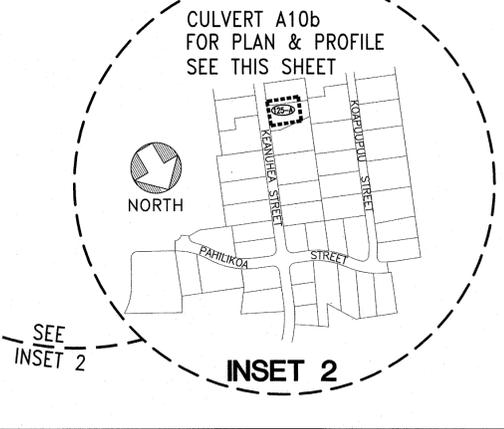
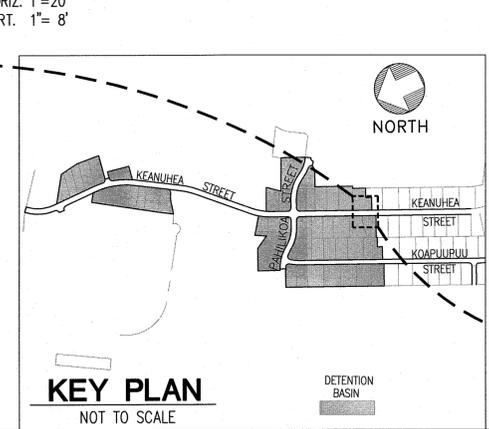
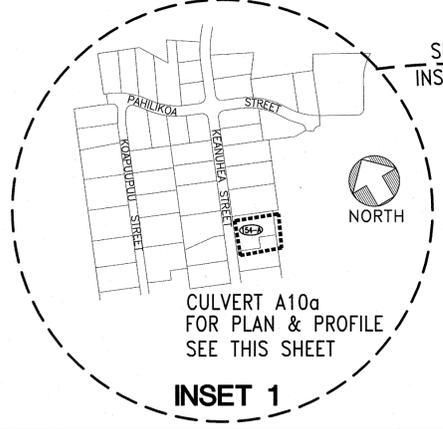


**PROFILE - CULVERT ACCESS ROAD A10a (LOTS 154-A & 155-A)**  
SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'



**PROFILE - CULVERT ACCESS ROAD A10b (LOT 125-A)**  
SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'

- LEGEND**
- LIMITS OF GRADING
  - 2500 --- EXISTING GROUND CONTOUR
  - 2450 --- FINISH GRADE CONTOUR
  - PROPERTY LINE
  - OLD PROPERTY LINE
  - EXISTING GUARD RAIL
  - LIMITS OF 100 YEAR STORM
  - (140-A) LOT NUMBER
  - (165) EXISTING LOT NUMBER
  - TMK 2-2-002:014



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REVISION DATE	DESCRIPTION	MADE BY	APPROVED

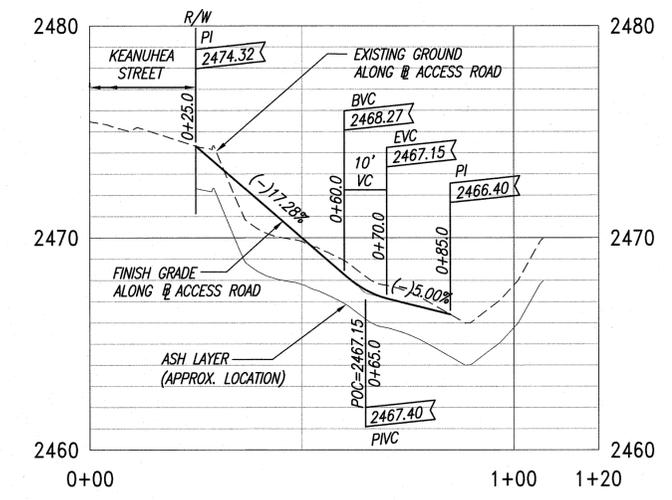
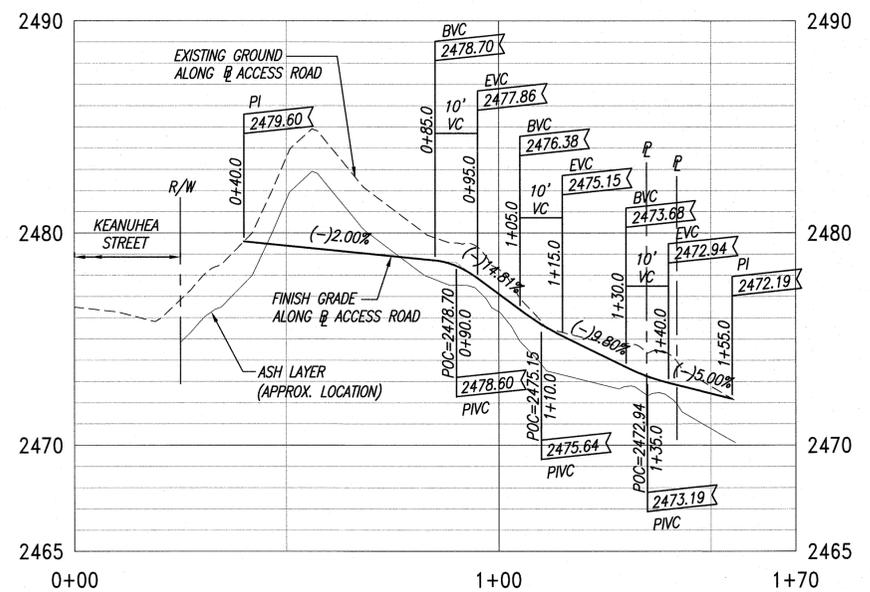
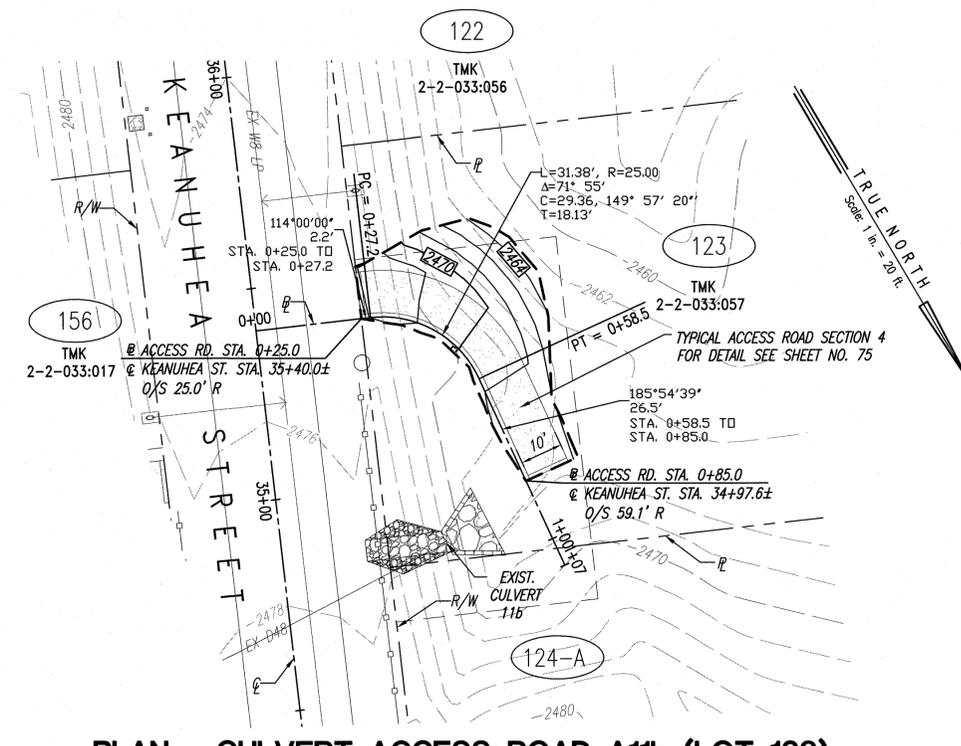
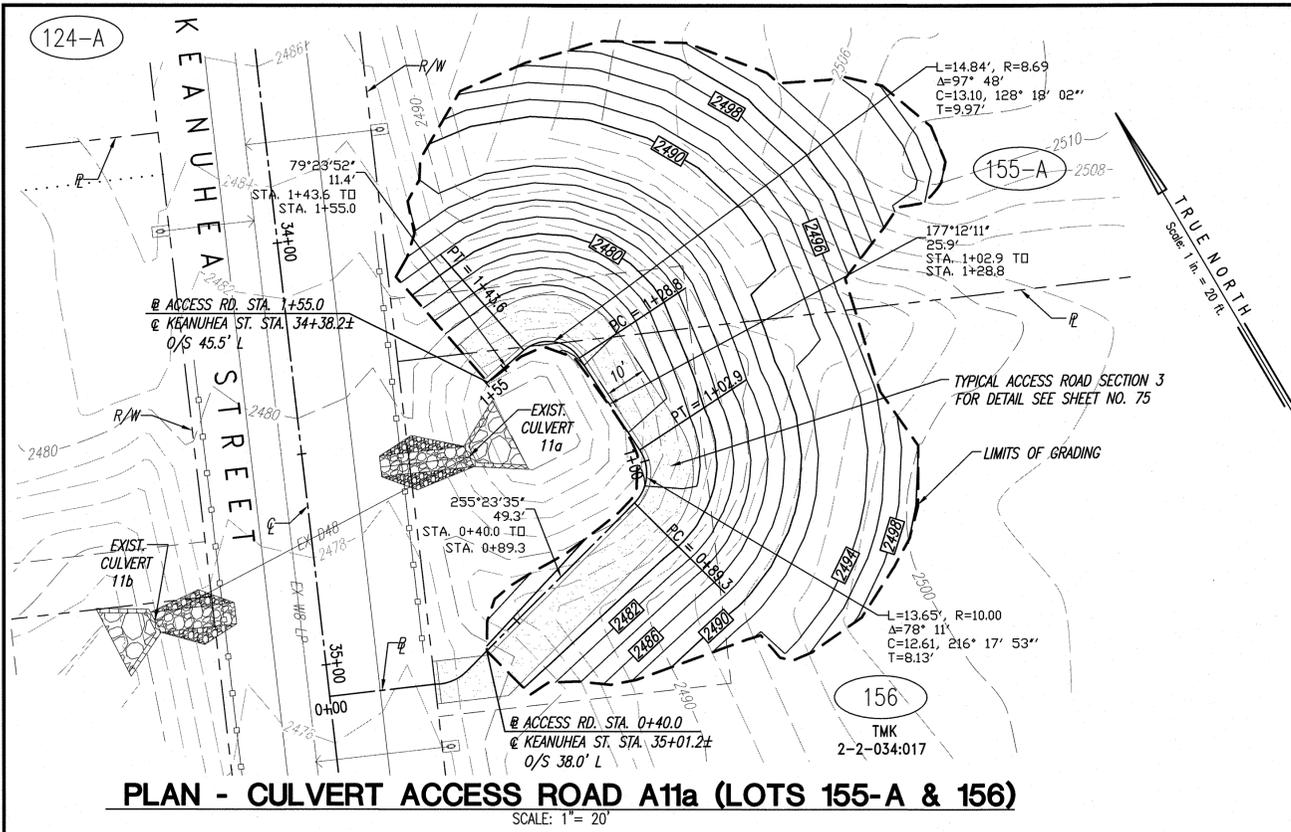
**Community Planning and Engineering, Inc.**  
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1288 Queen Emma Street, Third Floor Honolulu, Hawaii

**CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A**  
KEOKEA & WAIOHULI, MAKAWAO, MAUI  
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074 AND (2) 2-2-34: 001 TO 016, 026 & 029

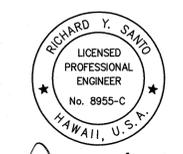
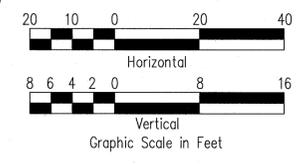
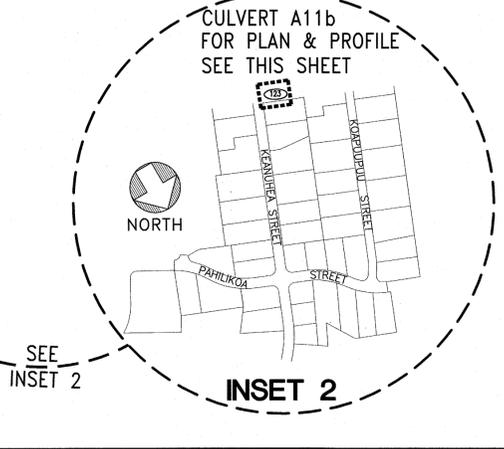
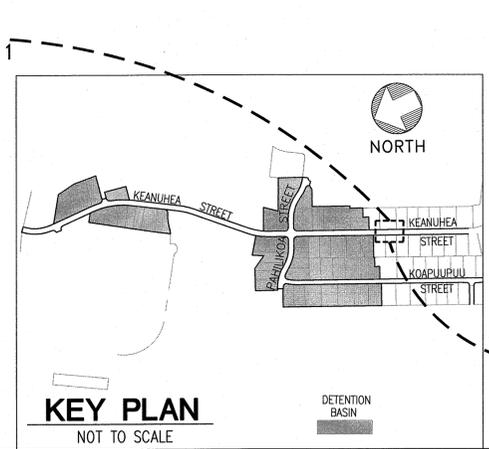
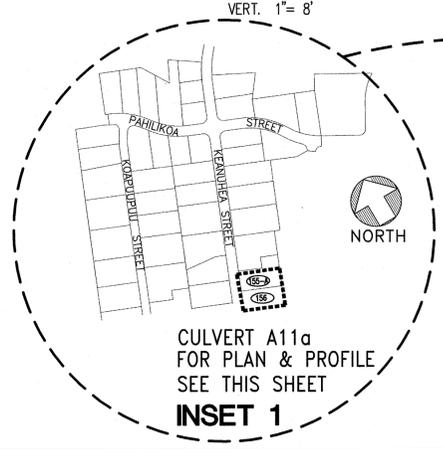
**PLAN AND PROFILE CULVERT ACCESS ROAD DRAIN CULVERTS A10a & A10b**

DRAWN BY: KWNW ENGINEER: KWNW/MFC CHECKED BY: RYS

P:\Land Projects\DHHL Keokea Ph 1, 2 & 4\DWG\Increment 1\Current\65-75 P&P Access Road DC All.dwg, 11/17/2014 7:43:07 AM, 1:1

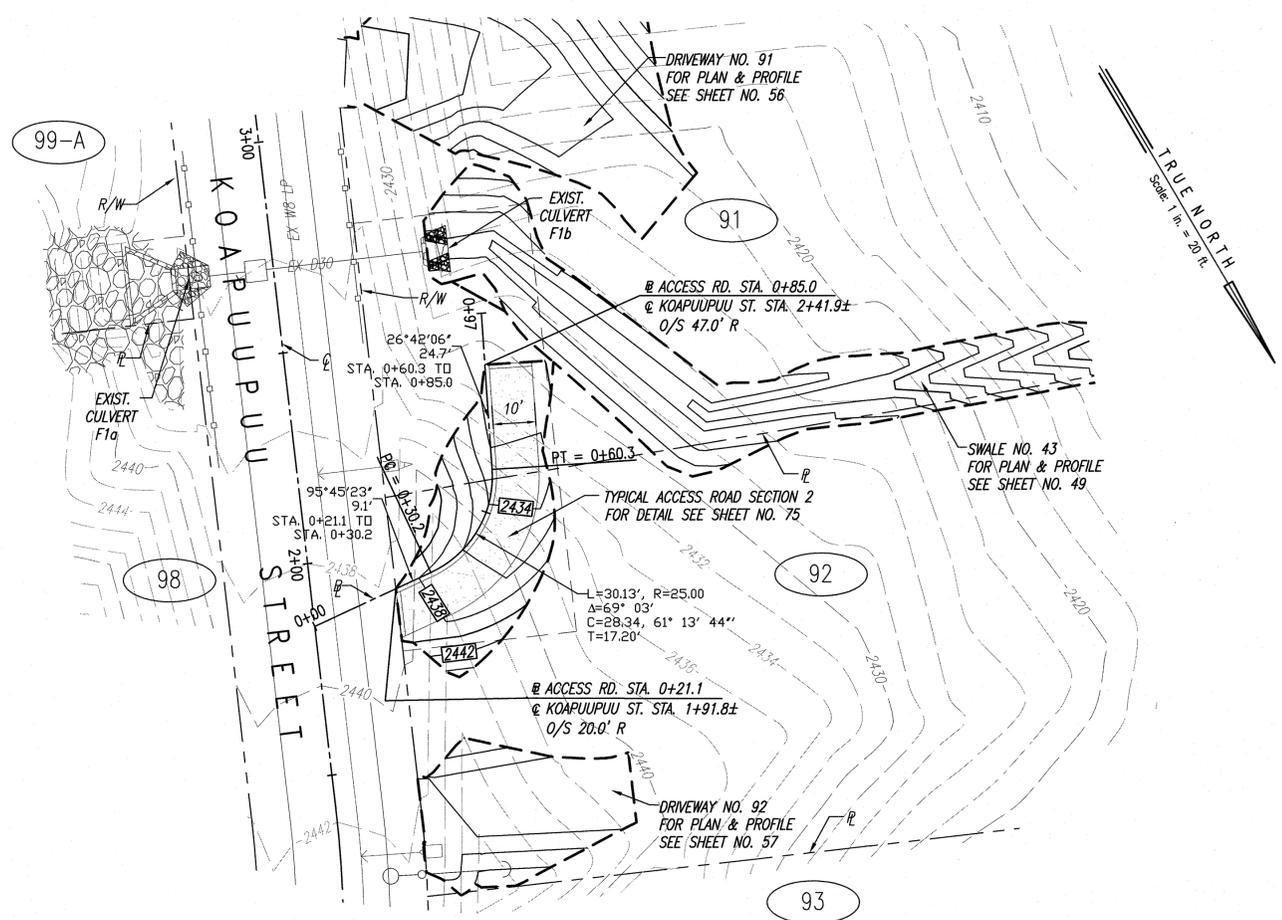


- LEGEND**
- LIMITS OF GRADING
  - - - - - EXISTING GROUND CONTOUR
  - 2450 FINISH GRADE CONTOUR
  - PROPERTY LINE
  - OLD PROPERTY LINE
  - EXISTING GUARD RAIL
  - LIMITS OF 100 YEAR STORM
  - 140-A LOT NUMBER
  - 165 EXISTING LOT NUMBER
  - TMK 2-2-002:014

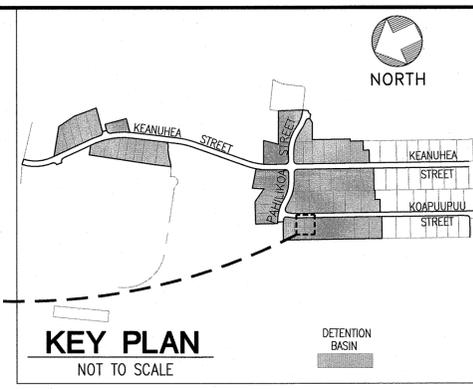
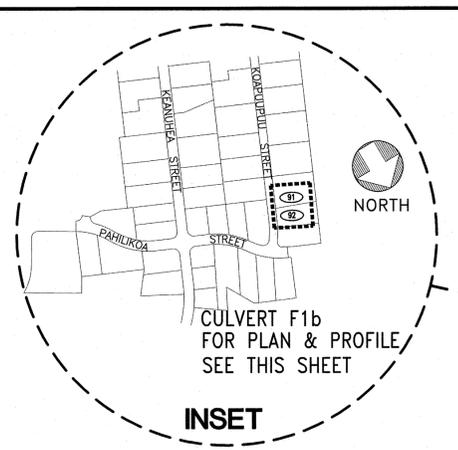


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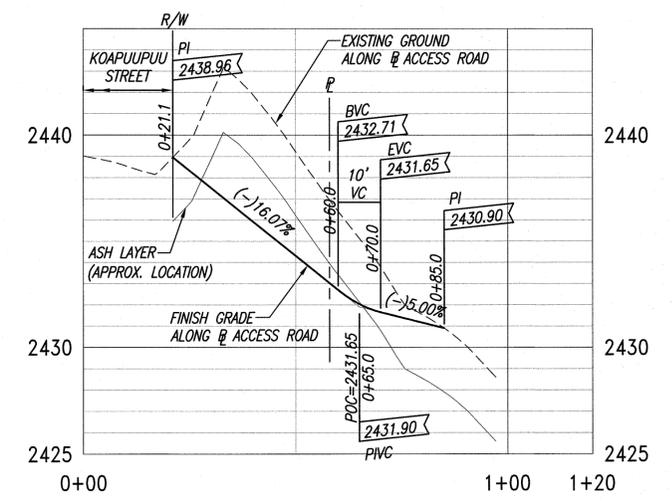
REVISION DATE	DESCRIPTION	MADE BY	APPROVED
<p><b>Community Planning and Engineering, Inc.</b> Engineering Design   Construction Management   Infrastructure Planning 1286 Queen Emma Street, Third Floor Honolulu, Hawaii</p> <p><b>CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A</b> KEOKEA &amp; WAIOHULI, MAKAWAO, MAUI OWNER &amp; DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS TAX MAP KEYS: (2) 2-2-033: 021 TO 038 &amp; 058-074 AND (2) 2-2-34: 001 TO 016, 026 &amp; 029</p> <p><b>PLAN AND PROFILE CULVERT ACCESS ROAD DRAIN CULVERTS A11a &amp; A11b</b></p>			
DRAWN BY: KWNW	ENGINEER: KWNW/MFC	CHECKED BY: RYS	



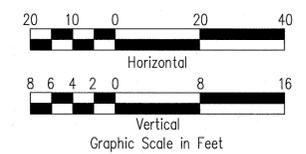
**PLAN - CULVERT ACCESS ROAD F1b (LOTS 92 & 91)**  
SCALE: 1" = 20'



- LEGEND**
- LIMITS OF GRADING
  - - - - - EXISTING GROUND CONTOUR
  - 2450 — FINISH GRADE CONTOUR
  - — — — — PROPERTY LINE
  - ..... OLD PROPERTY LINE
  - - - - - EXISTING GUARD RAIL
  - LIMITS OF 100 YEAR STORM
  - (140-A) LOT NUMBER
  - (165) EXISTING LOT NUMBER
  - TMK 2-2-002:014



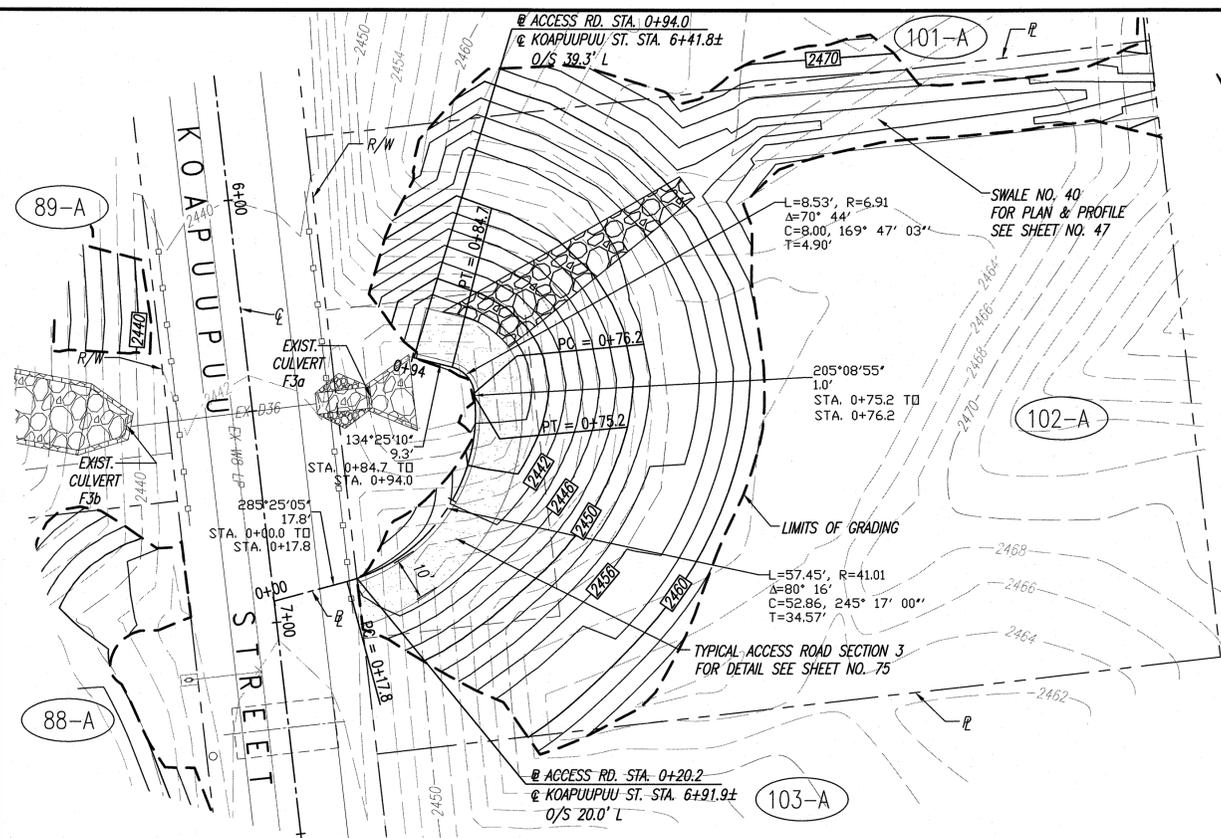
**PROFILE - CULVERT ACCESS ROAD F1b (LOTS 92 & 91)**  
SCALES: HORIZ. 1" = 20'  
VERT. 1" = 8'



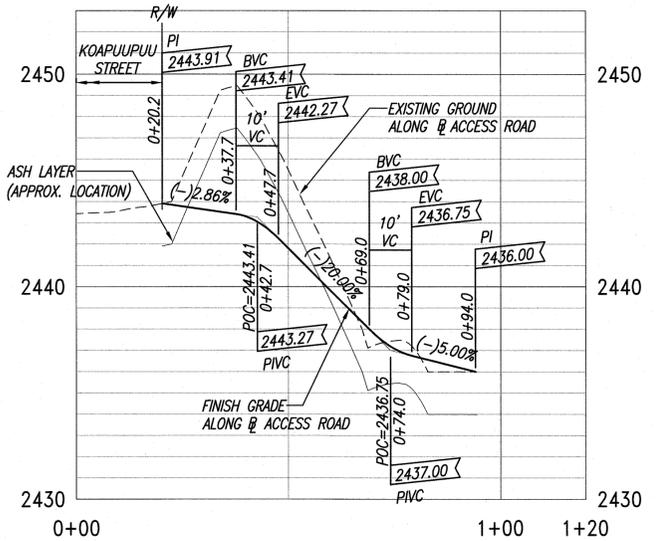
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REVISION DATE	DESCRIPTION	MADE BY	APPROVED
 <b>Community Planning and Engineering, Inc.</b> Engineering Design   Construction Management   Infrastructure Planning 1288 Queen Emma Street, Third Floor Honolulu, Hawaii			
<b>CONSOLIDATION / RE-SUBDIVISION</b> <b>KEOKEA-WAIOHULI DEVELOPMENT</b> <b>PHASE 1A</b> KEOKEA & WAIOHULI, MAKAWAO, MAUI OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074 AND (2) 2-2-34: 001 TO 016, 026 & 029			
<b>PLAN AND PROFILE</b> <b>CULVERT ACCESS ROAD</b> <b>DRAIN CULVERT F1b</b>			
DRAWN BY: KWNW	ENGINEER: KWNW/MFC	CHECKED BY: RYS	

P:\Land Projects\DHLL KEOKEA Ph 1, 2 & 4\DWG\Inurement 1\Current\65-75 P&P Access Road DC All.dwg, 11/17/2014 7:46:45 AM, 1:1

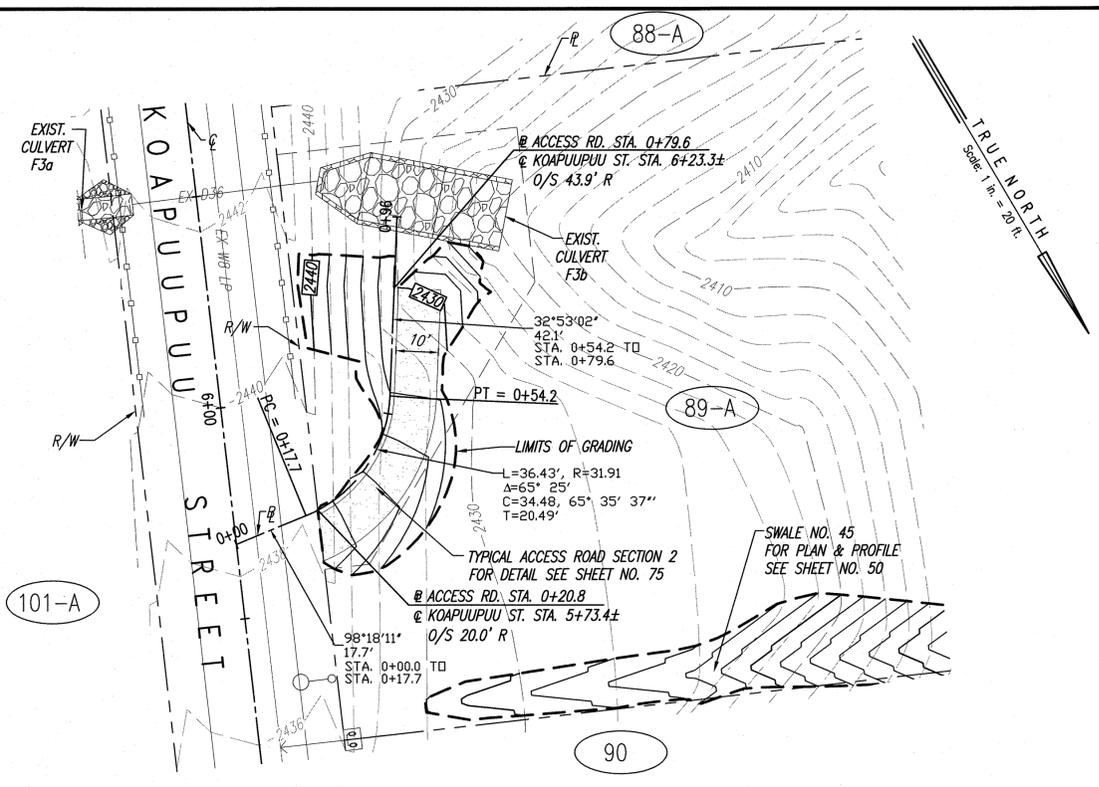
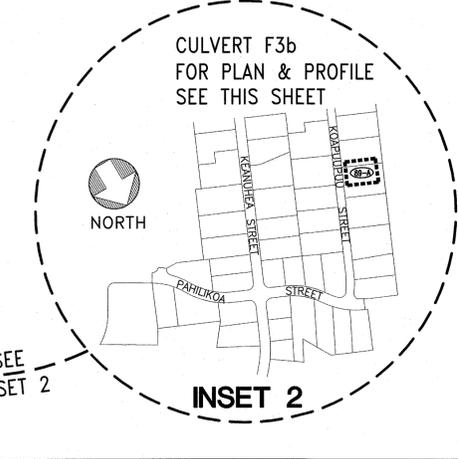
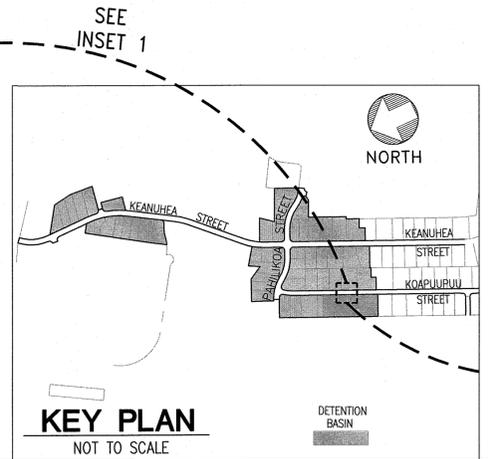
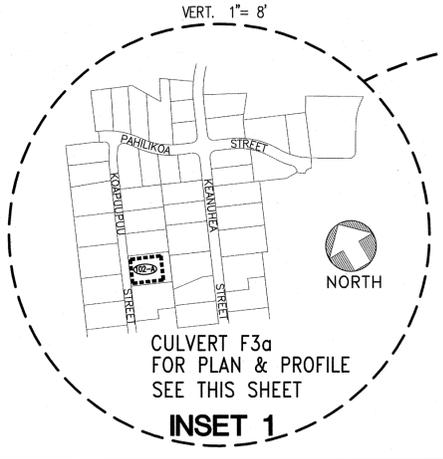


**PLAN - CULVERT ACCESS ROAD F3a (LOT 102-A)**  
SCALE: 1" = 20'

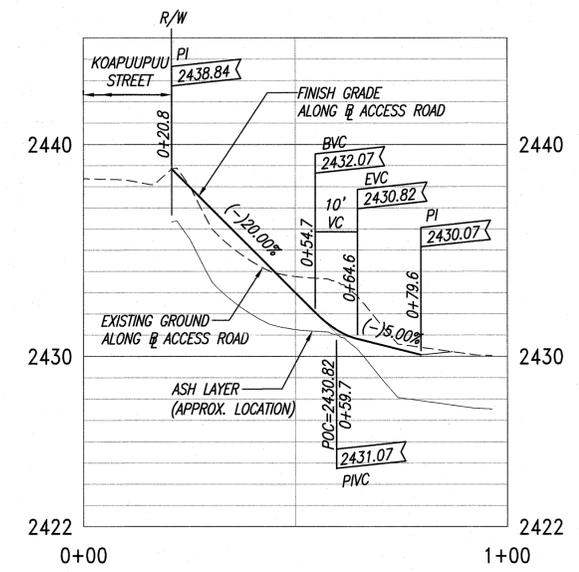


**PROFILE - CULVERT ACCESS ROAD F3a (LOT 102-A)**  
SCALES: HORIZ. 1" = 20' VERT. 1" = 8'

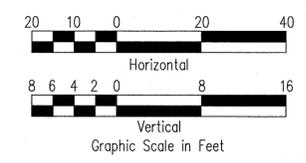
- LEGEND**
- LIMITS OF GRADING
  - - - 2500 EXISTING GROUND CONTOUR
  - 2450 FINISH GRADE CONTOUR
  - PROPERTY LINE
  - OLD PROPERTY LINE
  - EXISTING GUARD RAIL
  - LIMITS OF 100 YEAR STORM
  - 140-A LOT NUMBER
  - 165 EXISTING LOT NUMBER
  - TMK 2-2-002:014



**PLAN - CULVERT ACCESS ROAD F3b (LOT 89-A)**  
SCALE: 1" = 20'

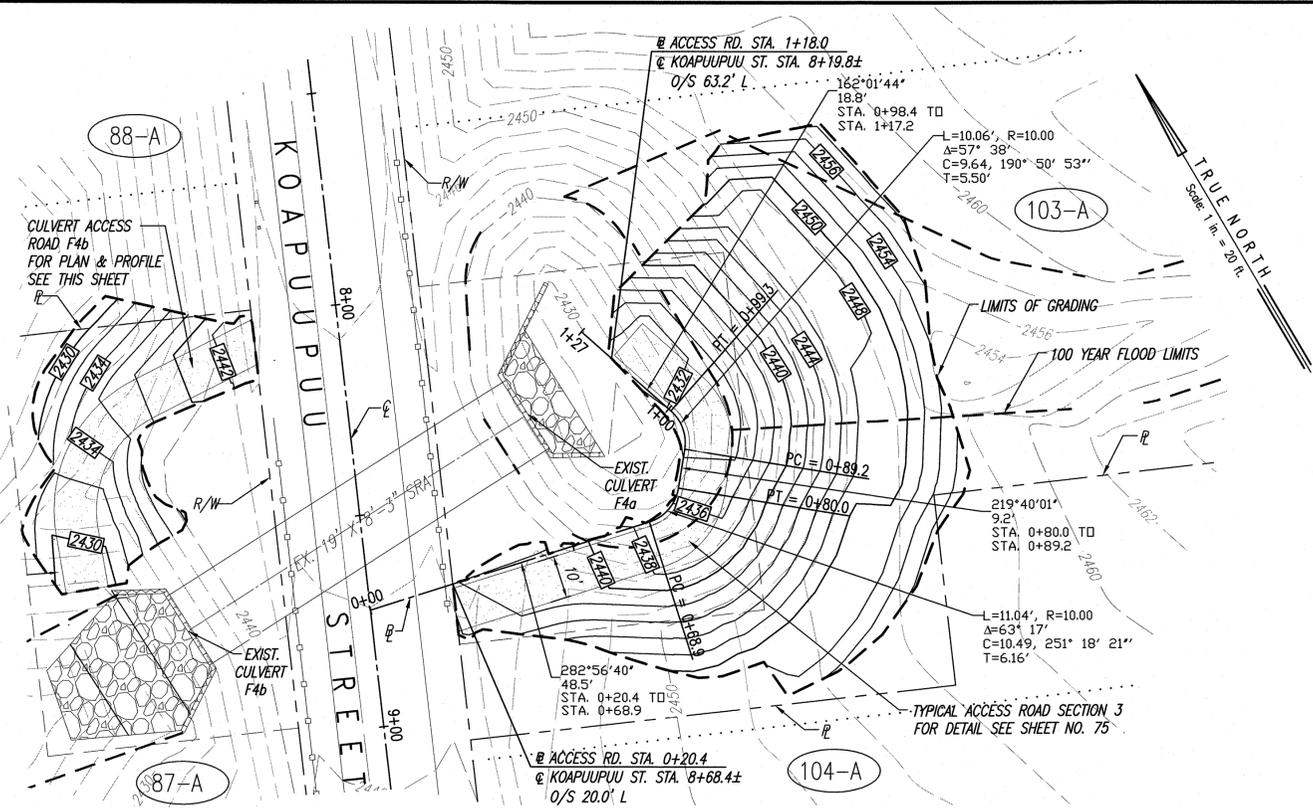


**PROFILE - CULVERT ACCESS ROAD F3b (LOT 89-A)**  
SCALES: HORIZ. 1" = 20' VERT. 1" = 8'

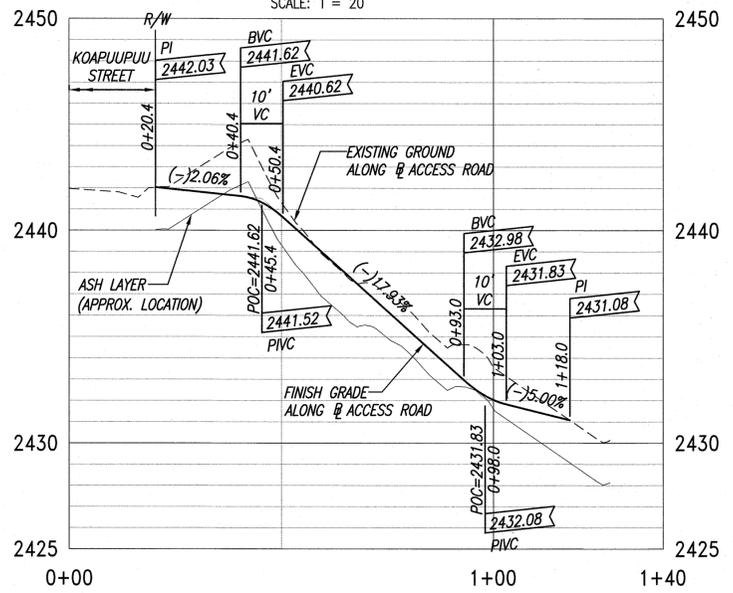


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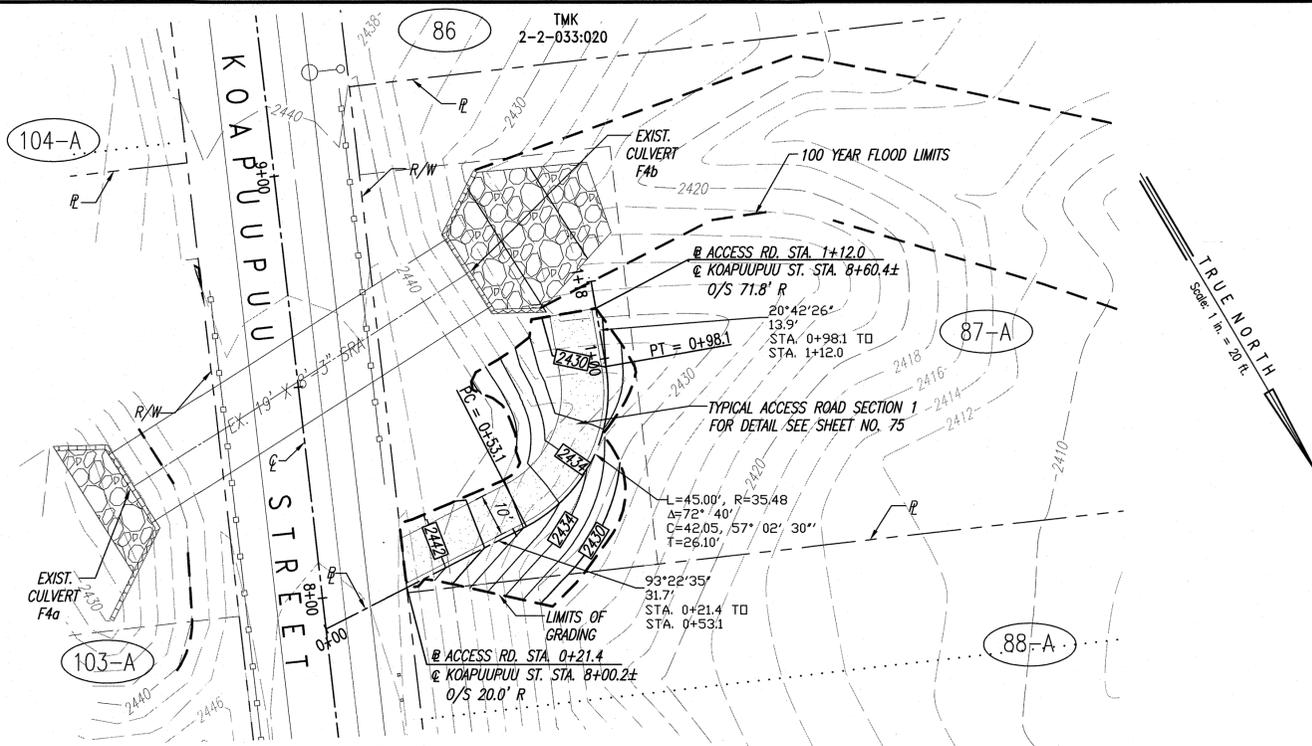
REVISION DATE	DESCRIPTION	MADE BY	APPROVED
<p><b>Community Planning and Engineering, Inc.</b> Engineering Design   Construction Management   Infrastructure Planning 1288 Queen Emma Street, Third Floor Honolulu, Hawaii</p> <p><b>CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A</b> KEOKEA &amp; WAIOHULI, MAKAWAO, MAUI OWNER &amp; DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS TAX MAP KEYS: (2) 2-2-033: 021 TO 038 &amp; 058-074 AND (2) 2-2-34: 001 TO 016, 026 &amp; 029</p> <p><b>PLAN AND PROFILE CULVERT ACCESS ROAD DRAIN CULVERTS F3a &amp; F3b</b></p>			
DRAWN BY: KWNW	ENGINEER: KWNW/MFC	CHECKED BY: RYS	



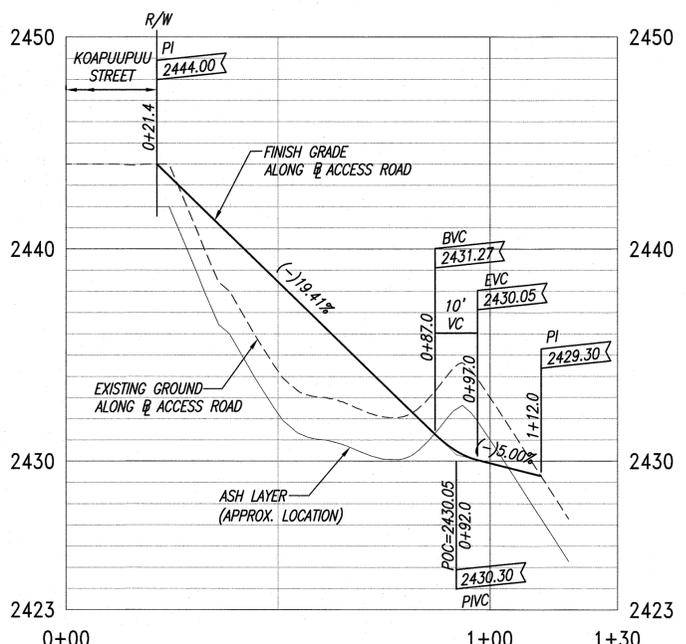
**PLAN - CULVERT ACCESS ROAD F4a (LOT 103-A)**



**PROFILE - CULVERT ACCESS ROAD F4a (LOT 103-A)**

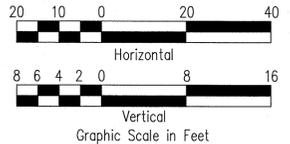
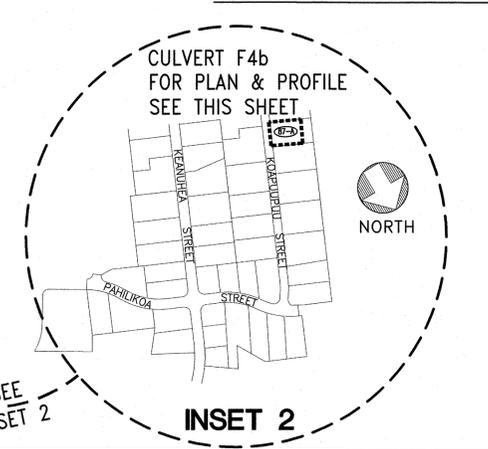
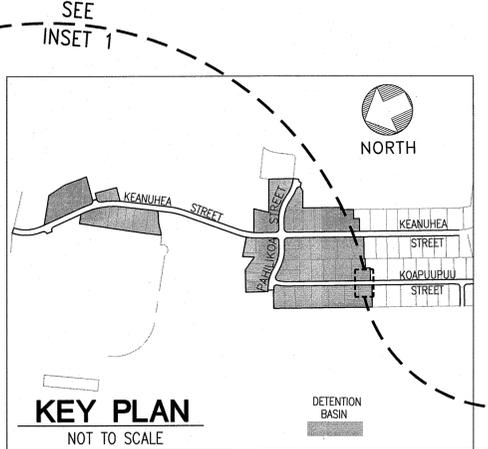
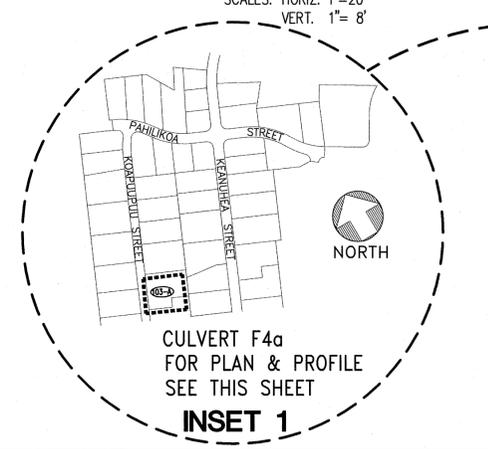


**PLAN - CULVERT ACCESS ROAD F4b (LOT 87-A)**



**PROFILE - CULVERT ACCESS ROAD F4b (LOT 87-A)**

- LEGEND**
- LIMITS OF GRADING
  - - - - - EXISTING GROUND CONTOUR
  - FINISH GRADE CONTOUR
  - PROPERTY LINE
  - OLD PROPERTY LINE
  - EXISTING GUARD RAIL
  - LIMITS OF 100 YEAR STORM
  - (140-A) LOT NUMBER
  - (165) EXISTING LOT NUMBER



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REVISION DATE	DESCRIPTION	MADE BY	APPROVED

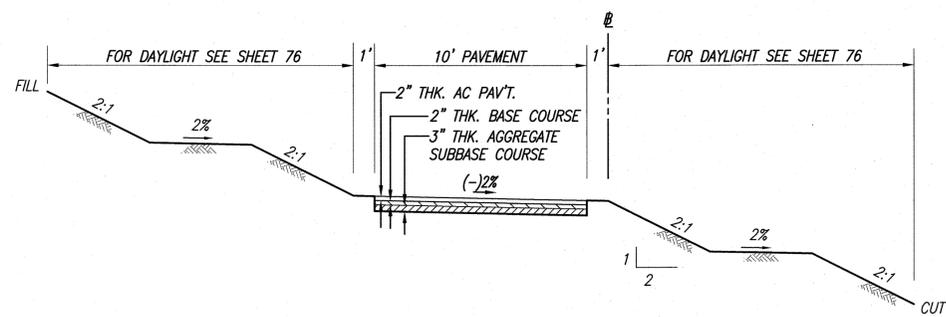
**Community Planning and Engineering, Inc.**  
Engineering Design | Construction Management | Infrastructure Planning  
1288 Queen Emma Street, Third Floor Honolulu, Hawaii

**CONSOLIDATION / RE-SUBDIVISION  
KEOKEA-WAIOHULI DEVELOPMENT  
PHASE 1A**

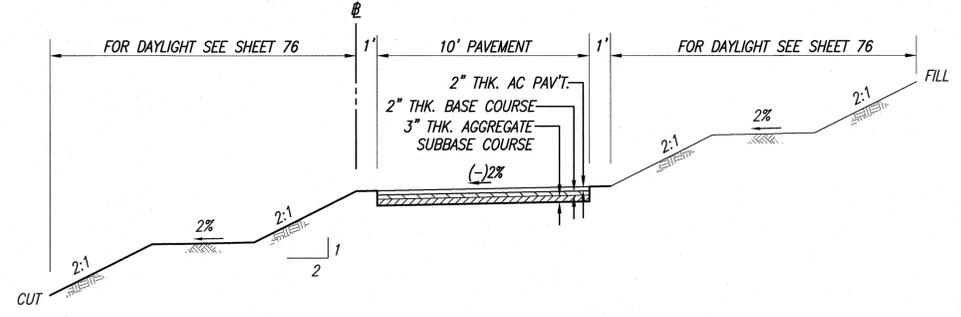
KEOKEA & WAIOHULI, MAKAWAO, MAUI  
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074  
AND (2) 2-2-34: 001 TO 016, 026 & 029

**PLAN AND PROFILE  
CULVERT ACCESS ROAD  
DRAIN CULVERTS F4a & F4b**

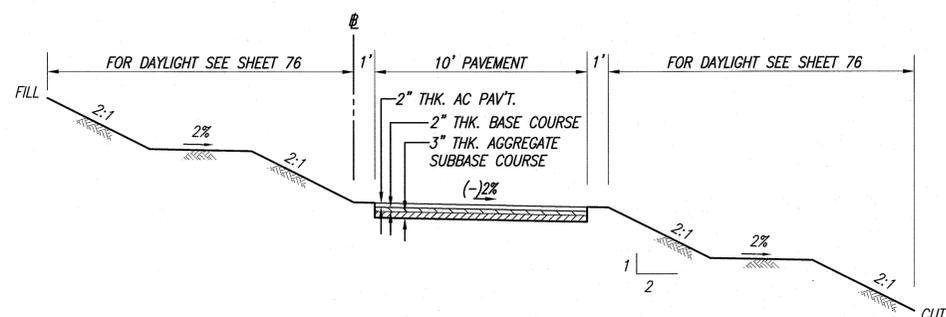
DRAWN BY: KWNW ENGINEER: KWNW/MFC CHECKED BY: RYS



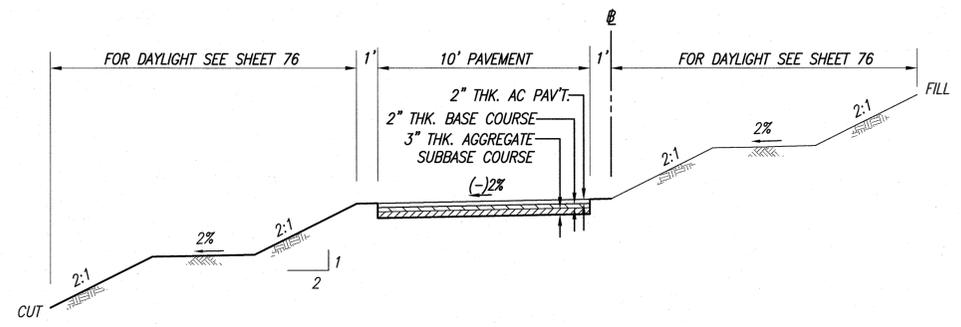
**TYPICAL ACCESS ROAD SECTION 1**  
NOT TO SCALE



**TYPICAL ACCESS ROAD SECTION 3**  
NOT TO SCALE



**TYPICAL ACCESS ROAD SECTION 2**  
NOT TO SCALE



**TYPICAL ACCESS ROAD SECTION 4**  
NOT TO SCALE



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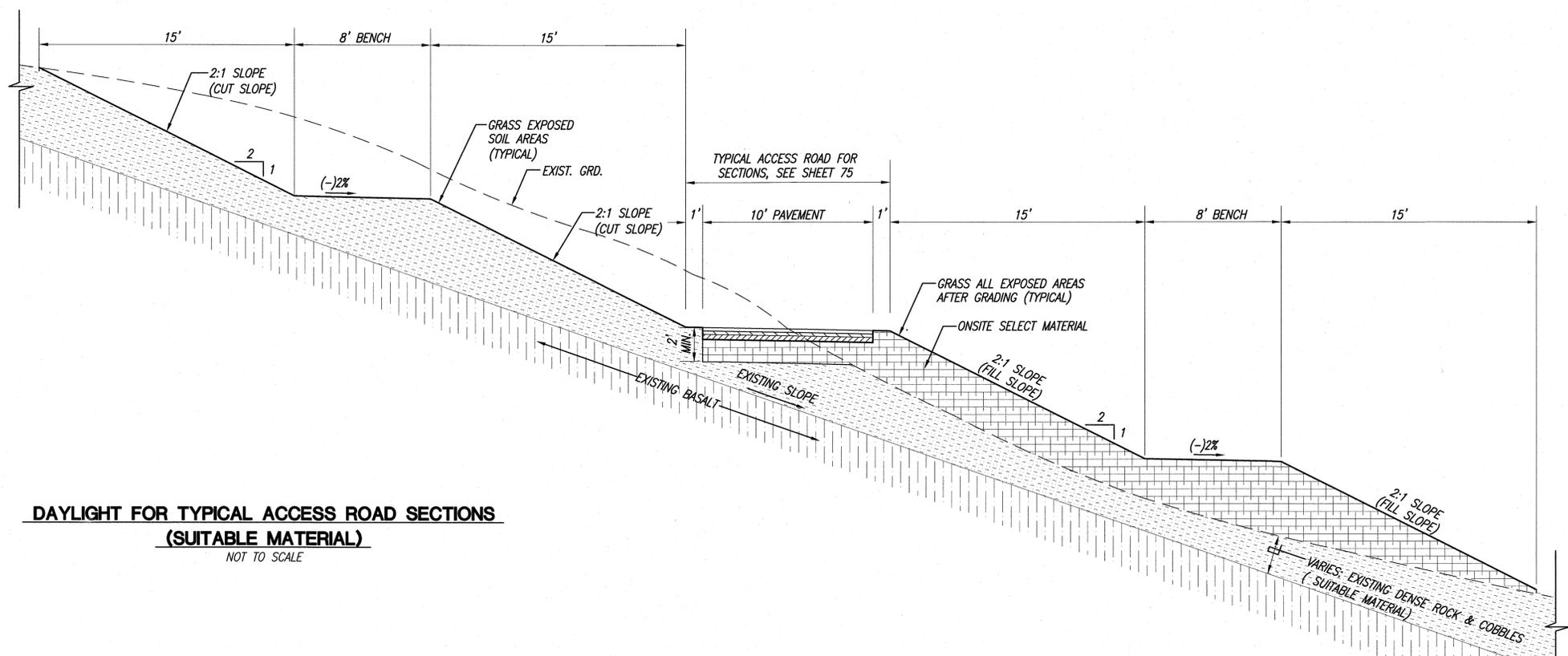
**Community Planning and Engineering, Inc.**  
Engineering Design | Construction Management | Infrastructure Planning  
1288 Queen Emma Street, Third Floor Honolulu, Hawaii

**CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A**  
KEOKEA & WAIOHULI, MAKAWAO, MAUI  
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074  
AND (2) 2-2-34: 001 TO 016, 026 & 029

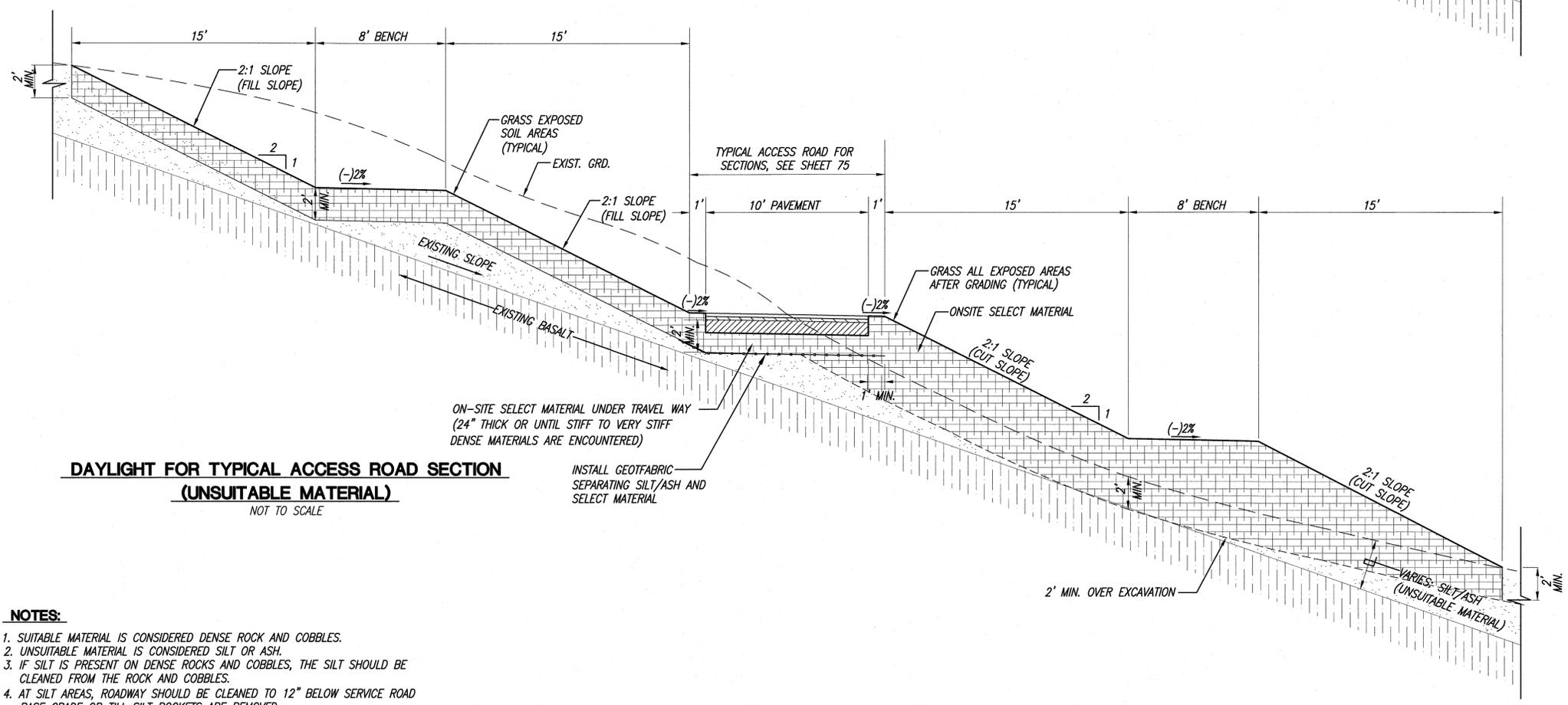
**TYPICAL ACCESS ROAD CROSS SECTION DETAILS - 1**

DRAWN BY: KWNW    ENGINEER: KWNW/MFC    CHECKED BY: RYS

P:\Land Projects\DHLL Keokea Ph 1, 2 & 4\DWG\Increment 1\Current\176-77 Typical Access Road Cross Section Details.dwg, 11/17/2014 8:45:18 AM, 1:1



**DAYLIGHT FOR TYPICAL ACCESS ROAD SECTIONS  
(SUITABLE MATERIAL)**  
NOT TO SCALE



**DAYLIGHT FOR TYPICAL ACCESS ROAD SECTION  
(UNSUITABLE MATERIAL)**  
NOT TO SCALE

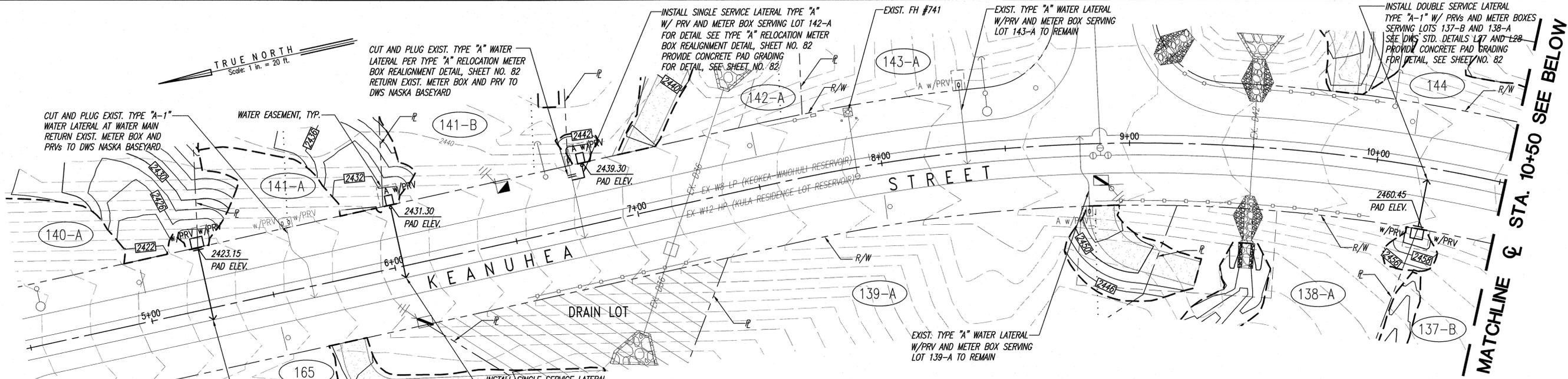
- NOTES:**
1. SUITABLE MATERIAL IS CONSIDERED DENSE ROCK AND COBBLES.
  2. UNSUITABLE MATERIAL IS CONSIDERED SILT OR ASH.
  3. IF SILT IS PRESENT ON DENSE ROCKS AND COBBLES, THE SILT SHOULD BE CLEANED FROM THE ROCK AND COBBLES.
  4. AT SILT AREAS, ROADWAY SHOULD BE CLEANED TO 12" BELOW SERVICE ROAD BASE GRADE OR TILL SILT POCKETS ARE REMOVED.
  5. FILL SLOPE SHALL BE CONSTRUCTED BY OVERFILLING THREE FEET, THEN CUTTING BACK TO DESIGN SLOPE.



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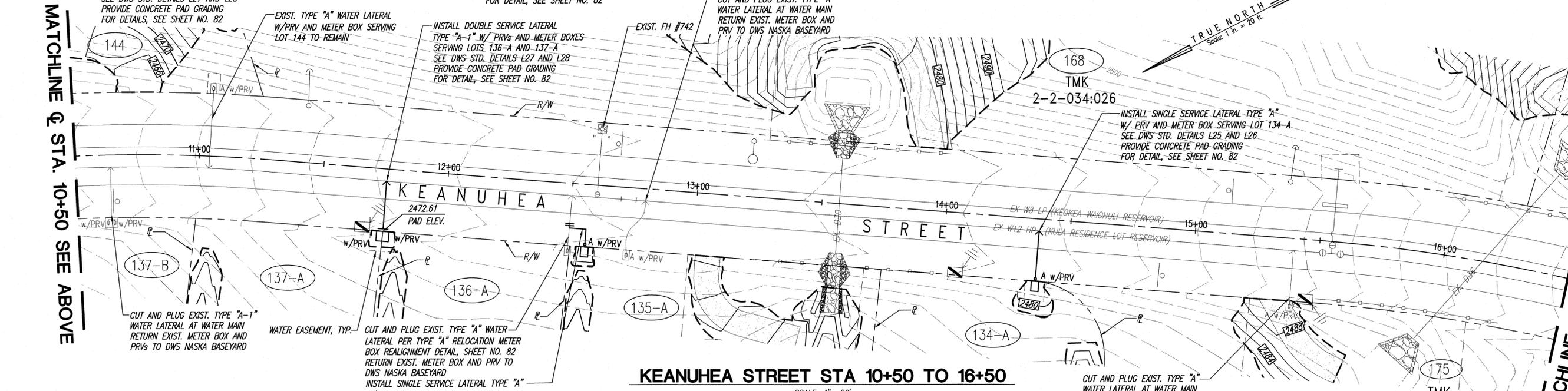
REVISION DATE	DESCRIPTION	MADE BY	APPROVED
<b>Community Planning and Engineering, Inc.</b> Engineering Design   Construction Management   Infrastructure Planning 1288 Queen Emma Street, Third Floor   Honolulu, Hawaii			
<b>CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A</b> KEOKEA & WAIOHULI, MAKAWAO, MAUI OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074 AND (2) 2-2-34: 001 TO 016, 026 & 029			
<b>TYPICAL ACCESS ROAD CROSS SECTION DETAILS - 2</b>			
DRAWN BY: KWNW	ENGINEER: KWNW/MFC	CHECKED BY: RYS	
SHEET 76 of 84 SHEETS			

P:\Land Projects\DHLL Keokea Ph 1, 2 & 4\DWG\Increment 1\Current\76-82 Water Meter Relocation Plan.dwg, 11/17/2014 7:51:56 AM, 1:1



**KEANUHEA STREET STA 4+50 TO 10+50**

SCALE: 1" = 20'

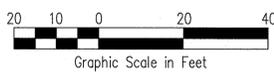
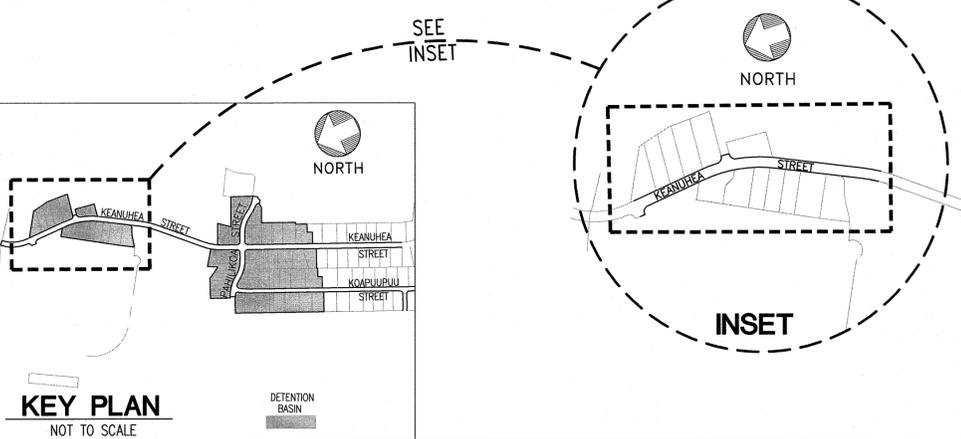


**KEANUHEA STREET STA 10+50 TO 16+50**

SCALE: 1" = 20'

**LEGEND**

- 2500 --- EXISTING GROUND CONTOUR
- EX W8 --- EXIST. WATER LINE
- >--- TYPE "A" SERVICE LATERAL
- >--- TYPE "A-1" SERVICE LATERAL
- --- LIMITS OF GRADING
- 2450 --- FINISH GRADE CONTOUR
- --- PROPERTY LINE
- --- OLD PROPERTY LINE
- --- LIMITS OF 100 YEAR STORM
- --- WATER EASEMENT
- --- DRAINAGE LOT
- 140-A --- LOT NUMBER
- 165 --- EXISTING LOT NUMBER



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REVISION DATE	DESCRIPTION	MADE BY	APPROVED

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 Engineering Design | Construction Management | Infrastructure Planning  
 1286 Queen Emma Street, Third Floor Honolulu, Hawaii

**CONSOLIDATION / RE-SUBDIVISION  
 KEOKEA-WAIOHULI DEVELOPMENT  
 PHASE 1A**  
 KEOKEA & WAIOHULI, MAKAWAO, MAUI  
 OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
 TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074  
 AND (2) 2-2-34: 001 TO 016, 026 & 029

**WATER METER RELOCATION PLAN  
 KEANUHEA STREET  
 STA. 4+50 TO 16+50**

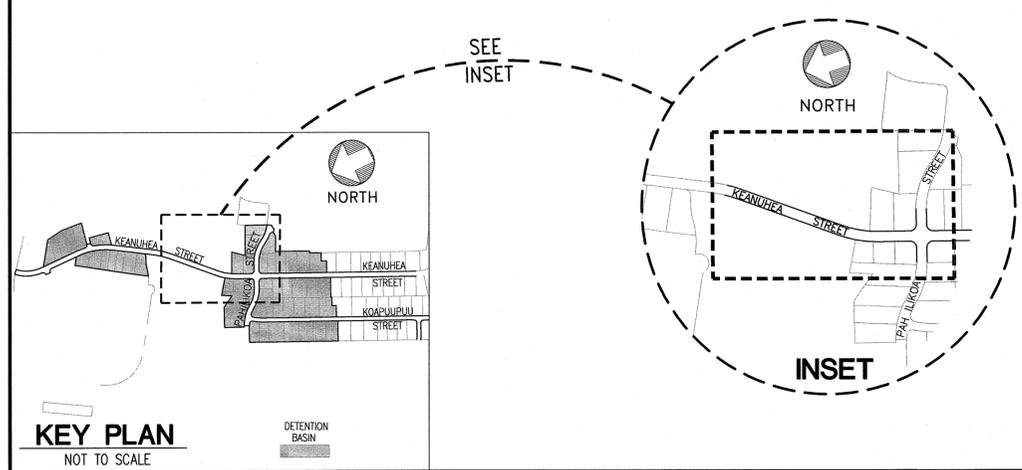
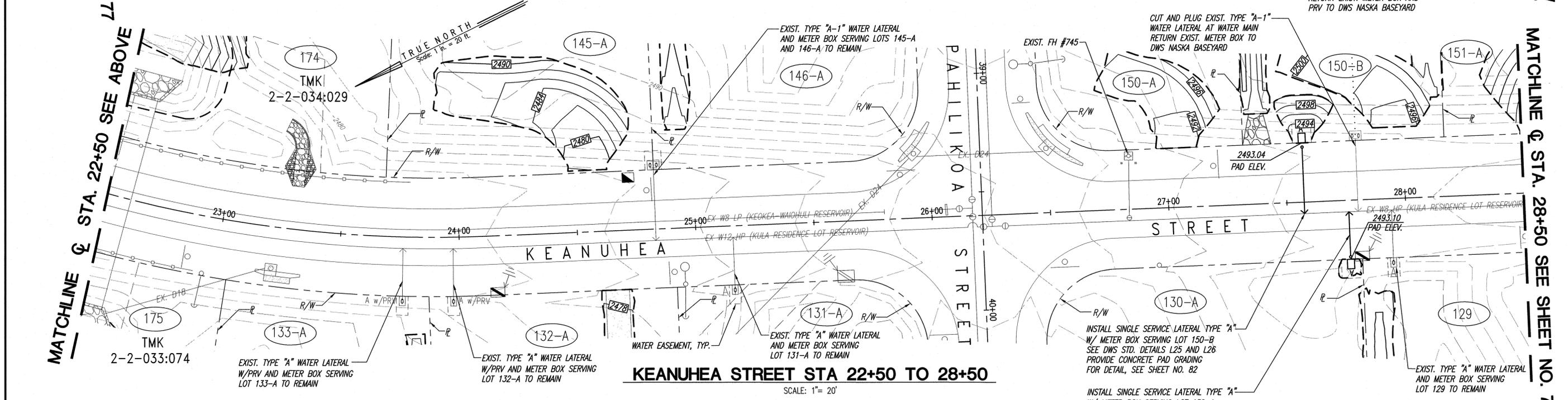
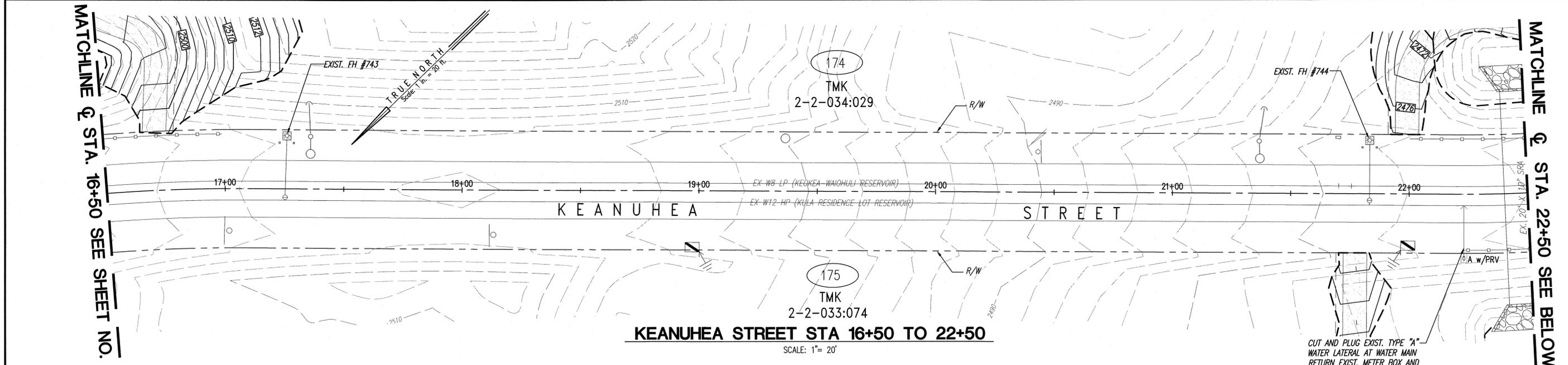
DRAWN BY: MFC	ENGINEER: MFC	CHECKED BY: RYS
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MATCHLINE @ STA. 16+50 SEE SHEET NO. 77

MATCHLINE @ STA. 22+50 SEE BELOW

MATCHLINE @ STA. 22+50 SEE ABOVE

MATCHLINE @ STA. 28+50 SEE SHEET NO. 79



- LEGEND**
- 2500 --- EXISTING GROUND CONTOUR
  - EX W8 --- EXIST. WATER LINE
  - TYPE "A" SERVICE LATERAL
  - TYPE "A-1" SERVICE LATERAL
  - LIMITS OF GRADING
  - 2450 --- FINISH GRADE CONTOUR
  - PROPERTY LINE
  - OLD PROPERTY LINE
  - LIMITS OF 100 YEAR STORM
  - WATER EASEMENT
  - ▨ DRAINAGE LOT
  - (140-A) LOT NUMBER
  - (165) EXISTING LOT NUMBER



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REVISION DATE	DESCRIPTION	MADE BY	APPROVED

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 1286 Queen Emma Street, Third Floor Honolulu, Hawaii

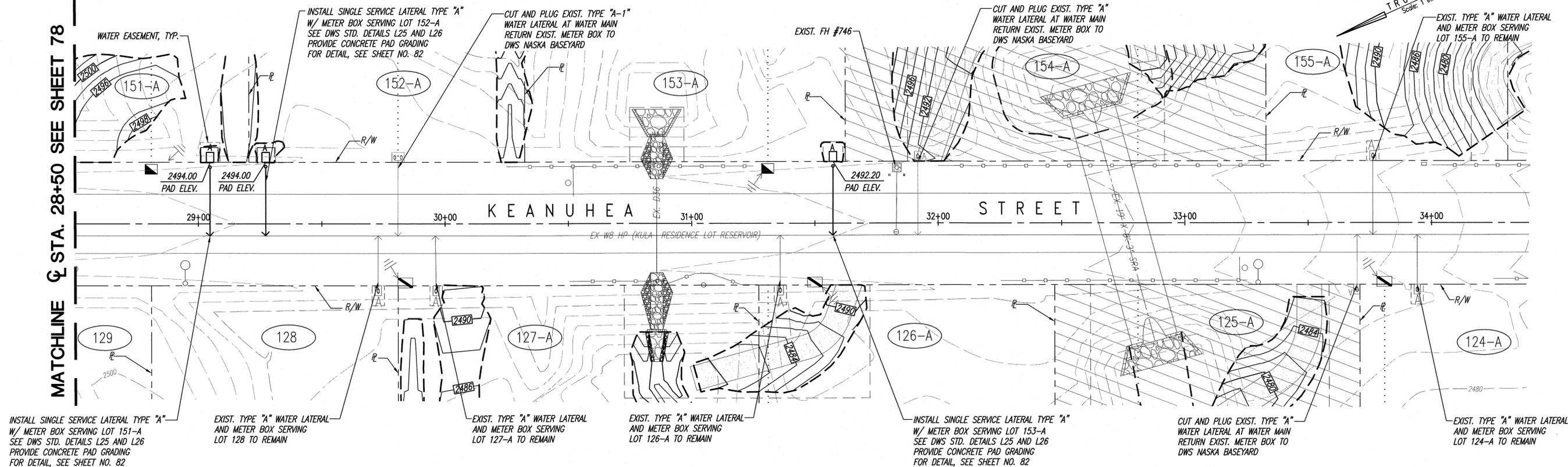
**CONSOLIDATION / RE-SUBDIVISION  
 KEOKEA-WAIOHULI DEVELOPMENT  
 PHASE 1A**  
 KEOKEA & WAIOHULI, MAKAWAO, MAUI  
 OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
 TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074  
 AND (2) 2-2-34: 001 TO 016, 026 & 029

**WATER METER RELOCATION PLAN  
 KEANUHEA STREET  
 STA. 16+50 TO 28+50**

DRAWN BY: MFC	ENGINEER: MFC	CHECKED BY: RYS
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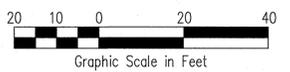
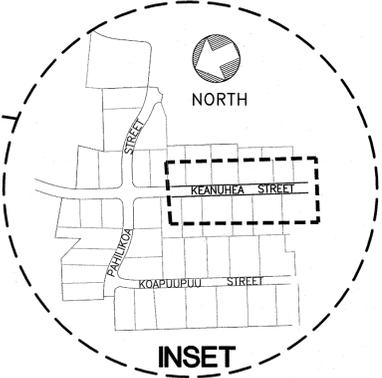
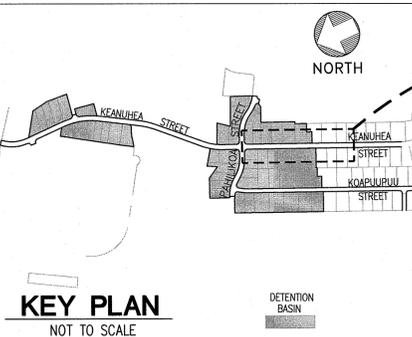
MATCHLINE @ STA. 28+50 SEE SHEET 78



**KEANUHEA STREET STA. 28+50 TO END**  
SCALE: 1" = 20'

**LEGEND**

- 2500--- EXISTING GROUND CONTOUR
- EX W8--- EXIST. WATER LINE
- >--- TYPE "A" SERVICE LATERAL
- >--- TYPE "A-1" SERVICE LATERAL
- LIMITS OF GRADING
- 2450--- FINISH GRADE CONTOUR
- PROPERTY LINE
- OLD PROPERTY LINE
- LIMITS OF 100 YEAR STORM
- WATER EASEMENT
- DRAINAGE LOT
- 140-A LOT NUMBER
- 165 EXISTING LOT NUMBER
- TMK 2-2-002:014



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REVISION DATE	DESCRIPTION	MADE BY	APPROVED

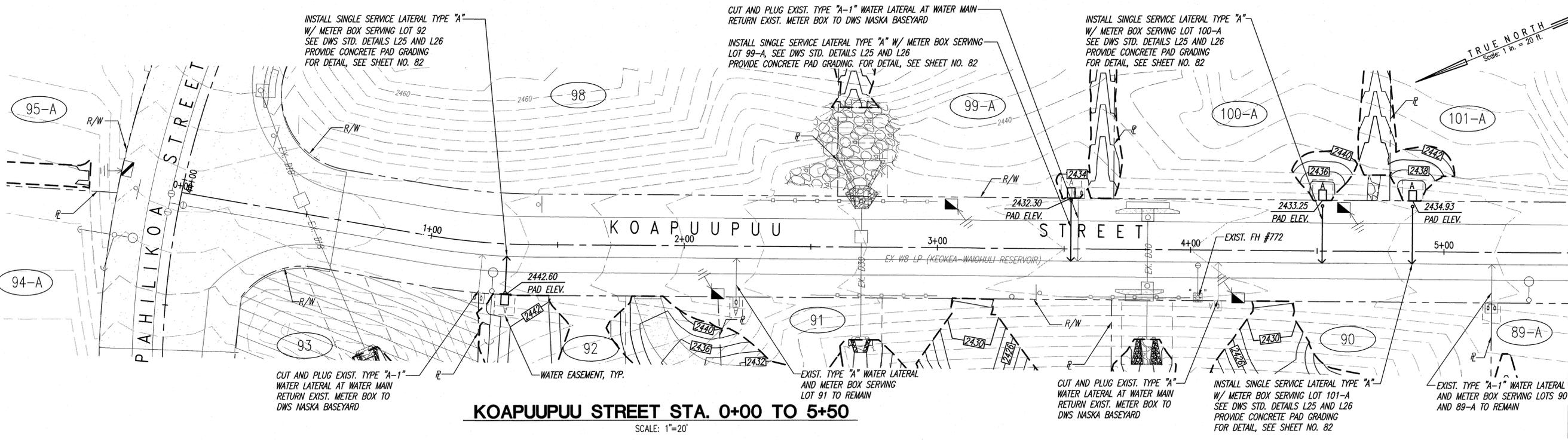
**Community Planning and Engineering, Inc.**  
Engineering Design | Construction Management | Infrastructure Planning  
1288 Queen Emma Street, Third Floor Honolulu, Hawaii

**CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A**  
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TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074 AND (2) 2-2-34: 001 TO 016, 026 & 029

**WATER METER RELOCATION PLAN KEANUHEA STREET STA. 28+50 TO END**

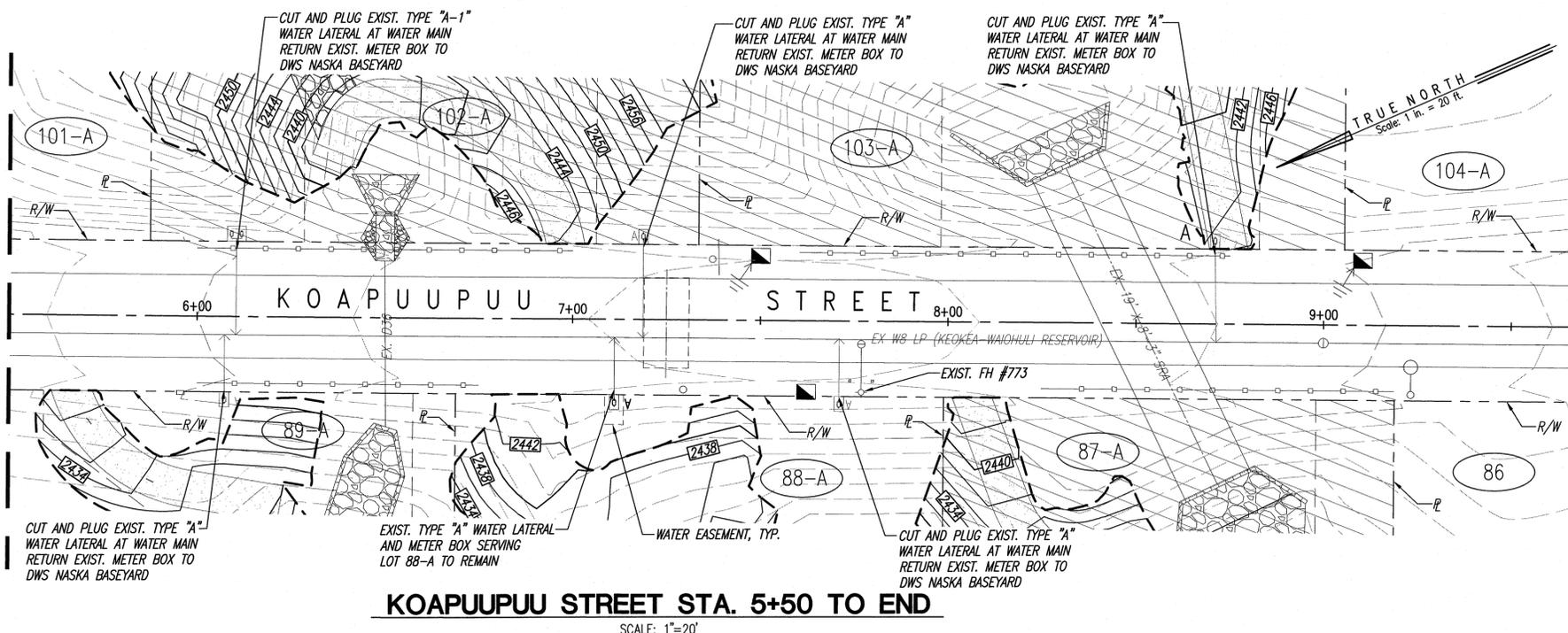
DRAWN BY: KWNW ENGINEER: KWNW/MFC CHECKED BY: RYS

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**KOAPUUPUU STREET STA. 0+00 TO 5+50**  
SCALE: 1"=20'

MATCHLINE @ STA. 5+50 SEE BELOW

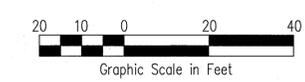
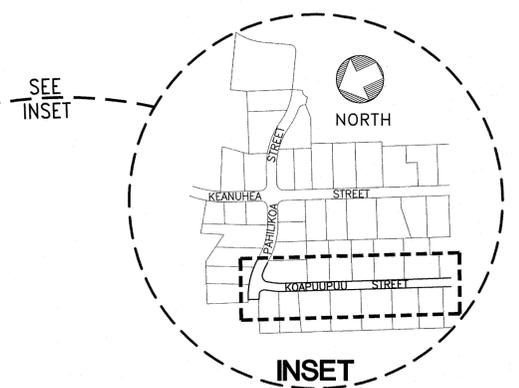
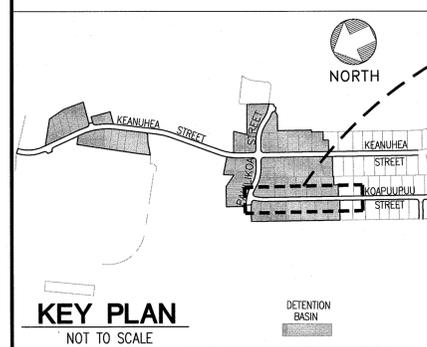


**KOAPUUPUU STREET STA. 5+50 TO END**  
SCALE: 1"=20'

**LEGEND**

- 2500 --- EXISTING GROUND CONTOUR
- EX W8 --- EXIST. WATER LINE
- TYPE "A" SERVICE LATERAL
- TYPE "A-1" SERVICE LATERAL
- LIMITS OF GRADING
- 2450 --- FINISH GRADE CONTOUR
- PROPERTY LINE
- OLD PROPERTY LINE
- LIMITS OF 100 YEAR STORM
- WATER EASEMENT
- DRAINAGE LOT
- 140-A LOT NUMBER
- 165 EXISTING LOT NUMBER
- TMK 2-2-002:014

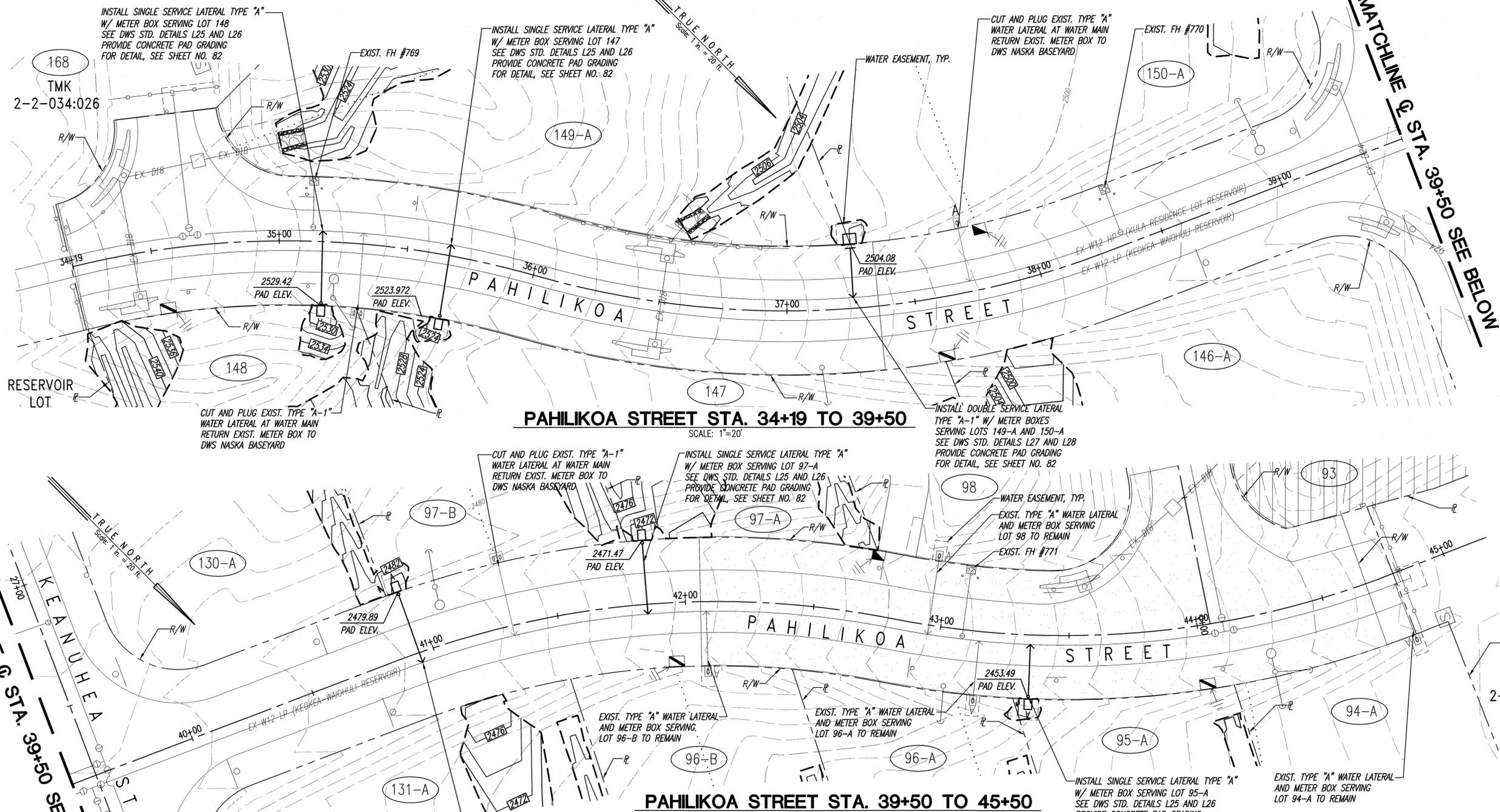
MATCHLINE @ STA. 5+50 SEE ABOVE



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REVISION DATE	DESCRIPTION	MADE BY	APPROVED				
<b>Community Planning and Engineering, Inc.</b> Engineering Design   Construction Management   Infrastructure Planning 1286 Queen Emma Street, Third Floor Honolulu, Hawaii							
<b>CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A</b> KEOKEA & WAIOHULI, MAKAWAO, MAUI OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074 AND (2) 2-2-34: 001 TO 016, 026 & 029							
<b>WATER METER RELOCATION PLAN KOAPUUPUU STREET</b>							
DRAWN BY: KWNW	ENGINEER: KWNW/MFC	CHECKED BY: RYS					
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FILE	PROJECT	FOLDER	NO.				

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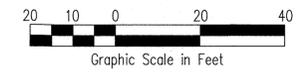


**PAHILIKOA STREET STA. 34+19 TO 39+50**  
SCALE: 1"=20'

**PAHILIKOA STREET STA. 39+50 TO 45+50**  
SCALE: 1"=20'

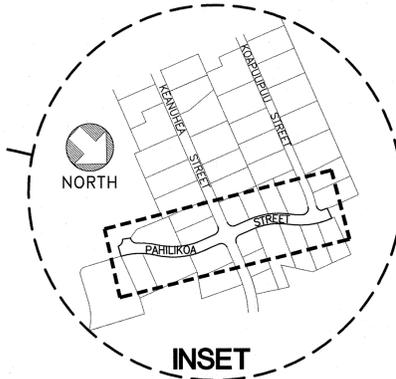
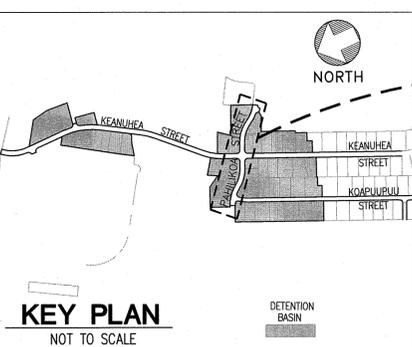
**LEGEND**

- 2500 --- EXISTING GROUND CONTOUR
- EX WB EXIST. WATER LINE
- TYPE "A" SERVICE LATERAL
- TYPE "A-1" SERVICE LATERAL
- LIMITS OF GRADING
- 2450 FINISH GRADE CONTOUR
- PROPERTY LINE
- OLD PROPERTY LINE
- LIMITS OF 100 YEAR STORM
- WATER EASEMENT
- ▨ DRAINAGE LOT
- 140-A LOT NUMBER
- 165 EXISTING LOT NUMBER
- TMK 2-2-002:014



MATCHLINE @ STA. 39+50 SEE ABOVE

MATCHLINE @ STA. 39+50 SEE BELOW



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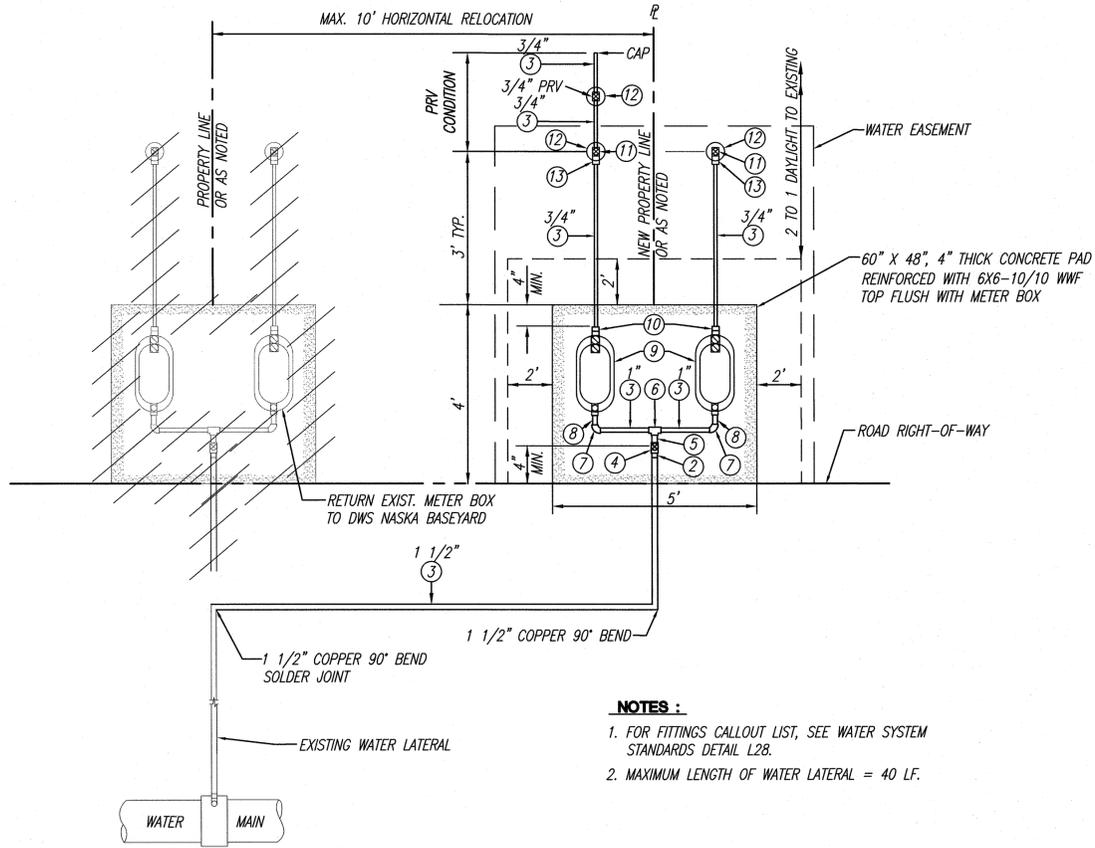
**Community Planning and Engineering, Inc.**  
Engineering Design | Construction Management | Infrastructure Planning  
1286 Queen Emma Street, Third Floor Honolulu, Hawaii

**CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A**  
KEOKEA & WAIOHULI, MAKAWAO, MAUI  
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074 AND (2) 2-2-34: 001 TO 016, 026 & 029

**WATER METER RELOCATION PLAN PAHILIKOA STREET**

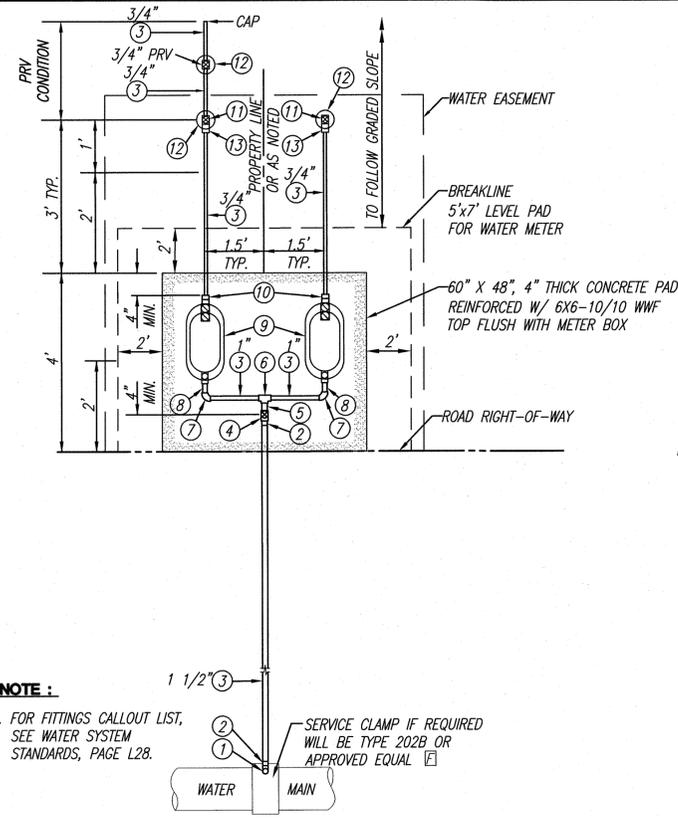
DRAWN BY: KWNW ENGINEER: KWNW/MFC CHECKED BY: RYS

P:\Land Projects\DHHL Keokee Ph 1, 2 & 4\DWG\Increment 1\Current\76-82 Water Meter Relocation Plan.dwg, 11/17/2014 7:50:45 AM, 1:1



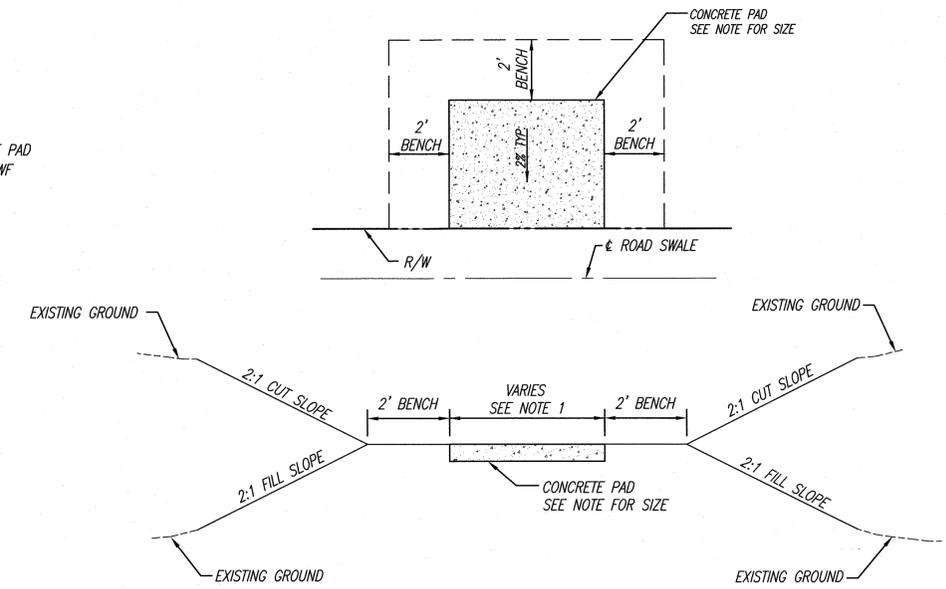
**DOUBLE SERVICE LATERAL TYPE "A-1"  
METER BOX REALIGNMENT**  
NOT TO SCALE

- NOTES :**
1. FOR FITTINGS CALLOUT LIST, SEE WATER SYSTEM STANDARDS DETAIL L28.
  2. MAXIMUM LENGTH OF WATER LATERAL = 40 LF.



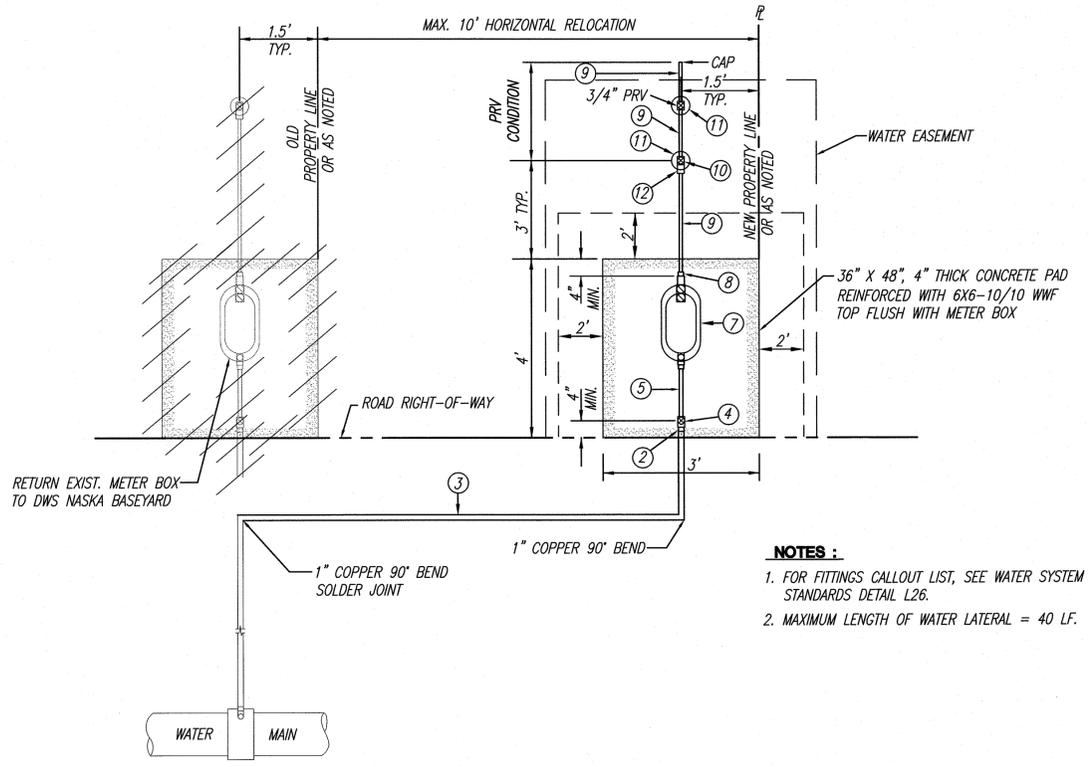
**DOUBLE SERVICE LATERAL TYPE "A-1"  
METER BOX NEW INSTALLATION**  
NOT TO SCALE

- NOTE :**
1. FOR FITTINGS CALLOUT LIST, SEE WATER SYSTEM STANDARDS, PAGE L28.
- SERVICE CLAMP IF REQUIRED WILL BE TYPE 202B OR APPROVED EQUAL [ ]



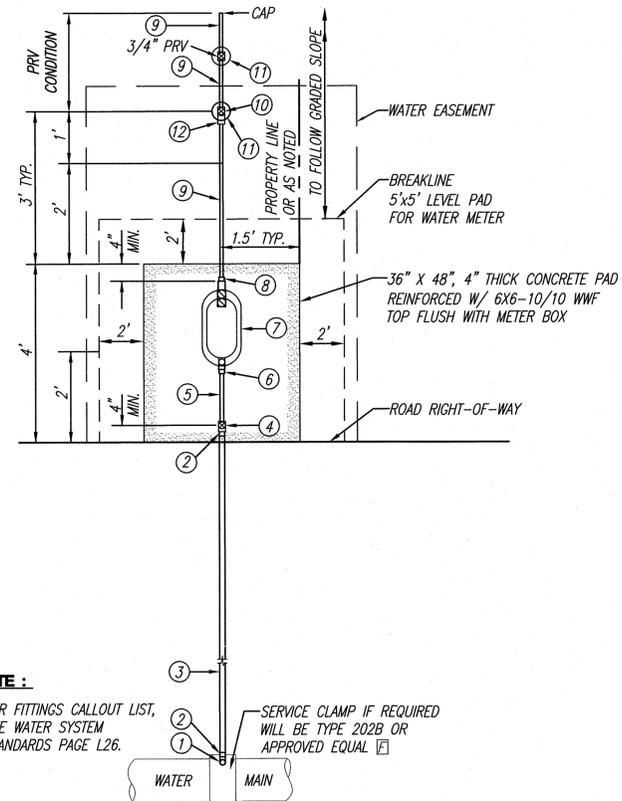
**WATER METER CONCRETE PAD GRADING DETAILS**  
NOT TO SCALE

- NOTE :**
- CONCRETE PAD DIMENSIONS  
SINGLE (TYPE A) = 3' x 4'  
DOUBLE (TYPE A-1) = 5' x 4'



**SINGLE WATER LATERAL TYPE "A" RELOCATION  
METER BOX REALIGNMENT**  
NOT TO SCALE

- NOTES :**
1. FOR FITTINGS CALLOUT LIST, SEE WATER SYSTEM STANDARDS DETAIL L26.
  2. MAXIMUM LENGTH OF WATER LATERAL = 40 LF.



**SINGLE SERVICE LATERAL TYPE "A"  
METER BOX NEW INSTALLATION**  
NOT TO SCALE

- NOTE :**
1. FOR FITTINGS CALLOUT LIST, SEE WATER SYSTEM STANDARDS PAGE L26.
- SERVICE CLAMP IF REQUIRED WILL BE TYPE 202B OR APPROVED EQUAL [ ]



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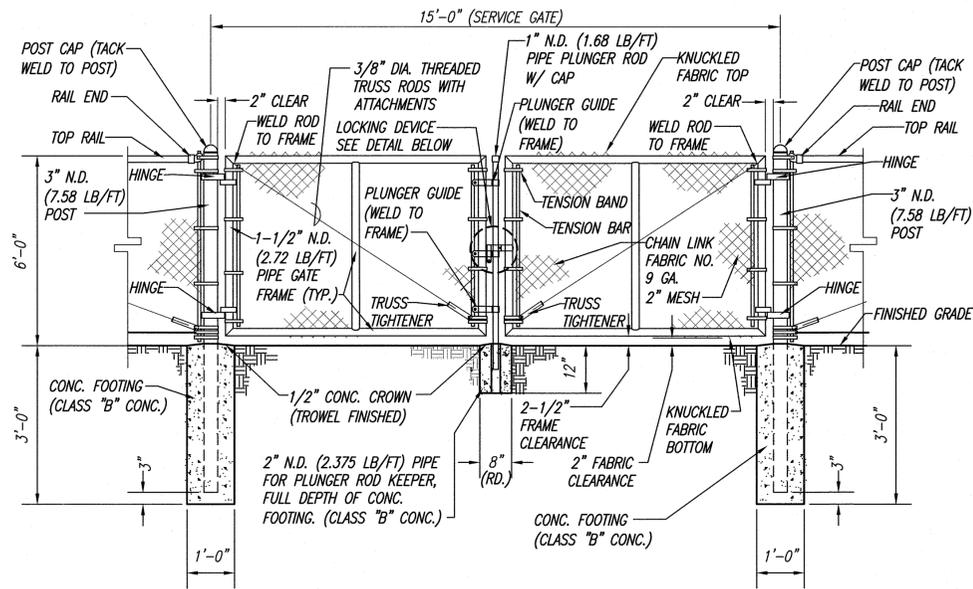
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TAX MAP KEYS: (2) 2-2-033: 021 TO 036 & 058-074  
AND (2) 2-2-34: 001 TO 016, 026 & 029

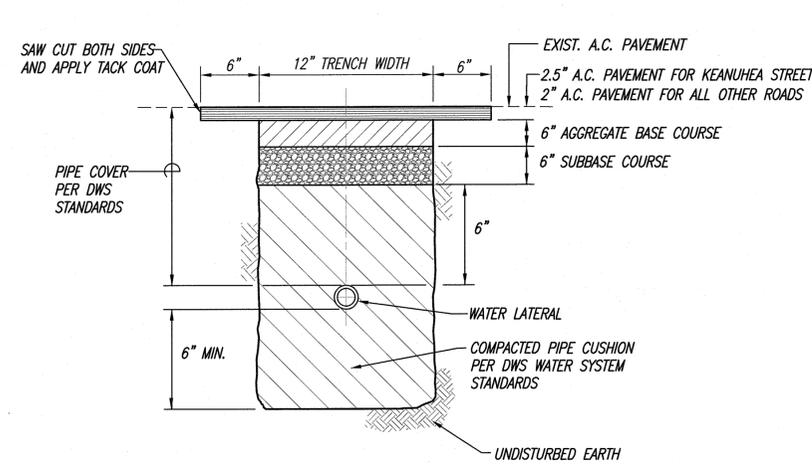
**WATER METER RELOCATION DETAILS**

DRAWN BY: KWNW    ENGINEER: KWNW/MFC    CHECKED BY: RYS

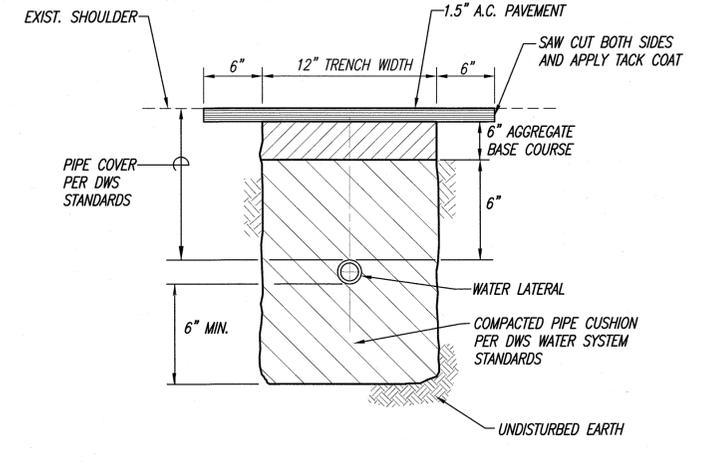
P:\Land Projects\DHHL Keokeya Ph. 1, 2 & 4\DWG\Increment 1\Curren\83 Water Meter Relocation Details.dwg, 11/17/2014 8:18:12 AM, 1:1



**TYPICAL DOUBLE SWING GATE**  
NOT TO SCALE



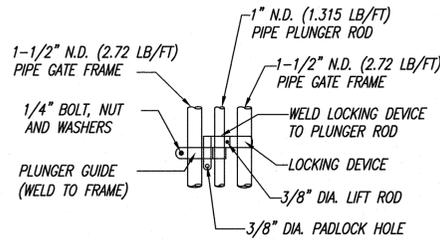
**A.C. ROADWAY TRENCH AND RESTORATION DETAIL**  
NOT TO SCALE



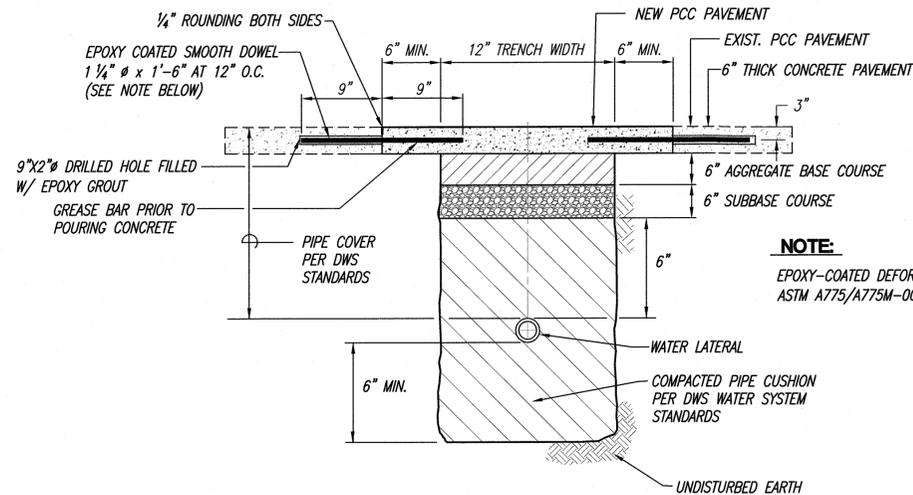
**A.C. SHOULDER RESTORATION DETAIL**  
NOT TO SCALE

**NOTES:**

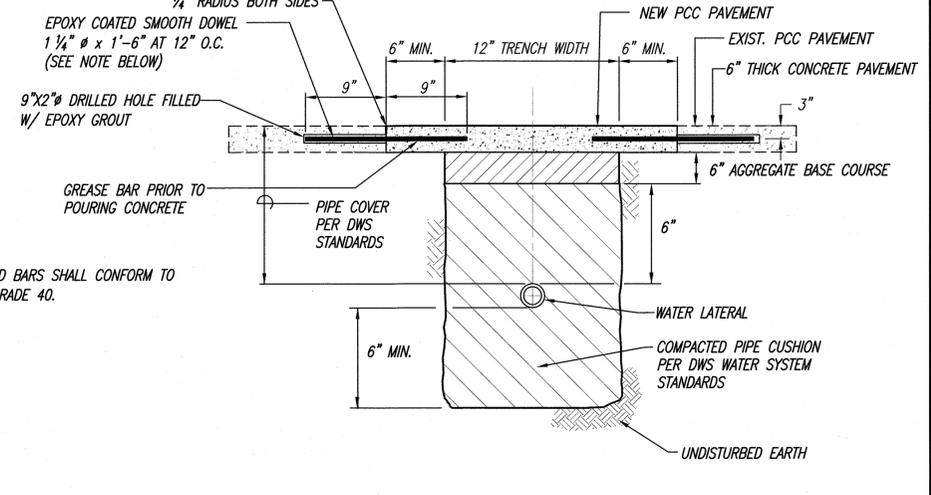
1. ALL PIPES AND POST SIZES ARE NOMINAL DIAMETER (N.D.).
2. GATE FRAME SHALL BE OF WELDED PIPE CONSTRUCTION. ALL WELDING SHALL CONFORM TO THE SPECIFICATIONS OF THE AMERICAN WELDING SOCIETY "STRUCTURAL WELDING CODE".
3. FOR ALL WELDED CONNECTIONS: CORNERS SHALL BE MITERED AND ALL PIPE BRACES PROPERLY COPED.
4. ALL WELDED CONNECTIONS SHALL BE PAINTED WITH TWO COATS OF Z.R.C. COLD GALVANIZING COMPOUND.
5. GATE HINGES SHALL BE TACK WELDED TO GATE POSTS AND FRAMES.
6. CHAIN LINK FABRIC SHALL BE CONTINUOUS AND FASTENED TO SIDE FRAME PIPES BY TENSION BARS WITH TENSION BANDS EVENLY SPACED AT 15" O.C. (MAX.).
7. WIRE FASTENINGS SHALL BE NO. 12 GAUGE GALVANIZED TIE WIRE.
8. CHAIN LINK FABRIC SHALL BE CONTINUOUS AND FASTENED TO SIDE FRAME PIPES BY TENSION BARS WITH TENSION BANDS EVENLY PAGED AT 15" O.C. (MAX.).
9. CHAIN LINK FABRIC SHALL BE FASTENED TO TOP AND BOTTOM FRAME PIPES WITH WIRE FASTENINGS EVENLY SPACED AT 12" O.C. (MAX.).
10. CHAIN LINK FABRIC SHALL BE FASTENED TO TRUSS RODS WITH NO. 9 GAUGE HOG RINGS EVENLY SPACED AT 12" O.C. (MAX.).
11. TOP AND BOTTOM SELVAGES OF CHAIN LINK FABRIC SHALL BE KNUCKLED.
12. ALL WIRE FASTENINGS SHALL BE WRAPPED AROUND CHAIN LINK A MINIMUM OF ONE COMPLETE TURN. (HOOKING OF WIRE ENDS SHALL NOT BE PERMITTED).
13. AFTER INSTALLATION, ALL BOLT ENDS SHALL BE CUT FLUSH WITH THE NUTS AND GROUND SMOOTH.



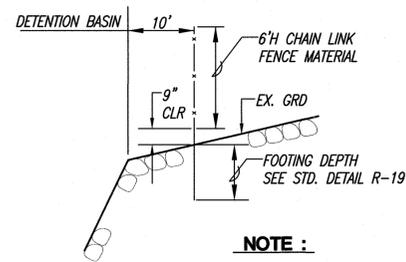
**LOCKING DEVICE DETAIL**  
NOT TO SCALE



**PCC ROADWAY TRENCH AND RESTORATION DETAIL**  
NOT TO SCALE



**PCC SHOULDER RESTORATION DETAIL**  
NOT TO SCALE



**CHAIN LINK FENCE**  
NOT TO SCALE

- NOTE :**
1. THIS CONDITION IS FOR TOP DETENTION BASIN (EAST SIDE) OTHER THREE SIDES FOLLOW STD. DETAIL R-19.



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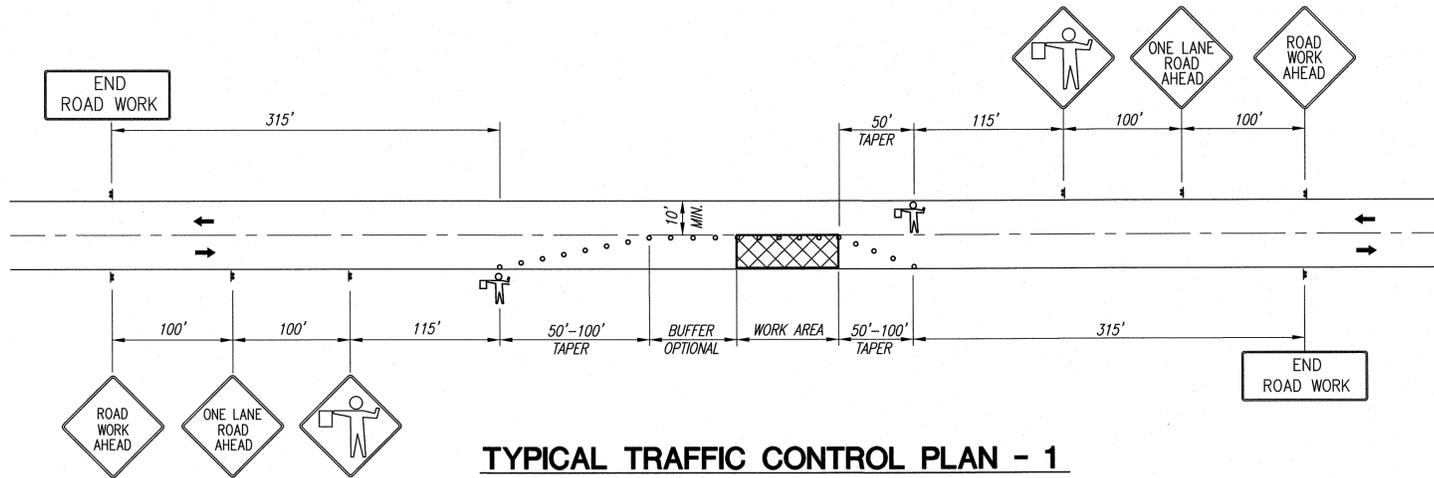
**Community Planning and Engineering, Inc.**  
Engineering Design | Construction Management | Infrastructure Planning  
1288 Queen Emma Street, Third Floor Honolulu, Hawaii

**CONSOLIDATION / RE-SUBDIVISION  
KEOKEA-WAIOHULI DEVELOPMENT  
PHASE 1A**

KEOKEA & WAIOHULI, MAKAWAO, MAUI  
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS  
TAX MAP KEYS: (2) 2-2-033: 021 TO 038 & 058-074  
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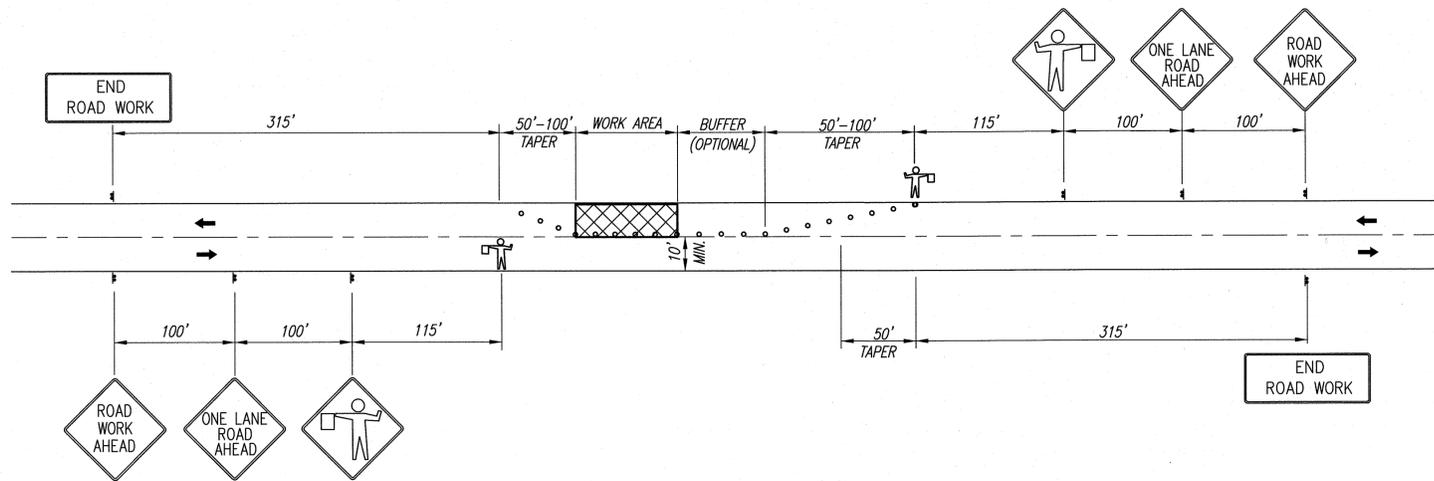
**MISCELLANEOUS DETAILS**

DRAWN BY: MFC	ENGINEER: MFC	CHECKED BY: RYS
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**TYPICAL TRAFFIC CONTROL PLAN - 1**  
(TWO FLAGGER OPERATION)

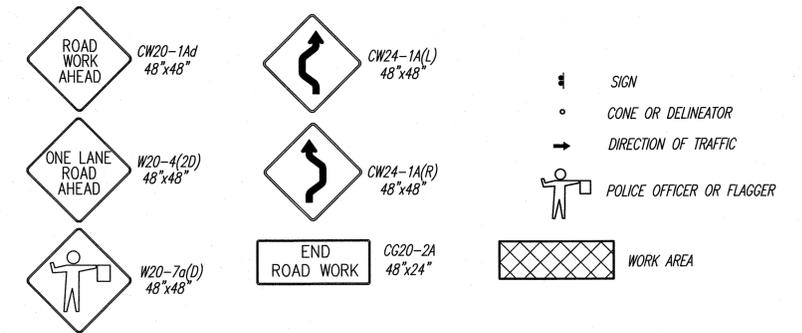
NOT TO SCALE



**TYPICAL TRAFFIC CONTROL PLAN - 2**  
(TWO FLAGGER OPERATION)

NOT TO SCALE

**LEGEND**



**GENERAL NOTES FOR TRAFFIC CONTROL PLAN**

1. THE PERMITTEE SHALL MAKE MINOR ADJUSTMENTS AT INTERSECTIONS, DRIVEWAYS, BRIDGES, STRUCTURES, ETC., TO FIT FIELD CONDITIONS.
2. CONES OR DELINEATORS SHALL BE EXTENDED TO A POINT WHERE THEY ARE VISIBLE TO APPROACHING TRAFFIC.
3. TRAFFIC CONTROL DEVICES SHALL BE INSTALLED SUCH THAT THE SIGN OR DEVICE FARTHEST FROM THE WORK AREA SHALL BE PLACED FIRST. THE OTHERS SHALL THEN BE PLACED PROGRESSIVELY TOWARD THE WORK AREA.
4. REGULATORY AND WARNING SIGNS WITHIN THE CONSTRUCTION ZONE THAT ARE IN CONFLICT WITH THE TRAFFIC CONTROL PLANS SHALL BE REMOVED OR COVERED. ALL SIGNS SHALL BE RESTORED UPON COMPLETION OF THE WORK.
5. FLAGGERS AND/OR POLICE OFFICERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES.
6. WHEN REQUIRED BY THE ISSUING OFFICE, THE PERMITTEE SHALL INSTALL A FLASHING ARROW SIGNAL.
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 PRECLUDE THE DISPLAY OF INAPPLICABLE SIGN MESSAGES (I.E., WHEN SIGNS HAVE MESSAGES ON BOTH FACES).
10. AT THE END OF EACH DAY'S WORK OR AS SOON AS THE WORK IS COMPLETED, THE PERMITTEE 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 PERMITTEE SHALL CONTROL TRAFFIC GOING IN AND OUT OF DRIVEWAYS.
13. ONE LANE ROAD (CW20-4) AND FLAGGER AHEAD (CW20-7) SIGNS SHALL BE REMOVED AND COVERED WHEN NO WORK IS BEING PERFORMED AND LANE IS NOT CLOSED.
14. SHOULDER TAPER: WHEN PAVED SHOULDERS HAVING A WIDTH OF 8-FT. OR MORE ARE CLOSED, CHANNELIZING DEVICES SHOULD BE USED TO CLOSE THE SHOULDER IN ADVANCE OF THE MERGING TAPER TO DIRECT VEHICULAR TRAFFIC TO REMAIN WITHIN THE TRAVELED WAY.
15. IF THE TANGENT DISTANCE ALONG THE TEMPORARY DIVERSION IS MORE THAN 600 FT. A REVERSE CURVE (CW1-4(L)) SIGN AND A REVERSE CURVE (CW1-4(R)) SIGN SHALL BE USED INSTEAD OF THE DOUBLE REVERSE CURVE (CW24-1A(L)) SIGN.
16. BUFFER ZONE REQUIREMENTS SHALL BE DETERMINED BY THE ENGINEER.
17. ALL CONES SPACED @ 10' O.C.



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<p><b>Community Planning and Engineering, Inc.</b>            Engineering Design   Construction Management   Infrastructure Planning            1286 Queen Emma Street, Third Floor Honolulu, Hawaii</p> <p><b>CONSOLIDATION / RE-SUBDIVISION KEOKEA-WAIOHULI DEVELOPMENT PHASE 1A</b>            KEOKEA &amp; WAIOHULI, MAKAWAO, MAUI            OWNER &amp; DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS            TAX MAP KEYS: (2) 2-2-033; 021 TO 038 &amp; 058-074            AND (2) 2-2-34; 001 TO 016, 026 &amp; 029</p> <p><b>TRAFFIC CONTROL PLAN</b></p>			
DRAWN BY: KWNW		ENGINEER: KWNW/MFC	CHECKED BY: RYS

## DIVISION 2 – SITE WORK

### SECTION 02100 – CLEARING AND GRUBBING

#### PART 1 – GENERAL

1.01 GENERAL CONDITIONS: The General Conditions, DHHL Construction General Conditions and Special Conditions in this IFB-16-HHL-006 shall govern this section of the work.

#### 1.01 WORK INCLUDED

- A. Furnish all labor, materials, equipment and tools necessary to accomplish all clearing and grubbing work as indicated on the plans and as specified herein.
- B. It shall be the responsibility of the Contractor to examine the project site and determine for himself the existing conditions.
- C. Obvious conditions of the site existing on the date of the bid opening shall be accepted as part of the work, even though they may not be clearly indicated on the plans and/or described herein or may vary there from.
- D. All debris of any kind accumulated from clearing or grubbing shall be disposed of off-site weekly and the whole area left clean. The Contractor shall be required to make all necessary arrangements related to the proposed place of disposal.
- E. Burning onsite will not be permitted.

#### PART 2 – PRODUCTS (NOT USED)

#### PART 3 – EXECUTION

3.01 SEQUENCE OF WORK: All sequence of work shall be subject to the approval of the Engineer.

#### 3.02 PROTECTION

- A. Adequate precautions shall be taken before commencing and during the course of the work to insure the protection of life, limb and property.
- B. The Contractor shall protect from damage all surrounding structures, trees, plants, grass, walks, pavements, utility boxes, etc. Any damages will be repaired or replaced by the Contractor to the satisfaction of the Engineer.

3.03 PERMITS: The Contractor shall apply for and obtain the necessary permits prior to the commencement of work. The Contractor shall pay for all fees.

- 3.04 BARRICADE: Erect temporary barricade to prevent people and animals from entering the project area, to the extent as approved by the Construction Manager. Such barricades shall not be less than 5'-0" in height. The extent of barricades may be adjusted as necessary with the approval of the Construction Manager. This work shall be accomplished to the satisfaction of the Department and at no extra cost to the Department. Barricades shall be removed upon completion of work and job site premises left clean.
- 3.05 MAINTAINING TRAFFIC
- A. The Contractor shall conduct operations with minimum interference to streets, driveways, sidewalks, etc. in accordance with the Traffic Control Plan in the contract documents.
  - B. When necessary, the Contractor shall provide, erect and maintain lights, barriers, etc., as required by traffic and safety regulations with special attention to protection of life.
- 3.06 CONSTRUCTION LINES, LEVELS AND GRADES
- A. The Contractor shall verify all lines, levels and elevations indicated on the plans before any clearing, excavation or construction begins. Any discrepancy shall be immediately brought to the attention of the Construction Manager and any change shall be made in accordance with his instruction. The Contractor shall not be entitled to extra payment if he fails to report the discrepancies before proceeding with any work whether within the area affected or not.
  - B. All lines and grades shall be established by a Surveyor licensed in the State of Hawaii.
- 3.07 CLEARING AND GRUBBING
- A. The Contractor shall clear off and remove from the entire area within the area to be graded, all rubbish, grass and weeds, stumps, large roots, buried logs, garbage, boulders and other unsuitable material. Where soft wet soils are encountered, light equipment should be used.
  - B. The Contractor shall grub the ground surface within the area to be graded of all grass and weeds to 6 inches below present grades. This material shall be disposed off site properly.
  - C. Any stumps and roots larger than 3 inches in diameter shall be removed to a depth not less than 18 inches below the original grade level. Fill voids with onsite material to maintain indicated grade.
  - D. No excavation or filling shall be undertaken until area has been cleared and grubbed.
- 3.08 CONTRACT ZONE LIMITS:
- 3.08.1 The Contract Zone Limits shall coincide with the limits of disturbance as shown on the plans. These limits indicate only in general the limits of the work involved. The Contractor, however, is required to perform any and all necessary and incidental work which may fall outside of these demarcation lines.

3.08.2 For the portion of the work concerning Kawaihae Road Improvements at South Kohala Distribution Road, Contract Zone Limits shall include the entire length of the limits of grading as specified within the contract documents.

A. A width of 5 feet outside of embankment slope lines for highway construction areas that include structures, frontage and access roads, streets, ramps, approaches, and ditches and channels with a bottom width of 12 feet. When slopes require rounding, extend clearing and grubbing limits to outside limits of slope rounding.

B. A width of 2 feet outside of excavation and embankment slope lines for highway construction areas that include ditches and channels with a bottom width of less than 12 feet.

3.09 VERIFICATION OF EXISTING GRADES: Verify existing grades, inverts, and improvements before any clearing and grubbing work is done. Immediately bring to the attention of the Construction Manager any discrepancy, and make any changes in accordance with his instructions. Starting of clearing and grubbing operations will be construed to mean that the Contractor agrees that the existing grades, inverts, and improvements are essentially correct as indicated. No extra compensation will be allowed if existing grades, inverts, and improvements are in error after verification thereof or if he fails to report the discrepancies before proceeding with any work.

3.10 CLEAN-UP: Clean up and remove all debris accumulated from construction operations from time to time, when and as directed by the Construction Manager. Upon completion of the construction work and before final acceptance of work, remove all surplus materials, equipment, etc., and leave entire job site clean and neat.

END OF SECTION

SECTION 02210 – SITE EARTHWORK

PART 1 – GENERAL

1.01 GENERAL CONDITIONS: The General Conditions, DHHL Construction General Conditions and Special Conditions in this IFB-16-HHL-006 shall govern this section of the work.

1.02 WORK INCLUDED: Furnish all labor, materials, services, equipment and related items necessary to excavate, fill, remove, transport, stockpile and dispose of all materials within the limits of the project required to construct the site work improvements in accordance with these specifications, dimensions, sections and details shown on the plans, and the approval of the Department.

1.03 RELATED WORK IN OTHER SECTIONS

Temporary Soil Erosion Control..... Section 02270

1.04 SUBSURFACE SOIL DATA: Subsurface soil investigations have been made at the project site. A copy of the complete reports entitled “Preliminary Geotechnical Exploration Report, Keokea-Waiohuli Development Project, Kula, Keokea, Maui, Hawaii”, dated March 31, 2005 and “Preliminary Geotechnical Exploration Report, Keokea-Waiohuli Subdivision Phases 1, 2 and 4A, Kula, Makawao, Maui, Hawaii”, dated April 5, 2013, and all supplemental revisions to these reports prepared by PSC Consultants LLC are available on the compact disc (CD) provided with these bid documents. Test pit and boring logs are shown in the soils report.

The Contractor is expected to examine the site and the record of soil investigation and decide for himself the character of materials to be encountered. The Engineer will not assume responsibility for variations of subsoil quality or condition at locations other than places shown and at the time investigations were made.

The soils report and its recommendations are made part of these specifications.

1.05 PROTECTION

A. Erosion Control: The Contractor shall incorporate into his work schedule the Temporary Erosion Control Measures and the Permanent Erosion Control procedures indicated on the Construction Plan Notes.

B. Dust Control: Every effort shall be made by the Contractor to keep dust to a minimum. Spraying the ground with water or other means of control shall be used wherever possible. The Contractor shall have an adequate supply of water for moisture conditioning of fill material.

Without limiting the generality or applicability of other indemnity provisions of the contract, the Contractor agrees that he shall indemnify and hold harmless the Department from and against all suits, actions, claims, demands, damages, costs and expenses (including but not limited to attorney’s fees) arising out of any damage to any property whatsoever or injury to any person whomsoever, in any way caused or contributed to by dust from the Contractor’s operations.

- C. Existing Utilities and Work Areas: The Contractor shall be responsible for the protection of existing surface and subsurface utilities and poles within and abutting the project site, trench excavations and other work areas.
- D. Finished Grades: All finished grades shall be kept moist until chemically stabilized. Where shrinkage cracks are noted after compaction of the finished grade, finished grade shall be re-scarified, moisture-conditioned to above the optimum moisture content, and re-compacted to the specified requirement at no additional cost to the Department. During construction, the Contractor shall properly grade and maintain all excavated surfaces to provide positive drainage and prevent ponding of water. In the event that ponding of water caused softening of the subgrades, the Contractor shall remove the soft soils and shall backfill the excavation with compacted fill at no additional cost to the Department.

## PART 2 – PRODUCTS

### 2.01 MATERIALS

- A. General Fill: Materials for general fill purposes should be well-graded, granular soils with no rocks greater than 12 inches in size in the deeper portion of the fill, at least 5 feet below the final grade or below any planned utilities. Materials ranging from 6 to 12 inches should be limited to less than 15 percent of the total general fill. The excavated materials, if less than 12 inches in maximum dimension, may be used as a source of general fill, provided these are processed to meet the gradation requirements for general fill. If the excavated materials do not contain a sufficient amount of fines to produce the desired gradation for general fill, offsite borrow or crusher-run onsite materials may be added to produce a well graded material.

Boulders, cobbles, or fractured rock fragment over 6 inches in size may be used in deeper portions of fills providing they are not nested, and sufficient soils are placed adjacent to them in such a manner that voids are properly filled and compacted, and are below the depths of utility installations.

The onsite soils may be used as general fill and backfill where structural fills are not specifically required, provided that it does not contain organics, debris, and other deleterious materials.

- B. Structural Fill. Structural fill shall be granular, free of organic debris, deleterious substances, and particles larger than 3 inches. Structural fill shall be classified as GP, GW, GM, GP-GM, SP, SW, SM, SP-SM and SW-SM, in accordance with ASTM D 2487. Where fill material is used in confined areas such as utility trenches and behind walls, the particles should be less than 2 inches in maximum dimensions. The material shall have a plasticity index less than 12 (ASTM 4318), a liquid limit less than 35, a CBR (ASTM D 1883) of at least 20 when compared to 95% relative compaction at optimum moisture content, and not more than 30% by weight passing the No. 200 sieve (ASTM D 1140).

The onsite basaltic rock may be crushed to meet the above recommendations for use as structural fill.

- C. Boulder Fills. A large quantity of boulders will be generated from excavation operations. Boulders at the surface and in the excavations may be used in the deeper fills, provided that the following recommendations are followed:
1. Boulders must not be nested together and shall be placed so that compaction equipment is able to suitably compact the soil around them. Boulder placement and compaction shall be reviewed and monitored by a Geotechnical Engineer.
  2. Boulders, 6-inch plus size rocks, can be used below 5 feet from finish grade or below utility lines whichever is at the greater depth; and
- Care shall be exercised to avoid placement of boulders in proposed utility alignments to prevent difficulty in later excavations of utility trenches.
- D. Imported Borrow: Additional general fill material needed for general filling shall consist of imported borrow materials that have the same general properties as on-site material described above. Borrow material shall be tested by the geotechnical engineer to evaluate its stability for use as general fill and shall be approved by the Engineer.
- E. Non-Expansive Select Material: Non-expansive select material to be used for this project shall consist of crushed coral, basalt gravel, or cinder sand. The non-expansive select material shall be well-graded from coarse to fine with no particles larger than 3 inches in largest dimension. It shall have a plasticity index not exceeding 15 as determined by ASTM D-4318-84; and have maximum 20 percent particles passing the No. 200 sieve. The material shall have a laboratory CBR value of 25 or higher. Free draining materials and highly permeable materials shall not be used as select material. Select material shall be tested by the Geotechnical Engineer for conformance with these requirements prior to delivery to the project site for the intended use.
- F. Rocks: Rocks greater than 6 inches in diameter may be used at the bottom of deep fills or may be placed in areas suitable for rock disposal in accordance with the recommendations of the Geotechnical Engineer. Rocks not used in an engineered fill shall be disposed of as directed by the Engineer.
- G. Organic Topsoil (Stripped Material): Subsequent to acceptable clearing and grubbing, remove the top 8 inches of organic material laden topsoil as required and disposed of properly off-site.
- H. Ash Material: Ash material shall be removed and disposed of properly off-site prior to construction of the new improvements as specified by the Geotechnical Engineer.

### PART 3 – EXECUTION

#### 3.01 SITE GRADING

- A. Notification of Schedule: The Engineer shall be notified by the Contractor after clearing and grubbing and before any fill is placed; and also at least two weeks in advance before grading operations are scheduled to begin. Further, the Contractor shall advise the Engineer of the proposed overall schedule for earthwork operations.

- B. General: All cuts and fills to be constructed shall be monitored by a licensed geotechnical consultant (Geotechnical Engineer) retained by the Department, who shall approve all fill material, methods of placing and compaction and perform field density tests during the grading. No deviation from these specifications shall be made except upon the written approval of the Geotechnical Engineer and/or other public agencies having jurisdiction.
- C. General Fill. Materials for general fill purposes should be well-graded, granular soils with no rocks greater than 12 inches in size in the deeper portion of the fill, at least 5 feet below the final grade or below any planned utilities. Materials ranging from 6 to 12 inches should be limited to less than 15 percent of the total general fill. The excavated materials, if less than 12 inches in maximum dimension, may be used as a source of general fill, provided these are processed to meet the gradation requirements for general fill. If the excavated materials do not contain a sufficient amount of fines to produce the desired gradation for general fill, offsite borrow or crusher-run onsite materials may be added to produce a well graded material.

Boulders, cobbles, or fractured rock fragment over 6 inches in size may be used in deeper portions of fills providing they are not nested, and sufficient soils are placed adjacent to them in such a manner that voids are properly filled and compacted, and are below the depths of utility installations.

The onsite soils maybe used as general fill and backfill where structural fills are not specifically required, provided that it does not contain organics, debris, and other deleterious materials. Between 2 feet and 5 feet on-site soil, except ash, can be used.

D. Site Preparation:

1. Site Preparation. At the onset of earthwork, the area within the contract grading limits shall be cleared of trees, vegetation, debris, rubbish, boulders, and other deleterious materials. These materials shall be removed and properly disposed of off-site.
2. Competent Soils. Areas to receive fill shall be over-excavated down 2 feet, and shall be scarified to a depth of 6 inches, moisture-conditioned to at least 2 percent above the optimum moisture content, and compacted to a minimum of 90 percent relative compaction. Relative compaction refers to the in-place, dry density of soil expressed as percentage of the maximum dry density of the same soil established in accordance with ASTM Test designation D 1557-78. The optimum moisture content is the moisture content corresponding to the maximum compacted dry density. Soft, yielding areas encountered during site preparation shall be over-excavated to expose firm soil surface and stabilized by backfilling with select material placed in 8-inch thick, loose, lifts and compacted to 90 percent relative compaction or 95 percent of its maximum dry density.

E. Site Grading:

1. General. Boulders may be stockpiled for future use, such as rip rap, gravity walls, landscaping and other purposes.

Materials used for fills placed within the upper 2 feet of the embankments shall be select non-expansive material less than 3 inches in maximum dimension. If additional off site borrow soil is required, it shall be tested and approved by a Geotechnical Engineer prior to its delivery to the project site.

2. Earthwork and Grading. Soft or loose unsuitable silt/volcanic ash soils encountered within the roadways and driveways shall be stripped to a depth of at least 2 feet below grade or until very stiff or gravelly materials are encountered, and replaced with select granular material. Where the design subgrade encounters silty gravel, gravelly silt with cobbles, and boulders or weathered basalt, over excavation will not be necessary. After grading, scarification and proof rolling, the subbase and base course may be placed directly on top of these gravelly insitu materials. If the clinker gravel is covered in volcanic ash matrix, the use of a geofabric, such as Mirafi 140, is recommended to prevent contamination of the select borrow fill or subbase. Where fresh basalt rocks are encountered, the subbase course may be placed directly over the basalt rocks after grading.
3. Over Excavation. Some of the existing upper silt/volcanic ash soils do not contain, or have very little percentage of coarse material and are not suitable for support of roadways, house pads, driveways and access/service roads. These soils are porous (susceptible to collapse/settle with increased water content), have a relatively low dry density, are prone to erosions, and should be over-excavated and replaced with select onsite granular soils or borrow. The silt/volcanic ash shall be over-excavated down to at least 2 feet or until very stiff or dense gravelly materials are encountered, replaced with select granular materials.
4. Fill Placement and Compaction. The fill shall be placed in level lifts with a maximum loose thickness of 8-inches and compacted to a minimum of 90 percent at house pads and 95 percent at driveways and access/service roads. Each layer shall be spread uniformly and processed to attain uniformity of the material and water content. Additional fill material shall not be placed on any fill layer which has not been properly compacted and tested.

Lava tubes, if encountered, shall be filled with select granular material.

- F. Slopes. Cut and fill slopes of 2H:1V (horizontal to vertical) may be used.

Steeper cut slopes ratios up to 1H:1V may be used in weathered basalt formations.

Fill slopes shall be constructed by overfilling 2 to 3 feet, then cutting back to the design slope to obtain a well-compacted slope face.

Where the existing ground is steeper than 5H:1V, keying and benching are required to properly bond the new fill to the slope. The filling operations should start at the lowest point up in level compacted layers, as recommended above.

Water shall be diverted away from the top of slopes and slope planting shall be implemented to minimize surface erosion.

- G. Excavations: All excavation shall be made to the lines and grades as shown on the project plans. All excavation shall be inspected and approved by the geotechnical engineer. Where conditions encountered require, he shall direct the necessary modifications to be made.

Suitable material from excavation shall be used in the fill, and unsuitable material free of organic material from excavation shall be disposed of offsite.

- H. Drainage: Care shall be exercised during grading so that areas involved will drain properly. Water shall be prevented from running over the slopes by the temporary berms or drainage swales. Runoff diversion by ditches shall be completed in the time specified in the bid form.

- I. Field Testing: The Construction Manager shall be notified seven (7) days prior to the start of grading. A pre-grading conference shall be held between the parties involved so as to discuss methods of operations, site problems and scheduling. Field density tests shall be taken by the Geotechnical Engineer retained by the Department.

- K. Supervision: At all times, the Contractor shall have a responsible field superintendent on the project in full charge of the work with authority to make decisions. He shall cooperate with the Construction Manager in carrying out the work. Any instructions given to him by the Construction Manager shall be considered to have been given to the Contractor personally.

- L. Rainy Weather: No fill shall be placed, spread or rolled during unfavorable weather. When the work is interrupted by rain, operations shall not be resumed until field tests by the Engineer indicate that conditions will permit satisfactory results.

- M. Unforeseen Conditions: If unforeseen or undetected soil conditions such as soft spots, existing utility trenches, structure foundations, voids or cavities, boulders, seepage water or expansive soil pockets, etc. are encountered, the Contractor at his sole expense shall make all necessary corrective measures in the field as such conditions are detected.

- 3.02 UNSUITABLE EXCAVATED MATERIAL: The Contractor shall remove from the site all unsuitable excavated material unless specified otherwise by the Engineer. The unsuitable material not containing organic material shall be hauled and disposed of offsite. Unsuitable material containing organic material shall be disposed of off-site, unless otherwise specified.

Removal, including hauling and disposal, of the unsuitable material will not be paid for directly, but shall be considered incidental to the project.

3.03 MAINTENANCE OF CHEMICALLY STABILIZED GRADED AREA:

A. Maintenance shall include, but not limited to:

1. Protect areas susceptible to traffic by erecting immediately after stabilization.
2. Maintain chemically stabilized area per manufacturer's specifications
3. Keep stabilized area free of weeds and undesirable grasses through daily weeding, if required. Remove the entire root system. Dispose of all weeds in appropriate containers.
4. Inspect area for disease or insect damage weekly. Treat affected material immediately.

END OF SECTION

DIVISION 2 SITEWORK

SECTION 02230 – FINE GRADING OF ROADWAY PRISM

PART 1 – GENERAL

1.01 GENERAL CONDITIONS: The General Conditions, DHHL Construction General Conditions and Special Conditions in this IFB-16-HHL-006 shall govern this section of the work.

1.02 WORK INCLUDED: Furnish all labor, materials, services, equipment and related items necessary to excavate and grade the roadway prism necessary to install curbs, gutters, sidewalks and pavement structure. Work shall be governed by Section 12, Roadway Excavation, and Section 30, Select Borrow for Subbase Course, of the Standard Specifications.

1.03 RELATED WORK IN OTHER SECTIONS

Temporary Soil Erosion Control.....Section 02270

1.04 SUBSURFACE SOIL DATA: Subsurface soil investigations have been made at the project site. A copy of the complete reports entitled “Preliminary Geotechnical Exploration Report – Keokea-Waiohuli Development Project, Kula, Keokea, Maui, Hawaii,” dated March 31, 2005 and “Preliminary Geotechnical Exploration Report – Keokea-Waiohuli Subdivision Phases 1, 2, and 4A, Kula, Makawao, Maui, Hawaii,” dated April 5, 2013 prepared by PSC Consultants LLC are available with these bid documents. Test pit and boring logs are shown in the soils report.

The Contractor is expected to examine the site and the record of soil investigation and decide for himself the character of materials to be encountered. The Engineer will not assume responsibility for variations of subsoil quality or condition at locations other than places shown and at the time investigations were made.

1.05 PROTECTION

A. Erosion Control: The Contractor shall incorporate into his work schedule the Temporary Erosion Control Measures and the Permanent Erosion Control procedures indicated on the plans and as specified in the contract.

B. Dust Control: Every effort shall be made by the Contractor to keep dust to a minimum. Spraying the ground with water or other means of control shall be used wherever possible. The Contractor shall have an adequate supply of water for moisture conditioning of fill material.

Without limiting the generality or applicability of other indemnity provisions of the contract, the Contractor agrees that he shall indemnify and hold harmless the Department from and against all suits, actions, claims, demands, damages, costs and expenses (including but not limited to attorney's fees) arising out of any damage to any property whatsoever or injury to any person whomsoever, in any way caused or contributed to by dust from the Contractor's operations.

- C. Existing Utilities and Work Areas: The Contractor shall be responsible for the protection of existing surface and subsurface utilities and poles within and abutting the project site, trench excavations and other work areas.
  
- D. Finished Grades and Subgrades: All subgrades shall be kept moist until covered by subbase, base course, or concrete. All finished grades shall be kept moist until covered by landscaping or other permanent groundcover. Where shrinkage cracks are noted after compaction of the subgrade or finished grade, the subgrade or finished grade shall be rescarified, moisture-conditioned to above the optimum moisture content, and recompacted to the specified requirement at no additional cost to the Department. During construction, the Contractor shall properly grade and maintain all excavated surfaces to provide positive drainage and prevent ponding of water. In the event that ponding of water causes softening of the subgrades, the Contractor shall remove the soft soils and shall backfill the excavation with compacted fill at no additional cost to the Department.

## PART 2 – PRODUCTS

### 2.01 MATERIALS

- A. General Fill: On-site material excavated from within the project limits and meeting the requirements for embankment may be utilized as fills unless otherwise recommended by the Geotechnical Engineer during construction.
  
- B. Select Granular Fill: Select granular fill required below roadways shall consist of non-expansive, select granular material, crushed coral to be consistent with the material installed under the separate mass grading contract. The material shall be well-graded from coarse to fine with no particles larger than 3 inches in largest dimension. It shall also contain between 10 and 30 percent particles passing the No. 200 sieve. The material shall have a laboratory CBR value of 25 or higher and a swell potential of 1 percent or less when tested in accordance with ASTM Test Designation D1883. If available, coralline material processed from the designated borrow site may be used. Free-draining materials and highly permeable materials shall not be used as select granular fill. Select granular fill material shall be tested by the Geotechnical Engineer for conformance with these requirements prior to delivery to the project site for the intended use.

## PART 3 – EXECUTION

### 3.01 GRADING ROADWAY PRISM

- A. Notification of Schedule: The Construction Manager shall be notified by the Contractor at least two weeks in advance before grading operations are scheduled to begin. Further, the Contractor shall advise the Construction Manager of the proposed overall schedule for the grading operations.
- B. General: All cuts and fills to be constructed shall be monitored by a licensed geotechnical consultant (soils engineer) retained by the Department, who shall approve all subgrade preparation, fill material, methods of placing and compaction and perform field density tests during the grading. Written approval shall be issued upon completion of cuts and fills.
- C. Preparation of Subgrades for Areas to Receive Fill: Firm Competent Soils: The surface to receive fill shall be scarified to a depth of about 6 inches until free of large clods, moisture-conditioned to at least 2 percent above the optimum moisture content and compacted to at least 95 percent of the maximum dry density established by ASTM D1557-91.
- D. Soil Fill Placement and Compaction: After completion of the subgrade preparation, select granular fill materials shall be brought to at least 2 percent above the optimum moisture content, placed in level lifts not exceeding 8 inches in loose thickness, and compacted to a minimum of 95 percent of the maximum dry density established by ASTM D1557-91.

Each lift of fill shall be thoroughly compacted complete to the edge before the next layer is laid thereon. Compaction shall be obtained with the use of conventional compaction equipment designed for the intended purpose. The incidental compaction achieved by the passage of hauling units over the fill will not be considered adequate.

Each lift of fill material shall be brought to at least 2 percent above the optimum moisture content (above the optimum moisture content for the capping fill) to permit compacting the specified requirements. If the soil moisture content is too high or too low, the soil moisture content shall be adjusted by suitable means before placement. Compaction of each lift of fill shall be continued until the density as determined by field tests reaches a value of at least 95 percent of the maximum indicated by the aforementioned methods. In lieu of compacting the slope faces, embankments may be overfilled past the design slope and then cut back.

The finished subgrade below areas to receive asphalt concrete base course for pavements shall be scarified to a depth of 6 inches, moisture-conditioned to above the optimum moisture content, and compacted to at least 95 percent of the maximum dry density established by ASTM D1557-91.

- E. Excavations: All excavation shall be made to the lines and grades as shown on the project plans. All excavation shall be inspected and approved by the Geotechnical Engineer. Where conditions encountered require, he shall direct the necessary modifications to be made.

Suitable material from excavation shall be used in the fill, and unsuitable material free of organic material from excavation shall be disposed of in the designated borrow site to replace material borrowed.

- F. Drainage: Care shall be exercised during grading so that areas involved will drain properly. Water shall be prevented from running over the slopes by the temporary berms or drainage swales.

- G. Field Testing: The Construction Manager shall be notified at least two days prior to the start of grading. A pre-grading conference shall be held between the parties involved so as to discuss methods of operations, site problems and scheduling. Field density tests shall be taken by the Geotechnical Engineer retained by the Department.

- H. Supervision: At all times, the Contractor shall have a responsible field superintendent on the project in full charge of the work with authority to make decisions. He shall cooperate with the Construction Manager in carrying out the work. Any instructions given to him by the Construction Manager shall be considered to have been given to the Contractor personally.

- I. Rainy Weather: No fill shall be placed, spread or rolled during unfavorable weather. When the work is interrupted by rain, operations shall not be resumed until field tests by the Construction Manager indicate that conditions will permit satisfactory results.

- 3.02 UNSUITABLE EXCAVATED MATERIAL: The Contractor shall remove from the site all unsuitable excavated material unless specified otherwise by the Construction Manager. Unsuitable material containing organic material shall be disposed of off-site.

Removal, including hauling and disposal, of the unsuitable material will not be paid for directly, but shall be considered incidental to the project.

END OF SECTION

SECTION 02270 – TEMPORARY SOIL EROSION CONTROL

PART 1 – GENERAL

- 1.01 GENERAL CONDITIONS: The General Conditions, DHHL Construction General Conditions and Special Conditions in this IFB-16-HHL-006 shall govern this section of the work.
  
- 1.02 WORK INCLUDED: Submit three (3) sets of the erosion control materials for approval by the Engineer. Furnish all labor, materials, services, equipment and related items necessary to implement the temporary erosion control measures, submitted separately, as required by these specifications and as ordered by the Engineer during the life of the contract to control water pollution through the use of berms, dikes, dams, sediment basins, fiber mats, netting, gravel, mulches, grasses, slope drains, and other erosion control devices or methods.
  - A. Temporary erosion and siltation control measures as described herein shall be applied to any erodible material within this project, including local material sources and work areas.
  
  - B. The Contractor shall be responsible for providing the necessary erosion control measures which are shown on the plans or which may be ordered by the Engineer. 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.
  
  - C. The Contractor shall be responsible for promptly (next day after storms) removing all silt and debris resulting from his work and deposited in drainage facilities, roadways, neighboring lands, and other areas.

1.03 RELATED WORK IN OTHER SECTIONS

Fine Grading of Roadway Prism.....Section 02230

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Mulches: To be bagasse, hay, straw, fiber mats, netting, wood cellulose, bark, wood chips, or other suitable material acceptable to the Engineer and shall be reasonably clean and free of noxious weeds and deleterious materials.
  
- B. Slope Drains: To be constructed of fiber mats, plastic sheets, or other materials acceptable to the Engineer.

- C. Catch Basin Inlet Filters: "True Dam" sediment filter (by Dandy Products, Inc.) or approved equal.

PART 3 – EXECUTION

3.01 TEMPORARY EROSION CONTROL

- A. The Construction Manager has the authority to limit the surface area exposed by clearing and grubbing and to limit the surface area exposed by excavation, borrow and fill operations. The Construction Manager may also direct the Contractor to provide immediate, permanent, or temporary pollution control measures to prevent contamination of streams, drainage channels and pipes, roads, neighboring lands, and other areas.

Except for specified measures which may be shown on the plans, the Contractor shall determine the appropriate erosion control measures to use. Such work may involve the construction of temporary berms, dikes, dams, sediment basins, and slope drains, and the use of temporary mulches, mats, and grassing, or the construction and use of other control devices or methods as necessary to control erosion.

- B. The Contractor shall incorporate all erosion control measures shown in the plans. The erosion controls may be modified as necessary to adjust to conditions that develop during construction. All modifications are subject to approval by the Engineer.
- C. The Contractor shall limit the surface area exposed by grubbing, stripping of topsoil, and grading to that which is necessary for him to perform the next operation and which is within his capability and progress in keeping the finish grading, mulching, grassing, and other such pollution control measures current.

The grubbing of the vegetative root mat and stumps and the stripping of topsoil shall be confined within the limits of grading which can be actively and continuously prosecuted within 15 calendar days. The area to be graded shall be limited to the minimum area necessary to accommodate the Contractor's equipment and work force and shall not at any time exceed 15 acres, unless otherwise stated on plans, without prior approval of the Construction Manager.

Any area remaining bared or cleared for more than 10 calendar days and which is not within the limits of active construction shall be immediately hydro-mulch seeded or remedied as directed by the Engineer at the Contractor's expense without cost to the Department. All areas where finish grading has been completed shall be grassed within three calendar days after the completion of grading for that area.

- D. The Contractor shall, at the end of each work operation in any one day, shape the earthwork in such a manner as to control and direct the runoff to minimize the erosion of soils. He shall construct earth berms along the top edges of embankments or along the property line with adjacent properties, streams and water channels, to intercept any runoff. Temporary slope drains shall be provided to carry runoff from the top of cuts and fills. Temporary facilities for controlled discharges shall be provided for runoff impounded, directed, or controlled by project activities or by any erosion control measure employed.
- E. Cut slopes shall be shaped, topsoil added if necessary, and planted as the work progresses. In no case shall the exposed surface be greater than 15 feet in height. Whenever major excavation is suspended or halted and the slope is bared for more than 15 consecutive days, the exposed surfaces shall be hydro-mulch seeded or protected as directed by the Engineer at the Contractor's expense without cost to the Department of Hawaiian Home Lands.
- Fill slopes shall be finished as specified and in accordance with the requirements outlined for cut slopes above.
- F. Construction of berms, cofferdams, or other such construction in or near the vicinity of streams, ponds, waterways, or other bodies of water shall be with approved materials.
- G. The temporary erosion and siltation control measures outlined in these specifications are minimum requirements and shall not preclude the provision of any additional measures which the Contractor may deem necessary. Damages caused by the erosion of soils and the pollution of downstream areas shall be the responsibility of the Contractor and all costs for repairing, correcting, replacing and cleaning damaged or polluted facilities shall be borne by the Contractor.

END OF SECTION

SECTION 02510 – ASPHALT CONCRETE PAVEMENT

PART 1 – GENERAL

- 1.01 GENERAL CONDITIONS: The General Conditions, DHHL Construction General Conditions and Special Conditions in this IFB-16-HHL-006 shall govern this section of the work.
- 1.01 WORK INCLUDED: Furnish all labor, materials, tools, equipment and related items necessary to complete, in place, asphalt concrete pavement for roads in conformity with the dimensions, profiles, sections and details shown on the plans.
- 1.02 SUBMITTALS: The Contractor shall submit for approval, the job mix formula for the asphalt concrete to be supplied for the project. The job mix formula shall indicate the source of aggregates and grades of bituminous material to be used in the mix. The total amount of bituminous binder in the mix shall be between 4.5 percent to 8.0 percent by weight depending on the specified Asphalt Concrete Mix. All test data used to develop the job mix formula shall also be submitted. The job mix formula for the mixture shall be in effect until modified in writing by the Engineer. Should a change in sources of materials be made, a new job mix formula shall be established and approved before the new material is used.

The bituminous mixtures shall be designed using procedures contained in Chapter III, Marshall Method of Mix Design, of the Asphalt Institute’s Manual Series No. 2 (MS-2), current edition, and shall meet the requirements of Table I below:

TABLE I  
REQUIREMENTS FOR MARSHALL METHOD OF MIX DESIGN

Test Property	Mix #2	Mix #3	Mix #4	Mix #5
Number of Blows	75	75	75	75
Stability, lb (minimum number)	2,000	2,000	2,000	2,000
Flow, 0.01 in.	8 - 16	8 - 16	8 - 16	8 - 16
Percent air voids	4 - 6	4 - 6	4 - 6	4 - 6
Percent air voids in mineral aggregate (min.)	13	14	16	18

The job-mix formula for each mixture shall establish a single percentage of aggregate passing each required sieve size and a single percentage of bituminous material to be added to the aggregate.

After the job-mix formula is established, all mixtures furnished for the project shall conform thereto within the following ranges of tolerances in Table II below:

TABLE II  
RANGE OF TOLERANCES FOR JOB-MIX FORMULA

Passing No. 4 and larger sieves	± 7 percent
Passing No. 8 to No. 100 sieves (inclusive)	± 4 percent
Passing No. 200 sieve	± 2 percent
Bitumen	± 0.4 percent

Acceptance Sampling and Testing of the Bituminous Mixture.

- A. The Contractor shall provide laboratory testing for control and acceptance functions during periods of mixture productions: One (1) field Marshall Test, asphalt content test, gradation analysis, and specific gravity test for each mixture.
- B. The compacted mixtures of the in-place pavement shall not be less than 91 percent of the specific gravity (ASTM D2041, commonly called the Rice Method) of the combined mixture without voids.
- C. Two (2) core or cut samples per street for the determination of the thickness and density of the completed pavements (or using nuclear gauge for determination of density) shall be obtained and/or tested by the Contractor at no extra cost (including that to restore the affected area). The size and locations of the samples will be directed by the Engineer.
- D. All data for the control and the acceptance testing shall be submitted.

PART 2 – PRODUCTS

2.01 MATERIALS: Materials for roads shall be in accordance with the following sections of the Standard Specifications, except as amended on the plans and/or in the specifications herewith:

Roadway Excavation .....	Section 12
Subgrade .....	Section 29
Aggregate Subbase Course .....	Section 30
Aggregate Base Course.....	Section 31
Asphalt Surface Treatments.....	Section 33
Asphalt Concrete Pavement, Mix No. 3 or 4.....	Section 34
Standard Street Survey Monuments.....	Section 49

Asphalt cement grade shall be PG 64-16.

PART 3 – EXECUTION

- 3.01 INSTALLATION: Stake out the areas to be paved using wooden stakes on which the final finish elevations, base course and subgrade elevations are clearly marked. All stakes and elevations shall be approved by the Engineer before any work is done.

Contractor shall fine grade the subgrade under the pavement and swales by bringing the subgrade to the proper grade from the mass grade elevations to the proper shape before installing the subbase course.

Install roadways in accordance with the applicable sections noted hereinbefore.

- 3.02 COMPACTION TESTING: The Contractor shall notify the Engineer at least 5 days prior to the start of fine grading for the roadway subgrade. Field density tests will be taken on the roadway subgrade, and aggregate subbase and base course by the Geotechnical Engineer retained by the Department. The Contractor shall be responsible for any corrective measures required as a result of inadequate compaction.

- 3.03 CLEANING OF SURFACES: Immediately before applying the prime coat or tack coat, the surface to be treated shall be swept clean of all loose material, dirt, excess dust or other objectionable material. No application shall be permitted when the surface to be treated is appreciably damp or when weather conditions are unsuitable.

Apply asphalt surface treatments at the rates specified in Section 33 of the Standard Specifications.

- 3.04 ADJUSTMENT OF EXISTING UTILITY STRUCTURES TO FINISHED GRADE: Adjust existing utility structures to finished grade in accordance with Section 36 of the Standard Specifications.

- 3.05 REPAIRS OF EXISTING ASPHALT CONCRETE PAVEMENTS: Repair to the original conditions and to the satisfaction of the Engineer all existing asphaltic concrete pavements that have been damaged by construction activities, including damage done by heavy equipment.

- 3.06 PLACING ASPHALT CONCRETE PAVEMENT: Install asphalt concrete pavement as specified in Section 34 of the Standard Specifications.

END OF SECTION

SECTION 02577 - PAVEMENT STRIPING AND MARKINGS

PART 1 - GENERAL

- 1.01 GENERAL CONDITIONS: The General Conditions and Special Provisions preceding these specifications shall govern this section of the work.
- 1.02 WORK INCLUDED: Furnish all labor, materials and equipment required to accomplish the installation of all white and yellow traffic pavement striping and other markings in conformance to the "Manual on Uniform Traffic Control Devices for Streets and Highways," 2003, the "Traffic Standards Manual" of the Department of Transportation Services, July 1976, and these plans and specifications. This work shall also include the removing of existing pavement markers and removing or eradicating of existing pavement striping and markings when called for in the plans and/or directed by the Traffic Engineer.
- 1.03 SUBMITTALS: Submit material certifications, test results and brochures for all pavement markers and traffic paint materials to the Traffic Review Branch, Department of Planning and Permitting, City and County of Honolulu. A copy of the submittal shall be submitted to the Construction Manager.

PART 2 - PRODUCTS

2.01 GENERAL: Materials shall conform to the requirements of Pavement Markers, Adhesives for Pavement Markers, and Pre-Mixed Reflectorized White and Yellow Traffic Paint, as specified in these specifications.

2.02 MATERIALS

A. Pavement Markers

1. Description of Markers: The markers shall have the shape, dimensions and tolerances as shown on the plans. The markers shall be of uniform composition and free from surface irregularities, cracks, checks, chipping and other physical damage interfering with appearance or application.
2. Type of Markers
  - a. Type A - Non-Reflective White Markers and Type J Non-Reflective Yellow Markers.
    - 1) Class III Ceramic Type. For use on Portland cement concrete and asphalt concrete road surfaces.

- 2) Class IV Ceramic Type. For use only on Portland cement concrete road surfaces.
  - 3) The class of non-reflective white marker to be used shall be at the option of the Contractor, subject to the above limitations.
    - b. Type B - Two-Way Clear Reflective Markers
    - c. Type C - Red-Clear Reflective Markers
    - d. Type D - Two-Way Yellow Reflective Markers
    - e. Type E - Yellow-Clear Reflective Markers
    - f. Type G - One-Way Clear Reflective Markers
    - g. Type H - One-Way Yellow Reflective Markers
3. Markers
- a. Non-Reflective Markers: Type A and J pavement markers shall have the following characteristics:
    - 1) Composition of Markers: The composition of finished markers shall conform to the following: The Class III and IV pavement markers shall consist of a heat-fired, vitreous, ceramic base and a heat-fired, opaque, glazed surface to produce the properties required in these specifications. The markers shall be produced from any suitable combination of intimately mixed clays, shales, talcs, flints, feldspars, or other inorganic material which shall meet the properties herein required. The markers shall be thoroughly and evenly matured and free from defects which affect appearance or serviceability.
    - 2) Properties of Markers: The properties of finished markers, Class III and Class IV, shall conform to the following:
      - a) Finish: The top surface of the marker shall be convex and the radius of curvature shall be between 3-1/2 inches and 6 inches except that the radius of the 1/2 inch nearest the edge may be less. Any change in curvature shall be gradual. The top and sides shall be smooth and free of mold marks, pits,

indentations, air bubbles, or other objectionable marks or discolorations.

The bottoms of the ceramic markers shall be free from gloss or glaze and shall have a number of integrally formed protrusions approximately 0.050 inch projecting from the surface in a uniform pattern of parallel rows.

Each protrusion shall have a face parallel to the bottom of the marker. The area of each parallel face shall be between 0.01 and 0.065 square inches and the combined area of these faces shall be between 2.2 and 4.4 square inches.

The protrusions shall be circular in section.

The number of protrusions should be not less than 48 nor more than 200.

To facilitate forming and mold release, the sides of each protrusion may be tapered. This taper shall not exceed 15 degrees from perpendicular to the marker bottom. Markers manufactured with protrusions whose diameter is less than 0.15 inch may have an additional taper not exceeding 30 degrees from perpendicular to the marker bottom and extending not more than one-half the total height of the protrusion.

The overall height of the marker shall be between 0.68 to 0.80 inch.

- b) Glaze Thickness: The thickness of the glazed surface shall be not less than 0.007 inch at any point located more than 1/4 inch from the edge of the marker circumference. The glaze thickness shall be measured on a fractured edge with a calibrated reticule of a microscope of at least 25 power.
- c) Moh Hardness: The glazed surface of the marker shall have a hardness of a 6 minimum in the Moh hardness scale. This shall be determined relative to the mineral orthoclase which has a hardness of 6. With moderate hand pressure, it must be possible to

scratch orthoclase with the marker but not possible to scratch the marker with the orthoclase.

- d) Directional Reflectance (Type A markers only): The 45°, 0° directional reflectance of the marker when tested in accordance with ASTM E97, shall have the following values:

Glazed Surface ..... 75 minimum  
Body of Marker ..... 65 minimum

The test on the glazed surface shall be made on the top of the convex surface of the marker. The test on the body of the marker shall be made on a flat surface of the marker from which the glaze has been removed by grinding with carborundum wheel.

- e) Yellowness Index (Type A markers only): The yellowness index of the marker when tested in accordance with ASTM E313 shall have the following values:

Glazed Surface ..... 0.07 maximum  
Body of Marker ..... 0.12 maximum

The test on the glazed surface shall be made on the top of the convex surface of the marker. The test on the body of the marker shall be made on a flat surface of the marker from which the glaze has been removed by grinding with a carborundum wheel.

- f) Color (Type J markers only): The chromaticity of the glazed surface of the marker shall be within the following limits:

Purity ..... 76 to 96 percent

Dominant Wave Length ..... 579 to 585 mu

Total Luminous Reflectance  
(Y value) ..... 0.41 minimum

Chromaticity measurements shall be made in accordance with California Test Method No. 660.

- g) Water Absorption: The average water absorption of the ceramic marker when tested in accordance with ASTM C373 shall not exceed 2.0 percent of the dry weight of the test piece.
- h) Autoclave Test: The glazed surface of the marker shall not craze, spall or peel when subjected to one cycle at 100 psi for one hour of the autoclave test when tested in accordance with ASTM C424.
- i) Strength Test: A random sample of five markers of each type and/or class used will be selected for the load test. Each Class III marker shall support a minimum load of 1,500 pounds and each Class IV marker shall support a minimum load of 750 pounds when the load is applied in the following manner: The base of the marker shall be made flat using plaster of paris or some other suitable material. Sufficient amount of material shall be applied to the base of the marker to fill the spaces around the protrusions up to the faces of the protrusions. The protrusions shall not protrude from the prepared finished base. The prepared marker shall be centered, base down, over the open end of a vertically positioned hollow metal cylinder. The cylinder shall be 1-inch high, with an internal diameter of 3 inches and a wall thickness of 1/4 inch. A load necessary to break the marker shall be applied at a speed of 0.2 inch per minute to the top of the marker through a 1-inch diameter solid metal cylinder centered on the top of the marker. Failure shall consist of a breakage of the marker at a load of less than 1,500 pounds when applied to Class III markers or less than 750 pounds when applied to Class IV markers.
- j) Sampling: Twenty markers selected at random will constitute a representative sample for each batch consisting of 10,000 markers or less. Forty markers will constitute a representative sample for lots consisting of more than 10,000 markers. The lot size shall not exceed 25,000 markers. However, if a batch represents less than 100 markers, the Engineer may delete sampling and may accept the markers

based on certification of compliance and certified test results.

k) Tolerances

(1) Three test specimens shall be randomly selected from the sample for each test except as noted in (i) above, and tested for compliance in accordance with these specifications. Should any one of the specimens fail to comply with the requirements of these specifications, additional samples consisting of double the number of samples originally taken will be tested. The failure of any one of these additional samples shall be cause for rejection of the entire lot or shipment represented by the sample.

(2) At the discretion of the Engineer, a resample may be taken consisting of double the number of samples originally taken. Tolerances for resamples shall be in the same ratio as specified above

l) Packaging: Shipments shall be made in containers which are acceptable to common carriers and packaged in such a manner as to insure delivery in perfect condition. Any damaged shipments shall be replaced by the Contractor. Each package shall be clearly marked as to the name of the manufacturer, type, color, quantity enclosed, lot and/or batch number, and date of manufacture.

b. Reflective Pavement Markers: Reflective pavement markers shall be of the prismatic reflector type consisting of a methyl methacrylate or suitably compounded acrylonitrile butadiene styrene (ABS) shell filled with a mixture of an inert thermosetting compound and filler material. The exterior surface of the shell shall be smooth and contain one or two methyl methacrylate prismatic reflector faces of the color specified.

The reflective lens shall not contain any voids or air space, and the back of the lens shall be metallized.

The shell shall be fabricated in a manner that will provide a mechanical interlock between the thermosetting compound and the shell. The thermosetting compound shall bond directly to the backside of the metallized lens surface.

The base of the marker shall be flat (the deviation from a flat surface shall not exceed 0.050 inch), rough textured and free from gloss or substances which may reduce its bond to the adhesive. The presence of a soft or resin-rich film on the surface of the base will be cause for rejection.

Reflective markers shall conform to the following requirements:

- 1) **Optical Performance:** The specific intensity of each reflective surface, when tested at 0.2 degrees angle of divergence, shall not be less than the following specified values:

Specific Intensity			
	Clear	Yellow	Red
0° Incidence Angle	3.0	1.5	0.75
20° Incidence Angle	1.2	0.60	0.30

NOTE:

- a) **Angle of Incidence.** The angle formed by a ray from the light source to the marker and the normal to the leading edge of the marker face.
- b) **Angle of Divergence.** The angle formed by a ray from the light source to the marker and the returned ray from the marker to the measuring receptor.

- c) Specific Intensity. The mean candle power of the reflected light at a given incidence and divergence angle for each foot candle at the reflector on a plane perpendicular to the incidence light.

$$\frac{(R_L)(D^2)}{I_L} SI =$$

Where: SI = Specific Intensity

$R_L$  = Reflected Light

$I_L$  = Incident Light

D = Test Distance

- d) Test Method: The markers to be tested shall be located with the center of the reflecting face at a distance of 5 feet from a uniformly bright light source having an effective diameter of 0.2 inch. The photocell receptor width shall be 0.05 inch and shall be shielded to eliminate stray light. The distance from the center of the light source aperture to the center of the photocell shall be 0.21 inch. If a test distance of other than 5 feet is used, the source and receptor shall be modified in the same proportion as the test distance.
- 2) Color: The color of the reflectors when illuminated by an automobile headlight shall be an approved clear, yellow or red color as required. Off-color reflection will constitute grounds for rejection.

- 3) **Strength Requirements:** A random sample of 3 markers shall be selected for the load test. The marker shall support a minimum load of 2,000 pounds as applied in the following manner: The marker shall be centered, base down, over the open end of a vertically positioned hollow metal cylinder. The cylinder shall be 1-inch high, with an internal diameter of 3 inches and a wall thickness of 1/4 inch. A load necessary to break the marker shall be applied at a speed of 0.2 inch per minute to the top of the marker through a 1-inch diameter solid metal cylinder centered on the top of the marker. Failure shall consist of either:
  - a) breakage or significant deformation of the marker at load of less than 2,000 pounds, or
  - b) significant delamination of the shell and the filler material regardless of the load required to break the marker.
- 4) **Sampling:** Six markers will be selected at random from each batch for testing. However, if a batch represents less than 100 markers, the Traffic Engineer may delete sampling and may accept the markers based on certification of compliance and certified test results.
- 5) **Tolerances:** Should any one of the samples selected for strength testing fail to comply with the strength requirements of these specifications, six (6) additional samples will be tested. The failure of any of these additional six (6) samples will be cause for rejection of the entire lot or shipment represented by the samples.
- 6) **Packaging:** Shipments shall be made in containers which are acceptable to common carriers and packaged in such a manner as to insure delivery in perfect condition. Any damaged shipments shall be replaced by the Contractor. Each package shall be clearly marked as to the name of the manufacturer, color, type, lot number, quantity enclosed, and date of manufacture.

B. Adhesive for Pavement Markers

1. General: The adhesives shall be furnished as two components. The adhesives are described as Standard Set Type and Rapid Set Type.

All adhesives shall have a white A epoxy component and a black B curing agent component, each packaged separately. The mixing ratio of Component A to Component B shall be one-to-one by volume. The color of the material when mixed shall be approximately that of Color Nos. 26132 to 21652 of Federal Standard No. 595-A. The Standard Set Type is a compositional specification, together with test requirements. The Rapid Set Type is based on laboratory test requirements only. No volatile solvents or thinners shall be present in the epoxy adhesives requirements.

2. Properties of the Adhesives: The adhesive shall have the following properties:

- a. Pot Life: The pot life shall be 12 minutes maximum and 7 minutes minimum for Standard Set Type and 5 minutes minimum for Rapid Set Type when tested as follows at  $77^{\circ}\text{F} \pm 3^{\circ}\text{F}$ : Mix equal volumes of Components A and B in an 8-ounce, unwaxed paper cut 2 inches  $\pm 1/4$  inch at base to give a 170 grams  $\pm 10$  grams total mass. Mix 60 seconds  $\pm 5$  seconds before timing for pot life. Test with a tongue depressor with minimum stirring. Record the time the material becomes unusable as the pot life. With most materials this shall be approximately the time a hard lump forms in the center.
- b. Shear Strength: When tested as follows, the shear strength shall be not less than 1,000 psi for Standard Set Type and 900 psi for Rapid Set Type.

Bond three concrete blocks 2 inch x 3-1/2 inch x 7 inch of 7-sack concrete together with the 7-inch sides parallel forming two areas of contact 3-1/2 inch x 3-1/2 inch by overlapping the blocks. The test specimen then has a base of two blocks and a second surface formed by the center block. Apply the adhesive to the contact surfaces and allow to cure for 24 hours at  $77^{\circ}\text{F} \pm 3^{\circ}\text{F}$ . Cap the base of the specimen with an approved capping compound and test at a load rate of 10,000 pounds per minute. A swivel type head must be used at the top of the testing press. Computations are

based on a total area of 24.5 square inches (shear strength = total load/24.5).

- c. Viscosity: The viscosity of each component when measured in a three-fourths filled standard round quart paint can shall be between  $1.0 \times 10^5$  and  $3.0 \times 10^5$  centipoises for Standard Set Type and  $0.8 \times 10^5$  and  $2.2 \times 10^5$  centipoises for Rapid Set Type when measured as follows: Stir the components vigorously for 30 seconds with a spatula. Remove entrained air by vigorously tamping and measure viscosity within 10 minutes after stirring. Use Brookfield Viscometer, Model RVT at 5.0 RPM with a Model C Brookfield Helipath Stand and Helipath TD Spindle having a crossarm length of 0.804 inch for Standard Set Type and T.E. Spindle for Rapid Set Type. Use weight included in spindle set. Component and ambient temperature is to be  $77^\circ\text{F} \pm 3^\circ\text{F}$  at time of measurement. Reading shall be taken at approximately the center of the vertical travel of the spindle.
- d. Viscosity--Shear Ratio:

$$\frac{\text{Viscosity at 0.5 RPM}}{\text{Viscosity at 2.5 RPM}}$$

This ratio shall be 2.0 minimum for Standard Set Type and 1.8 minimum for Rapid Set Type for Component A and 1.9 minimum for Component B. Take the above viscosities at the same time and conditions as in subsection (C) above.

- e. Bond Strength
- 1) Clean a 4 inch x 4 inch area on a flat surface of a concrete block made with 7-sack concrete and having a tensile strength in excess of 250 psi.
  - 2) Use the equipment and load described in California Test Method No. 420. Condition test equipment, concrete and epoxy at test temperature for 24 hours before test.
  - 3) Mix adhesive on a tin plate with a trowel or spatula for 60 seconds  $\pm 5$  seconds. Immediately start timing, place adhesive on pipe cap and press firmly in place on concrete. Just before the required test time, insert the dynamometer hook into pipe cap.

4) After curing 3-1/3 hours for Standard Set Type and 25 minutes for Rapid Set Type at 77°F ± 3°F measured from the end of the mixing period, the bond strength shall be at least 200 psi.

f. Weight per Gallon, Pounds at 77°F ± 3°F (Standard Set Type).

Component A 11.5 - 11.8

Component B 11.7 - 12.1

Composition:

STANDARD SET TYPE	
Component A	Parts by Weight
Epoxy Resin <sup>1</sup>	100
Titanium Dioxide, TT-P-422, Type III or IV	7.31
Resin Grade Asbestos <sup>2</sup>	5.00
Talc <sup>3</sup>	37.64
Component B	
N-Aminoethyl Piperazine <sup>1</sup>	23.16
Nonylphenol <sup>5</sup>	52.00
Carbon Black, TT-P-343, Form 1, Class B	0.22
Talc <sup>3</sup>	77.37
Resin Grade Asbestos <sup>2</sup>	1.00

<sup>1</sup>Viscosity, 5-7 poises at 25°C; epoxide equivalent 175-195; Color (Gardner), 5 maximum; manufactured from epichlorohydrin and bisphenol A. The reactive diluent shall be butyl glycidyl ether.

<sup>2</sup>Specific gravity, grams per ml., 2.45; moisture content, % by weight, 2.0 maximum; surface area, square meters per gram, 60 approximately; reflectance, G.E. brightness, 72-76; nature of surface charge, electropositive (cationic); Ph in water, 9.5; bulking value, gallons per 100 lbs., 4.8; oil absorption (DOP), pound per 100 lbs., 120; refractive index, n<sub>d</sub> 25°C, 1.54-1.56; wet bulk density in water, after dispersion, 2 grams per liter, settling after 1 hr., 100 ml. clear maximum; dry bulk density, pounds per cubic foot, 4.

<sup>3</sup>Percent passing U. S. No. 325 sieve, 94-96; maximum particle size, 70 microns, oil absorption (Gardner-Coleman), 6-7 ml. per 20 grams; fineness in oil (Hegman) 1-2; specific surface, 0.5-0.6 square meter per gram; consistency (40% suspension in linseed oil) 55-60 KU.

<sup>4</sup>Color (ALPHA) 50 maximum; amine value 1250-1350 based on titration which reacts with the three nitrogens in the molecule; appearance clear and substantially free of suspended matter.

<sup>5</sup>Color (ALPHA) 50 maximum; hydroxyl number 245-255; distillation range, °C at 760 mm first drop 295 minimum, 5% 298 minimum, 95% 325 maximum; water, % (K.F.) 0.05 maximum.

g. Directions for use

Any settling of fillers or pigments in Components A or B shall be completely redispersed to provide a homogeneous mix before the components are used. Just before use, Components A and B shall be mixed in a one-to-one ratio by volume.

When the Rapid Set Type adhesive is used, the components shall be mixed by a 2-component type automatic mixing and extrusion apparatus. The temperature of the Rapid Set Type adhesive shall be maintained at 65°F to 85°F before mixing. The temperature of the Standard Set Type adhesive shall be maintained at 60°F to 100°F before mixing. Any heating of epoxy adhesive shall be done by the application of indirect heat.

Packaging and Labeling of Adhesive: Each adhesive component shall be packaged in containers not larger than 5 gallons in volume. The containers shall be new steel, not less than No. 24 gage and shall otherwise meet Interstate Commerce shipping standards. Each container shall be clearly labeled with designation (Component A or B), type (Standard or Rapid Set), manufacturer's name, date of manufacture, batch number (a batch shall consist of a single charge of all components in a mixing chamber), directions for mixing, and the following warning:

CAUTION

This material will cause severe dermatitis if it is allowed to come in contact with the skin or eyes.  
Use gloves and protective creams on the hands.

Should this material contact the skin, wash thoroughly with soap and water. Do not attempt to remove this material from the skin with solvents. If any gets in the eyes, flush for 10 minutes with water and secure immediate medical attention.

Sampling: One quart sample of each of the components (A and B) from each batch will be sampled for testing.

Certification: The Contractor shall submit to the Engineer a certificate of compliance indicating that all types of adhesives conform to the requirements of the specifications.

C. Pre-Mixed Reflectorized White and Yellow Traffic Paint

1. General: Qualification of Reflectorized Traffic Paint: Only those traffic paints which have qualified in the latest completed prequalification tests conducted by the State Department of Transportation and having a Weighted Rating (W) of at least 6.5 for reflectorized white and 7.0 for reflectorized yellow at the completion of the road test will be permitted for use on this project. Quick dry paints shall not be used.

The phrase "latest completed prequalification tests" shall mean either those traffic paints which have been prequalified by the State Department of Transportation at the time this contract becomes effective or those traffic paints which have been listed by the State Department of Transportation as meeting the prequalification tests of the State Department of Transportation at the time the Contractor is doing pavement striping. The Traffic Engineer will furnish a list of prequalified traffic paints upon the request of the Contractor.

The Contractor may use other materials designed for pavement striping, such as adhesive striping, on temporary detours with the approval of the Traffic Engineer. Such materials shall meet the color and reflection requirements for traffic paints.

2. Pre-Mixed Reflectorized White and Yellow Traffic Paint

- a. General: The pre-mixed reflectorized white and yellow traffic paints shall be composed of a pigment binder and glass spheres and shall be suitable for use as traffic markings on concrete, bituminous macadam and asphalt concrete pavements. These paints shall be ready for use without any subsequent addition of glass spheres or solvent. The white paint shall be pure white and free from tint. The yellow paint shall be within the green and red

tolerance limits when compared with U. S. Federal Highways Administration's "Standard Color Chips for Highways Signs."

The term "pre-mixed reflectorized" shall refer to the finished mixture of pigmented binder and glass spheres. The terms "pre-mixed compound" and "compound" shall mean the same thing. The term "binder" shall refer to the pigment and vehicle alone (not including glass spheres). The term "spheres" shall refer only to the glass spheres incorporated in the compound.

The pre-mixed reflectorized white and yellow traffic paints shall be mixed at the factory ready for immediate application, using spray machines without thinning, at the normal rate of application used for these purposes by the Department of Transportation Services.

The traffic paints shall be well-ground and mixed. The paints shall not exhibit any characteristics of skinning, settling, thickening, or livering. The paints shall be readily mixed to a uniform consistency, capable of being applied through the spray machine without clogging or causing other operational difficulties. The mixing of the paint shall be performed in the normal manner followed by the Department of Transportation Services.

The paint shall be capable of drying to an elastic adherent finish and shall not show appreciable discoloration with age. The volatile material shall have a minimum solvent action on asphalt and be of such character that any gums and nonvolatile components of the vehicle will entirely dissolve therein and not precipitate from the solution on standing. The paints shall be of such quality that a dry film thereof will not darken or otherwise discolor excessively when exposed to sunlight.

- b. Tests: In addition to the above-mentioned requirements, the pre-mixed reflectorized white and yellow traffic paints shall conform to the following requirements:
- 1) Composition: The composition, formulation, and milling of the paints shall in all respect be identical to the sample and manufacturer's certificate of formulation thereof submitted in accordance with the Department of Transportation Services' requirements.
  - 2) Consistency: This test shall be performed in accordance with ASTM D562. The paint, as received, shall have a

consistency as determined by the Stormer Viscosimeter and expressed as Krebs units at 77°F between 75 and 90.

- 3) Wet Hiding Power: When applied with a 0.008 inch Bird Film Applicator on Standard Moresst Black and White Hiding Power Chart, Form 05, as supplied by the Leneta Company, P. O. Box 86, Ho-ho-kus, New Jersey 07423, the paint shall completely hide black.
- 4) No Pickup Time: The paint shall be tested in accordance with ASTM D711, except that the wet film shall be applied to the glass with a 0.005 inch Bird Film Applicator. The drying time for no pickup shall be not less than 5 minutes or more than 40 minutes.)
- 5) Chemical Analysis: The Department of Transportation Services shall have the option to perform a chemical analysis of said paints to determine if the paints conform with the manufacturer's certificate of formulation and that they are identical with the sample of paint submitted for prequalification test under the latest "Notice to Prospective Bidders for Furnishing Traffic Paint." (The Department of Transportation Services retains the right to check formulation by any approved method.
- 6) Weight per Gallon: The paint supplied by the successful bidder shall be within  $\pm 0.5$  Department of Transportation Services prior to installation of materials.
- 7) Glass Spheres: The glass spheres used in the compound shall be colorless, clean and transparent, free from milkiness and air bubbles. Not more than 20 percent of the glass spheres shall be irregular or fused spheroids when tested in accordance with the method used by the Department of Transportation Services.
- 8) Glass Spheres Content: There shall not be less than 4.00 pounds of glass spheres per gallon of finished pre-mixed reflectorized traffic paint.
- 9) Gradation of Spheres: Glass spheres shall meet the following gradation when tested in accordance with ASTM D1214, using U. S. Standard Sieves:

Sieve Size	Percent Passing
#40	100
#50	90 - 100
#100	20 - 75
#200	0 - 15

- c. Packing: Marking and Batching: The paints shall be delivered in clean open-head steel drums. Each container shall bear a label with the following information shown thereon: Name and address of the manufacturer, shipping point, trademark or trade name, kind of paint, formula, number of gallons, date of manufacture and batch number.

All paint pails shall have a positive and permanent seal.

- d. Sampling and Testing: The Contractor shall furnish paint samples from each paint batch to an independent testing laboratory. At least two samples from each batch consisting of one quart each in sealed containers will be used for testing.

No paint shall be used or paid for except as authorized by the Traffic Engineer until laboratory tests (excluding the laboratory test for settling) are completed, or if the paint fails to meet the requirements of these specifications.

D. Preformed Pavement Markings

1. General: The preformed pavement marking tape shall consist of a film with glass beads on a conformable backing precoated with a pressure sensitive adhesive. The tape shall be capable of being adhered to asphalt concrete or Portland cement concrete without the use of heat, solvents or other additional adhesive means, and shall be immediately ready for traffic after application.

The size, quality and refractive index of the glass beads shall be such that the performance requirements as specified herein are met. The beads shall not be easily removed when the material surface is scratched with a thumbnail.

The preformed pavement marking tape shall contain selected pigments blended to provide standard highway colors of white or yellow. The tape

shall maintain a uniform color under both daylight and night lighting conditions throughout its expected life.

Preformed works and symbols shall conform to the applicable shapes and sizes outlined in the latest edition of the FHWA publication, "Manual on Uniform Traffic Control Devices for Streets and Highways" (MUTCD), as amended.

When stored in a cool, dry area indoors, the tape shall be suitable for use a minimum of one year after the date of purchase.

2. Classification: Preformed pavement marking tape shall be of various types and compositions and for applications as specified as follows:
  - a. Temporary Preformed Pavement Marking Tape: Temporary tape shall be capable of performing for the duration of a normal construction period and shall then be capable of being removed intact or in large pieces.
  - b. Permanent Preformed Pavement Marking Tape
    - 1) Type I permanent tape shall be durable and capable of performing as specified herein when subjected to a high traffic volume and severe wear conditions such as repeated shear action from crossover and stop, start, or turn movements. Removal should not be easy.
    - 2) Type II permanent tape shall be used for highway edge of pavement lines. The tape shall be capable of performing satisfactorily when subjected to low traffic volumes, less severe wear action than for Type I, and primarily free rolling traffic.
    - 3) Type III permanent tape shall be used for symbols, legends and intersection markings such as stopbars and crosswalks in areas of high wear or as needed.
3. Reflectance: The films shall have the following initial minimum reflectance value of 0.2 degree and 0.5 degree observation angles and at an entrance angle of 86 degrees as measured in accordance with the testing procedure of Federal Test Method Standard 370. The photometric quantity to be measured shall be specific luminance (SL), and shall be expressed as millicandelas per square foot per foot candle (mcd/ft.<sup>2</sup>/fc).

INITIAL MINIMUM REFLECTANCE VALUE

		Specific Luminance (mcd/ft. <sup>2</sup> /fc)			
		White		Yellow	
Observation Angle Classification		0.26°	0.5°	0.2°	0.5°
Temporary		1770	1270	1310	810
Permanent	Type I	550	380	410	250
	Type II	960	760	680	510
	Type III	550	380	410	250

The sample size shall be 2.0 feet x 2.5 feet and the test distance shall be 50 feet. The angular aperture of both the photoreceptor and light projector shall be 6 minutes of arc. The reference center shall be the geometric center of the sample, and the reference axis shall be taken perpendicular to the test sample.

4. Skid Resistance: The surface of the preformed pavement marking tapes shall provide an initial minimum skid resistance value of 45 BPN when tested in accordance with ASTM E303.

5. Temporary Preformed Pavement Marking Tape

- a. Composition: The tape shall be a highly reflective, conformable, pliant polymer material intended for marking applications where removability is required.

The tape shall consist of a mixture of high quality polymer materials and pigments and shall not contain metallic foil. Glass beads shall be distributed throughout the pigmented area and in a reflective layer bonded to the top surface. The performance of the glass beads shall meet the durability and reflectance criteria specified herein.

The tape shall be reinforced with a non-metallic medium and shall be precoated with a pressure sensitive adhesive.

The tape shall be capable of adhering to roadway surfaces under climatic and traffic conditions normally encountered in the construction work zone. Newly applied tape shall be capable of being immediately exposed to traffic without pickup or distortion by vehicles.

- b. Thickness: The film without adhesive shall have a minimum thickness of 0.03 inch (0.76 mm).
- c. Removability: The tape shall be removable from asphalt cement concrete or Portland cement concrete, either manually or with a roll-up device, at temperatures about 40°F (4°C), and without the use of heat, solvents, grinding or sandblasting. The tape shall meet this requirement even after traffic exposure on transverse applications in accordance with the following:
  - 1) Time in place - 632 days
  - 2) ADT per lane - 9,000 (23% trucks, 3.5 axles/unit)
  - 3) Minimum axle hits - 13,000,000

6. Permanent Preformed Pavement Marking Tape

a. Type I

- 1) Composition: Tape shall consist of a mixture of high quality polymeric materials, pigments and glass beads, with a reflective layer of beads bonded to the top surface.
- 2) Thickness: The film without adhesive shall have a minimum thickness of 0.06 inch (1.52 mm).
- 3) Conformability and Patchability: The tape shall be conformable to pavement contours, breaks, faults, etc., through the action of traffic at normal pavement temperatures. Worn or missing areas shall be repairable with butt spliced patches of the same material.
- 4) Tensile Strength and Elongation: The tape shall have a minimum tensile strength of 40 pounds per square inch and minimum elongation of 75 percent at break when tested in accordance with ASTM D638. The sample size shall be 6 inches x 1 inch and shall be tested at a temperature between 70°F and 80°F with a jaw speed of 10 to 12 inches per minute.

5) Reflectivity Retention: Glass beads shall be strongly bonded and not easily removed by traffic. The tape shall be tested for reflectivity retention as follows:

(a) A sample 2 inches x 6 inches shall be bent around a 1/2-inch diameter mandrel with the 2-inch dimension perpendicular to the mandrel axis. Examination of the area with 5x magnifier shall show less than 10 percent of the beads with 40 percent or less embedment in the binder.

(b) Taber Abraser Simulation Test: Using a Taber Abraser with an H-18 wheel and a 125 gram load, a sample shall be tested for 200 cycles and then inspected with a magnifier of 5-power or larger.

No more than 15 percent of the beads shall be lost due to popout and bead erosion shall be the major mode of failure.

6) Effective Performance: The tape shall be neat and durable and shall not flow or distort due to temperature or vehicle impacts. The pliant polymer shall provide a cushioned, resilient substrate that shall reduce bead crushing and loss for the life of the marking. The film shall be weather resistant and shall show no appreciable fading, lifting or shrinkage throughout its usage. The tape shall show no significant tearing, roll back, or other signs of poor adhesion during its useful life which shall be a minimum of one year from the date of installation.

Immediately after application, the tape shall be capable of being impacted by vehicles without being picked up or distorted.

b. Type II

1) Composition: The retroreflective pavement marking material shall consist of glass beads embedded in a white or yellow film with a thin, flexible conformable backing which is precoated with a pressure sensitive adhesive.

2) Thickness: The film with adhesive shall have a minimum thickness of 0.025 inch (0.64 mm).

- 3) Abrasive Resistance: Samples of test material shall not wear through to the conformable backing surface in less than 400 cycles when tested in accordance to Federal Test Method Standard 141, Method 6192, except using an H-22 wheel and a 250 gm load.
- 4) Acid Resistance: The beads shall show resistance to etching, hazing or delamination of bead surface after exposure to a 1 percent solution of sulfuric acid. The test shall be performed as follows:

Soak one gram of beads in 100 cc of a 1 percent H<sub>2</sub>SO<sub>4</sub> solution for 100 hours. Then decant the acid solution and dry the beads at 100°C. Microscopic examination of a sample of the beads shall show no more than 5 percent of the beads altered by the acid.
- 5) Reflectivity Retention: The requirements shall be as described in 6.a.5).
- 6) Effective Performance: The requirements shall be as described in 6.a.6).

c. Type III

- 1) Composition: The retroreflective pavement marking film shall consist of a mixture of high quality polymeric materials, pigments and glass beads distributed throughout its base cross sectional area, with a reflective layer of beads bonded to the top urethane wear surface. The edges of the preformed tape shall be clean cut and true.
- 2) Thickness: The film without adhesive shall have a minimum thickness of 0.06 inch (1.52 mm).
- 3) Conformability and Patchability: The tape shall be conformable to pavement contours, breaks, faults, etc., and worn or missing areas shall be repairable with the same materials in accordance with the manufacturer's instructions.

4) Tensile Strength and Elongation. The material shall have a minimum tensile strength of 350 pounds per square inch and a minimum elongation of 50 percent at break when tested in accordance to the provisions of ASTM D638. The sample size shall be 6 inches x 1 inch and shall be tested between 70-80°F with a jaw speed of 10 to 12 inches per minute.

5) Reflectivity Retention: The glass beads shall be strongly bonded and not be easily removed by traffic wear.

The predominant mode of failure shall be “wear down” of the beads at 200 cycles when no more than 15 percent of the beads shall be lost due to popout using a Taber Abraser with an H-18 wheel and a 125 gram load.

6) Glass Bead Retention: When a 2-inch x 6-inch (5.08 x 15.24 cm) sample is bent over a 1/2-inch diameter mandrel (with a 2-inch dimension perpendicular to the mandrel axis), microscopic examination of the area on the mandrel shall show no more than 10 percent of the beads with entrapment by the binder of less than 40 percent.

7) Installation: The markings shall be applied and tamped in accordance with the manufacturer’s recommendations.

E. Reflective Thermoplastic Compound Pavement Markings

1. General: Reflective thermoplastic compound pavement markings shall be a substance, free of volatiles, which is machine applied to the pavement surface in a hot molten state and which, after cooling to the ambient temperature, and without polymerization or other chemical change, forms a traffic marking stripe of the quality and appearance as specified herein.

The material used shall be a product especially compounded for traffic markings.

The installed stripe shall not be slippery when wet.

The compound shall not deteriorate by contact with sodium chloride, calcium chloride, oil content of pavement materials, or from oil droppings from traffic.

In the plastic state, the material shall not give off fumes which are toxic or otherwise injurious to persons or property. The material shall not break

down or deteriorate if held at the plastic temperature for a period of 4 hours, or by reason of four reheatings to the plastic temperature.

There shall be no obvious change in color of the material as a result of up to four reheatings, or from batch to batch.

To insure the best possible adhesion, the compound shall be installed in a melted state of a minimum temperature of 375°F, and the material shall not scorch or discolor if kept at temperatures between 380°F to 450°F for up to 4 hours.

The pigmented binder shall be well-dispersed and free from all skins, dirt, foreign objects, or such ingredients as will cause bleeding, staining, or discoloration.

After application and proper drying time, the material shall show no appreciable deformation or discoloration under local traffic conditions, and in an air and/or road temperature ranging from 0° to 120°F.

Under this specification, the term "drying time" shall be defined as the minimum elapsed time, after application, when the stripe shall have and retain the characteristics required by the preceding sections. In addition, the drying time shall be established by the minimum elapsed time after application, after which normal local traffic will leave no impression or imprint on the applied marking.

The drying time shall not exceed a characteristic straight line curve, the lower limits of which are 2 minutes at 50°F, the upper limits of which are 15 minutes at 90°F, both temperatures measured at a maximum relative humidity of 70 percent.

The stripe shall maintain its original dimensions and placement. The exposed surface shall be free from tack. Cold ductility of the material shall be such as to permit normal movement with the road surface without chipping.

The marking shall have a uniform cross section. Pigment shall be evenly dispersed throughout the material. The density and character of the material shall be uniform throughout its thickness.

The material shall not smear or spread under normal traffic conditions at temperatures below 120°F.

The filler to be incorporated with the resins or binders shall be a white calcium carbonate or equivalent filler.

The white thermoplastic shall have a pigment containing not less than 6 percent per Titanium Dioxide, and, after setting, shall be pure white, free from dirt or tint.

Yellow reflectorized thermoplastic compound shall be "Federal Yellow."

The binder shall consist of a mixture of non-drying synthetic resins at least one of which is solid at room temperature. The total binder content of the thermoplastic compound shall be not less than 15 percent nor more than 35 percent by weight.

The material shall not change in its color and brightness characteristics after prolonged exposure to sunlight.

During manufacture, reflectorizing beads shall be mixed into the material to the extent of not less than 20 percent nor more than 50 percent by weight of the material. The beads that are applied to the surface of the material shall be automatically applied at a uniform rate of approximately 3 pounds of glass beads to every 100 square feet of line.

The glass beads used in the formulation shall have a refractive index of not less than 1.51 when tested by the liquid immersion method at 25°C; shall consist of 70 percent min. by count of true spheres; shall be free from air inclusions; and shall have the following graduation:

U. S. Sieve Number	Percent Passing
30	90 -100
40	35 - 100
100	0 -10

Not less than 70 percent of the spheres shall meet the following requirements:

- a. The surface of the spheres shall be smooth, lustrous, and free from film scratch and pits.
- b. The spheres shall be clear and transparent and shall not be ovoid in shape or fused spheroids.

- c. The spheres shall show high autocollimating efficiency. Not more than 1 percent shall be black, amber, or milky.

The glass beads dropped on the applied marking shall have a refractive index of not less than 1.51 when tested by the liquid immersion method of 25°C, shall consist of 70 percent min. by count of true spheres; shall be free from air inclusion; and shall have the following gradation:

U. S. Sieve Number	Percent Passing
20	90 - 100
80	0 - 10

Not less than 70 percent of the spheres shall meet the following requirements:

- a. The surface of the spheres shall be smooth, lustrous, and free from film scratch and pits.
- b. The spheres shall be clear and transparent and shall not be ovoid in shape or fused spheroids.
- c. The spheres shall show high autocollimating efficiency. Not more than 1 percent shall be black, amber, or milky.

2. Specifications and Tests

- a. Color
  - 1) White: Initially white; as demonstrated by a standard color difference meter such as the Gardner Color Difference Meter manufactured by Gardner Laboratories, Inc., Bethesda, Maryland, the material shall show deviations from a magnesium oxide standard not greater than the following:

Scale Definition	Mag Oxide Standard Sample	
	Rd Reflectance	100
a Redness-Greenness	0	-5 to +5
b Yellowness-Blueness	0	-10 to +10

- 2) Yellow: Initially yellow; equal to standard color chips using Federal test method standard 141 Method 4252.
- b. Color Retention: The retention of the initial color shall be determined as follows: Specimens shall be prepared and tested from the samples submitted in accordance with ASTM D620-57T, "Tentative Method of Test for Colorfastness of Plastics." The ultraviolet light source shall be as specified from the test procedure or optionally may be a General Electric 275 watt sunlamp bulb, type RS, with built-in reflector. After 100 hours of exposure, specimens shall show no perceptible color change when compared visually with an unexposed specimen.
- c. Water Absorption: Material shall have not more than 0.5 percent by weight of retained water, when tested by ASTM D570, procedure a.
- d. Softening Point: Material shall have a softening point of not less than 90°C, as determined by ASTM E28.
- e. Specific Gravity: Specific gravity of compound at 25°C shall be from 1.9 to 2.5.
- f. Impact Resistance: The impact resistance shall not be less than 15 inch-pounds at 77°F after the material has been heated for 4 hours at 400°F and cast into bars of 1-inch cross sectional area and 3 inches long and placed with 1-inch extending above the vise in a cantilever beam (Izod Type) tester using the 25-inch pound scale. See ASTM D256 for description of this instrument.
- g. Bond Strength: When two concrete blocks 2 inches by 3-1/2 inches by 7 inches are cemented together on the 3-1/2 inch by 7-inch faces with a 1/16 to 1/8-inch layer of the thermoplastic traffic line material and tested according to ASTM C321, the bond strength shall not be less than 150 pounds square inch.

- h. Indentation Resistance: The reading of the Shore Durometer, Type A, as described in ASTM D2240 after 15 seconds shall not be less than the amounts herein designated when the material is tested after heating for 4 hours at 400°F, and cooled to the following temperatures:

Temperature	Reading
115°F	65
77°F	95
40°F	95

3. Packaging: Each unit container shall be clearly and adequately marked to indicate the color of the material, the process batch number or similar manufacturer's identification, the manufacturer's name and location of plant, and the date of manufacture.

The material shall be delivered to a designated area in unit containers as processed by the manufacturer. Each unit container when filled shall weigh no less than 24 lbs. or more than 52 lbs.

4. Warranty: Thermoplastic compound pavement marking material furnished and installed under this specification shall be guaranteed by the Contractor against failure due to poor adhesion resulting from defective materials or methods of application.

For approved pavements carrying 30,000 vehicles per day or less, the successful bidder shall guarantee to replace, without cost to the Department, that part of the pavement markings installed under this contract which, in the opinion of the Construction Manager, has not remained to perform useful service as follows:

- a. Crosswalks and Stop Lines:

90 percent of the total of any one intersection for one year.

75 percent of the total of any one intersection for 2 years.

50 percent of the total of any one intersection for less than 3 years.

b. Lane Lines, Edge Lines, and Center Lines:

- 90 percent of a unit for one year.
- 80 percent of a unit for 2 years.
- 60 percent of a unit for 3 years.

(A "Unit" is defined as any length of highway having installed thereon 2,000 lineal feet of line of specified width in any combination or pattern.)

The replacement material installed under this guarantee shall be guaranteed the same as the original material, from the date of the original installation.

5. Equipment: The material shall be applied to the pavement by an extrusion method wherein one side of the shaping die is the pavement and the other three sides are part of the equipment.

The equipment shall provide continuous mixing and agitation of the material. Conveying parts of the equipment shall be constructed to pavement accumulation and clogging. All parts of the equipment which come in contact with the material shall be easily accessible and exposable for cleaning and maintenance.

All mixing and conveying parts including the shaping die shall maintain the material at the plastic temperature.

The equipment shall assure continuous uniformity in the dimensions of the stripe. The thickness of the material on the pavement shall be no less than 3/32 inch and no more than 3/16 inch measured as an average in any 3-foot length.

The applicator shall cleanly cut off square stripe ends and shall be capable of applying "skip" lines. The use of pans, aprons or similar appliances which the die overruns will not be permitted.

Beads applied to the surface of the completed stripe shall be applied by an automatic bead dispenser attached to the liner in such a manner that the beads are dispensed almost instantly upon the completed line. The bead dispenser shall be equipped with an automatic cutoff control synchronized with the cutoff of the thermoplastic material.

The equipment shall be constructed to provide for varying die widths to produce varying widths of traffic markings.

A special kettle shall be provided for melting and heating the composition. The kettle shall be equipped with an automatic thermostatic control device so that heating can be done by controlled heat transfer liquid rather than direct flame, to provide positive temperature control and prevent overheating of the composition.

The applicator and kettle must be equipped and arranged to satisfy the requirements of the National Fire Underwriters.

The applicator shall be mobile and maneuverable to the extent that straight lines can be followed and normal curves can be made in a true arc.

The applicator shall be capable of containing a minimum of 125 pounds of molten material.

6. Application: The Contractor shall clean off dirt, blaze, paint, tape and grease where necessary and as directed by the Engineer.

The material may be installed in variable widths from 2 inches to 12 inches.

On pavements containing less than 6 percent bituminous asphalt and on all concrete pavements, the Contractor shall prestripe the application area with a binder material as recommended by the manufacturer.

The compound shall be installed in a melted state at temperatures of 380°F to 450°F.

The minimum installed thickness of the line as viewed from a lateral cross section shall be not less than 3/32nds of an inch at the edges, nor less than 1/8th of an inch in the center. The measures shall be taken as an average throughout any 36-inch section of the line.

The new line when applied over an old line of compatible material shall bond itself to the old line in such a manner that no splitting or separation takes place during its useful life.

The finished lines shall have well-defined edges and be free of waviness.

### PART 3 - EXECUTION

- 3.01 GENERAL: Pavement markers and markings shall be applied to surfaces that have been thoroughly cleaned and are free of dirt, dust, curing compound, grease, oil, moisture, loose aggregates, unsound layers and any other material which would adversely affect the bond of the adhesive or paint.

In the installation of pavement markers, the cleaning of Portland cement concrete and asphalt concrete surfaces shall be by blast cleaning. Clean, newly placed asphalt concrete need not be blast cleaned unless the surface contains an abnormal amount of asphalt or the surface is contaminated with dirt, grease, oil or any other material which would adversely affect bonding.

Unless otherwise specified, the Contractor shall establish control points, satisfactory to the Traffic Engineer, spaced at intervals that will insure accurate location of pavement markers and striping. Markers, paints and tape shall not be applied when moisture or foreign matter is present on the pavement surface or when wind conditions are such as to cause dust to be deposited on the prepared areas or to prevent satisfactory application of the marker adhesive or paint.

The Contractor shall paint temporary guidelines and outline of arrows, legends and crosswalks with a 2-inch wide brushed line on the day the roadway is opened to traffic which shall be approved by the Traffic Engineer before permanent lines are painted.

The Contractor shall furnish and place all warning and directional signs necessary to direct and control the traffic during marker installation or the striping operations. Warning signs shall be set up before the beginning of each operation and extra signs shall be kept well ahead of the marking or painting equipment.

The Contractor shall install all markers and apply all pavement striping before opening roadways to public traffic except that when connections to existing pavements are made or when temporary detours carry public traffic, the Contractor shall mark or stripe the connecting pavements on the day that the roadway is open to traffic.

If it is necessary to run public traffic over roadways soon after paving, the Contractor shall paint, on the day of each day's paving, temporary guide dashes at the traffic stripe or marker location on the pavement, as guidance for drivers, until the permanent markings can be placed. The Contractor shall maintain and repaint, if necessary, all temporary markings until the permanent striping and/or markers are installed. This work shall be considered incidental to the items of paving, pavement markers and/or pavement striping, and no separate payment will be made therefore.

Permanent pavement markers, striping and markings shall be applied no sooner than 7 calendar days nor later than 14 calendar days after completion of the pavement.

3.02 PAVEMENT MARKERS: Unless otherwise ordered in writing by the Traffic Engineer, markers shall be cemented to the pavement with Standard Set Type adhesive. If ordered by the Traffic Engineer, the Contractor shall use Rapid Set Type adhesive for the Standard Set Type adhesive at no extra cost to the Department.

If the Contractor uses Rapid Set Type adhesive, he shall submit samples of the markers and Rapid Set Type adhesive proposed for use to the Traffic Engineer, for testing and approval, at least 10 days before the date of its intended use.

The adhesive shall be placed uniformly on the cleaned pavement surface or on the bottom of the marker in a quantity sufficient to result in complete coverage of the area of contact of the marker with no voids present and with a slight excess after the marker has been pressed in place. The marker shall be placed in position and pressure applied until firm contact is made with the pavement. Excess adhesive around the edge of the marker, excess adhesive on the pavement, and adhesive on the exposed surfaces of the markers shall be immediately removed. Soft rags moistened with mineral spirits conforming to Federal Specification TT-T-291E or kerosene may be used, if necessary, to remove adhesive from exposed faces of pavement markers. No other solvent shall be used. The marker shall be protected against impact until the adhesive has hardened to the degree designated by the Traffic Engineer.

The adhesive requires that the mixing operation and placing of the markers be done rapidly. When hand mixing or machine mixing the Standard Set Type adhesive, all markers shall be aligned and pressed into place within 5 minutes after mixing is started. When hand mixing Standard Set Type adhesive, not more than one quart shall be mixed at one time. Any mixed batch which becomes viscous so that the adhesive cannot be readily extruded from under the marker on application of slight pressure shall not be used.

When the Rapid Set Type adhesive is used, the components shall be mixed by a two component type automatic mixing and extrusion apparatus, the markers shall be placed within 60 seconds after the adhesive has been mixed and extruded and no further movement of the marker will be allowed.

Automatic mixing equipment for the epoxy adhesive shall use positive displacement pumps and shall properly meter the components in the specific ratio,  $\pm 5$  percent by volume of either component. At the beginning of each day and at any other time ordered by the Traffic Engineer, the ratio shall be checked by the Contractor in the presence of the Traffic Engineer. This check shall be made by disconnecting the mixing heads, or using suitable bypass valves, and filling two suitable containers with the unmixed components. The mixing head shall properly mix two components so that there is no trace of black or white streaks in the mixed material.

The Standard Set Type adhesive shall not be used when either the pavement or the air temperature is less than 50°F. The Rapid Set Type adhesive shall not be used when either the pavement or the air temperature is less than 30°F. No markers shall be installed if the relative humidity of the air is greater than 80 percent or if the pavement is not surface dry. The Traffic Engineer shall be the judge as to when the adhesive has set sufficiently to bear traffic. The following table may be used as a guide; however, the times shown may vary, depending upon field conditions:

TIME TO BEAR TRAFFIC		
Temperature* (°F)	Standard Set Type (Hours)	Rapid Set Type (Minutes)
100	1-1/2	15
90	2	20
80	3	25
70	4	30
60	5	35
50	7	45
40	No Application Below 50°F	65
30		85
		No Application Below °F

\*The temperature indicated is either pavement surface or air temperature, whichever is lower. The hardness of the rim of epoxy around the marker shall not be used as an indication of the degree of cure of the epoxy under the marker.

Types A and J pavement markers that are used to delineate 10-foot lane stripes shall be installed in sets of four markers as called for on the plans. Installation of fractional sets (i. e., one, two or three markers) will not be permitted. The length of the 10-foot stripe and 30-foot gap may vary ±1 foot to properly distribute the spacing of stripes.

No pavement markers shall be installed over longitudinal or transverse joints of the pavement surface.

- 3.03 PAVEMENT STRIPING AND MARKINGS: Pavement striping and markings shall be of the length, width and placement specified and shall conform to the Department of Transportation Services' Standards.

Traffic paint shall be applied at a nominal film thickness of 0.015 inch, utilizing a wheeled, hand or self-propelled applicator machine. The traffic paint applicator machine shall have appropriate shields of nozzle controls which will permit sharp pavement stripe

definition. The traffic paint applicator machine shall have an air stream nozzle which can direct compressed air immediately before the area of paint application for the purpose of cleaning the pavement prior to paint application.

Pavement arrows, legends, and crosswalks shall be applied with appropriate templates (refer to "Traffic Standards Manual" of the Department of Transportation Services, dated July 1976).

No stripe shall be less than the specified width. No stripe shall exceed the specified width by more than 1/2 inch. The length of the 10-foot painted segment for skip stripe may vary  $\pm 1$  foot and the 30-foot gap between segments may vary  $\pm 1$  foot. The alignment of the stripe shall not deviate from the intended alignment by more than 1 inch on tangents and on curves up to and including one degree. On curves exceeding one degree, the alignment of the stripe shall not deviate from the intended alignment by more than 2 inches.

When necessary to correct a deviation which exceeds the permissible tolerance in alignment, that portion of the stripe so affected shall be removed plus an additional 30 feet in each direction, and a new stripe then provided in accordance with these specifications.

All stripes, segments of stripes and markings shall present a clean cut, uniform appearance. All striping and markings which fail to meet the requirements specified herein, or are marred or damaged by traffic or from other causes, shall be corrected prior to acceptance by the City at the Contractor's expense. All misted areas, dripped and spattered paint shall be removed to the satisfaction of the Construction Manager.

The freshly painted stripe shall be protected by cones or other satisfactory devices until the traffic paint is dry and will not transfer to car tires. All stripes damaged by traffic, or pavements marked by traffic crossing wet paint, shall be repaired or corrected as specified below.

The Contractor shall submit to the Traffic Engineer test specimens as requested. Test films shall be applied to a suitable plane rigid surface. The area shall be of sufficient size to permit film thickness measurement to be made at least 1 inch from any edge.

3.04 REMOVING EXISTING PAVEMENT MARKERS, STRIPING AND MARKINGS:  
Existing pavement markers shall be removed by methods that cause the least possible damage to the pavement or surfacing.

Where specified on the plans and/or directed by the Traffic Engineer, existing pavement striping and markings shall be removed to the fullest extent possible by methods that will not materially damage the surface or texture of the pavement, or leave impressions on the roadway that could be confused with permanent striping during inclement weather or

night driving conditions. Any damage to the pavement or surfacing caused by the removal operations shall be repaired by the Contractor at his expense by methods acceptable to the Traffic Engineer.

Painting over the existing striping and markings will not be permitted. Burning off existing striping and markings will be permitted using an approved method using excess oxygen.

Sand or other material deposited on the pavement as a result of removing pavement markers, traffic striping and markings shall be removed as the work progresses. Accumulation of sand or other material which may constitute a hazard to traffic will not be permitted.

Extraneous traffic striping and markings shall be removed before any change is made in the traffic pattern.

- 3.05 PREFORMED PAVEMENT MARKING TAPE: Preformed pavement marking tape may be applied manually or with the tape applicators approved by the tape manufacturer. All markings shall be applied in accordance with the tape manufacturer's recommendations and as specified herein.

The Contractor shall install permanent preformed pavement marking tape only at the locations shown on the plans and as specified herein.

Preformed pavement marking tape shall not be applied over other markings or old paint. The Contractor shall remove all old markings and otherwise prepare the surface for tape application as specified.

The minimum temperatures for the application of preformed pavement marking tape shall be 60° (15°C) for air and 70°F (21°C) for roadway surfaces, with both temperatures rising. The maximum temperature shall be 150° (66°C) for roadway surfaces.

The Contractor shall prime existing roadway surfaces with an approved primer immediately prior to the application of permanent preformed pavement marking tape. The Contractor shall apply the primer as recommended by the tape manufacturer and as directed by the Construction Manager.

The Contractor may use tapes of different widths to form a specified stripe width (i. e., two 4-inch wide tapes may be used to form an 8-inch wide stripe); however, 12-inch wide stripe shall be of a single width and payment shall be made for the specified stripe width as shown on the plans and called for in the proposal.

The Contractor shall use butt splices only and shall not overlap the tape material.

All markings shall be thoroughly tamped with approved mechanical tampers. Additionally, the Contractor shall slowly drive on the newly applied markings several times with a truck.

All areas marked with preformed pavement marking tape shall be ready for traffic immediately after application.

3.06 REMOVAL OF TEMPORARY TAPE TRAFFIC MARKINGS: The Contractor shall remove all temporary tape striping placed to delineate traffic lanes, crosswalks, stop bars, etc., prior to the laydown of the finish asphalt concrete mix #4 layer.

3.07 METHOD OF MEASUREMENT: Pavement markings, including lane striping, will not be measured.

Pavement markers will not be measured.

Crosswalk markings will be measured as complete units of painted crosswalk marking as indicated on the plans and in the proposal.

Pavement arrows, legends and words will be measured as complete units of the type and design specified on the plans and in the proposal.

3.08 BASIS OF PAYMENT: The accepted quantities of the various types of pavement markers will be paid for at the contract lump sum price complete in place. The price includes full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved, in furnishing and placing pavement markers complete in place, as shown on the plans, as specified herein or as directed by the Engineer.

Pavement striping, including pavement markings such as stop lines (or stop bars), will be paid for at the lump sum price bid in the proposal which price shall be full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved in furnishing and installing traffic pavement striping complete in place as shown on the plans, including the removal of existing extraneous paint or paint stripe, as specified herein or as directed by the Engineer.

The quantity of pavement striping noted in the proposal is based on the striping plan. If the completed work deviates from the striping plan, the unit price for the adjusted striping work will be determined by dividing the lump sum price bid in the proposal by the quantity noted in the proposal. The lump sum price bid will be adjusted by the amount determined by multiplying the above unit price by the length of striping added or deleted. The adjusted striping work will be measured as follows: pavement stripes 12 inches or less in width (including between line spacing) will be measured as a single stripe; pavement stripes over 12 inches wide will be measured as two stripes; and the unpainted spaces, up to 25 feet, between painted stripe segments will be included in the measurement.

The accepted quantities of crosswalk markings will be paid for at the contract unit price per each thermoplastic or taped crosswalk marking as indicated on the plans and in the proposal, in place complete.

The accepted quantities of pavement arrows, legend and words will be paid for at the contract unit price per each as indicated in the proposal, in place complete.

The contract price shall be full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved as shown on the plans, as specified herein or as directed by the Construction Manager.

Removal of existing pavement markings and markers shall be considered incidental to the various payment items.

END OF SECTION

SECTION 02609 – ELECTRONIC MARKERS FOR POTABLE WATER SYSTEM

PART 1 – GENERAL

1.01 GENERAL CONDITIONS: The General Conditions, DHHL Construction General Conditions and Special Conditions in this IFB-16-HHL-006 shall govern this section of the work.

1.02 WORK INCLUDED: Furnish all labor, materials, tools and equipment necessary for the installation and testing of electronic markers over plastic pipe and concrete jackets for "locating" purposes.

Electronic markers shall be installed in lieu of copper toning wire along all new mains 4-inches and larger including fire hydrant and meter laterals.

PART 2 – PRODUCTS

2.01 MATERIALS: Electronic markers shall be the "Omni Marker," manufactured by Tempo, or approved equal.

Application	Color	Frequency	Model Number	UPC Number
Potable Water Main	Blue	145.7 kHz	161	60766

PART 3 – EXECUTION

3.01 PLACEMENT: The electronic markers shall be hand placed in the trench, centered over the pipe and covered with sufficient base course material to prevent shifting prior to backfilling of the trench. Installation shall be at a minimum depth of 2 feet and a maximum depth of 3 feet from finish grade.

3.02 LOCATION: Installation of electronic markers shall be in accordance with the following:

- A. One marker at all changes in horizontal alignment (e. g., bends, deflection couplings and deflections at joints).
- B. One marker 10 feet prior to and one marker 10 feet after a change in horizontal alignment unless markers are required within the 10-foot distance.
- C. On straight runs, markers shall be placed at a maximum distance of 40 feet.
- D. One marker at the end of all mains and at all permanent cleanouts.

E. Markers at the beginning and ending of all concrete jackets.

3.03 TESTING: Contractor shall test the electronic markers prior to installation to verify proper operation. Construction Manager shall verify the number and locations of placed electronic markers before final paving of the project. Contractor shall record marker locations on the "as-built" drawings.

3.04 PAYMENT: Payment for electronic markers will be made at a lump sum price.

The lump sum price for electronic markers shall be full compensation for all labor, materials, tools and equipment necessary for furnishing and installing electronic markers and all other incidentals required to complete the work.

END OF SECTION

## SECTION 02713 – POTABLE WATER SYSTEM

### PART 1 – GENERAL

- 1.01 GENERAL CONDITIONS: The General Conditions, DHHL Construction General Conditions and Special Conditions in this IFB-16-HHL-006 shall govern this section of the work.
- 1.02 WORK INCLUDED: Furnish all labor, materials, tools, equipment and related items necessary to complete, in place, the potable water system in conformity with the dimensions, profiles, sections, and details shown on the plans. Work shall be governed by the Water System Standards, Department of Water Supply, County of Maui, et al., State of Hawaii, 2002,” hereinafter referred to as the DWS Standards.

### PART 2 – PRODUCTS

- 2.01 MATERIALS: All materials shall conform to the DWS Standards. Water mains shall be polyvinyl chloride (PVC), Class 150, plastic pipe conforming to AWWA C900. Fittings shall be Class 350 ductile iron with mechanical joints. Gate valves shall be cast iron, Class 150, with mechanical joints. Fire hydrants shall be wet-barrel type.
- 2.02 Electronic markers as specified in Section 02609 - Electronic Markers for Potable Water System.

### PART 3 – EXECUTION

- 3.01 INSTALLATION: The installation, testing, disinfection and acceptance of water lines shall be governed by the DWS Standards.

The Construction Manager shall be responsible for precisely laying out the various utility lines shown on the contract plans as provided elsewhere in these specifications. The location shown on the contract plans of the various existing utility lines which the new lines are to cross over or under or connect to were determined on the basis of the best information available; however, no assurance can be provided that the actual locations will be precisely as shown on the contract plans.

In performing all work, the Contractor shall exercise due care and caution necessary to avoid any damage to and impairment in the use of any existing utility lines. Any damage inflicted on existing lines resulting from the Contractor’s operations shall be immediately repaired and restored as directed by the Construction Manager at the Contractor’s expense.

Connections to or the lowering or relocation of existing mains shall be done by the Contractor in accordance with the DWS Standards. The Contractor shall furnish all necessary pipe, fittings, appurtenances and other incidental materials.

Trenching, pipe cushion and backfilling for the water main shall be in accordance with the DWS Standards.

The Contractor shall coordinate the connection of the new water line with the Construction Manager. The Contractor shall inform the Construction Manager a minimum of one week prior to the date of the actual connection. The inverts shown on the plans are approximate only, and the Contractor shall adjust the slope of the new water line as necessary to construct a fully functional and acceptable system. The Contractor shall ensure that all piping, fittings, materials, tools, equipment and incidentals are at the site and ready for connection.

- 3.02 Install electronic markers as specified in Section 02609 – Electronic Markers for Potable Water System.

END OF SECTION

SECTION 02721 – STORM DRAINAGE SYSTEM

PART 1 – GENERAL

1.01 GENERAL CONDITIONS: The General Conditions, DHHL Construction General Conditions and Special Conditions in this IFB-16-HHL-006 shall govern this section of the work.

1.02 WORK INCLUDED: Furnish all labor, materials, tools, equipment and related items necessary to complete, in place, the storm drainage system in conformity with the dimensions, profiles, sections, and details shown on the plans. Work relating to drainpipes and drainage structures shall be governed by the following sections of the Standard Specifications:

Trench Excavation and Backfill.....	Section 11
Drainpipes .....	Section 24
Portland Cement Concrete .....	Section 39
Concrete Structures.....	Section 40

1.03 CONTRACTOR SUBMITTALS: Shop drawings shall be submitted for drain pipes.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Drainpipe: Reinforced Concrete Pipe, Class III, AASHTO M170.
- B. Materials for the storm drainage system shall be in accordance with the sections of the Standard Specifications noted hereinbefore.

PART 3 – EXECUTION

3.01 INSTALLATION: Install the storm drainage system in accordance with the sections of the Standard Specifications noted hereinbefore.

3.02 The Contractor shall be responsible for precisely laying out the storm drain line shown on the contract plans. The location shown on the contract plans of the various existing utility lines which the new lines are to cross over or under or connect to were determined on the basis of the best information available; however, no assurance can be provided that the actual locations will be precisely as shown on the contract plans.

- 3.03 In performing all work, the Contractor shall exercise due care and caution necessary to avoid any damage to and impairment in the use of any existing utility lines. Any damage inflicted on existing lines resulting from the Contractor's operations shall be immediately repaired and restored as directed by the Engineer at the Contractor's expense.

END OF SECTION

## DIVISION 3 - CONCRETE

### SECTION 03300 - CAST-IN-PLACE CONCRETE

#### PART 1 - GENERAL

- 1.01 GENERAL CONDITIONS: The General Conditions, DHHL Construction General Conditions and Special Conditions in this IFB-16-HHL-006 shall govern this section of the work.
- 1.02 WORK INCLUDED: Cast-in-place concrete and reinforcing steel for concrete slabs and footings. Work shall be in conformance to Section 39 - Portland Cement Concrete and Section 48 - Reinforcing Steel of the Standard Specifications.
- 1.03 QUALITY ASSURANCE
- A. Codes: Comply with the provisions of the following codes, specifications and standards, except as otherwise shown or specified.
1. Concrete Reinforcing Steel Institute, "Manual of Standard Practice"
  2. ACI 318 "Building Code Requirements for Reinforced Concrete"
  3. ACI 304, "Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete"
  4. ACI 311, "Recommended Practice for Concrete Inspection"
- B. Concrete Testing Service
1. The Contractor will employ, at his own expense, a testing laboratory experienced in the testing of concrete materials and mixes to perform material evaluation tests. This laboratory shall be the official testing agency for this project.
  2. Materials and installed work may require testing and retesting, as directed by the Engineer, at any time during the progress of the work. Allow free access to material stockpiles and facilities at all times. Test, if not specifically indicated to be done at the Department's expense, including the retesting of rejected materials and installed work, shall be done at the Contractor's expense.
  3. Tests shall comply with ASTM Standards whenever applicable.

#### PART 2 - PRODUCTS

##### 2.01 CONCRETE MATERIALS

- A. Portland Cement: ASTM C150, Type I
- B. Aggregates: ASTM C33
1. Fine Aggregates: Clean, sharp, natural sand or rocksand as manufactured locally

free from loam, clay, lumps or other deleterious substances.

2. Coarse Aggregates: Clean, uncoated, processed aggregate containing no clay, mud loam or foreign matter.

C. Reinforcing:

1. ASTM A615-51, Grade 60
2. ASTM A185, galvanized welded wire fabric

2.02 CONCRETE ADMIXTURES

A. Air-Entraining Admixtures: ASTM C260

B. Water-Reducing Admixtures: ASTM C494, Type D

C. Set Control Admixtures: ASTM C494, as follows:

1. Type B, retarding
2. Type D, water-reducing and retarding

D. Calcium Chloride: Do not use calcium chloride in concrete.

2.03 PROPORTIONING AND DESIGN OF MIXES

A. Prepare design mixes for each type of concrete; 28-day compressive strengths shall be 3,000 psi (Class A); 2,500 psi (Class B); 2,000 psi (Class C) and in the Standard Specifications.

B. Proportion mixes by either laboratory trial batch or field experience methods, using materials to be employed on the project for each class of concrete required.

C. Unless otherwise noted, Class A concrete shall be used for all electrical ducts, reaction blocks, slabs and walls; Class B concrete for curb and gutter, and sidewalk applications.

2.04 JOINT MATERIALS

A. Premolded Joint Fillers: Premolded material of specified thickness composed of fiberboard impregnated with asphalt.

B. Joint Sealing Compound: Tremco Butyl Sealant or approved equal.

C. Epoxy-Resin Bonding Agent: Two component, mineral filled epoxy polysulfide polymer complying with FS MMM-G-650, Type I or Type II, Grade A.

2.05 MOISTURE BARRIER: Provide moisture barrier over prepared base material where shown on plans. Use only materials which are resistant to decay when tested in accordance with ASTM E154, as follows: Polyethylene sheet not less than 6 mils thick.

2.06 CURING MATERIALS

- A. Curing compounds for membrane curing shall conform to ASTM C309.
- B. Liquid Curing - Hardening Compound: Aqueous solution of sodium silicate with non-acid penetrating agent, reacting chemically with free lime in concrete to form a hard, non-dusting surface which will not inhibit bonding with future finishes. Products offered by manufacturers to comply with the requirements for liquid curing hardening compounds include the following:
  - 1. Demicon: Castle Chemical Corp.
  - 2. Eucosil: Euclid Chemical Co.
  - 3. Chem Hard: L&M Construction Chemicals

- 2.07 EPOXY GROUT: Manufactured grout with built-in bonding material subject to approval of the Engineer.

PART 3 - EXECUTION

- 3.01 PREPARATION: Pre-Placement Inspection -- Before placing concrete, inspect and complete the formwork installation, reinforcing steel, and items to be embedded or cast in. Notify other crafts involved in ample time to permit the installation of their work; cooperate with other trades in setting such work, as required.

3.02 CONCRETE PLACEMENT

- A. General: Place concrete in compliance with the practices and recommendations of ACI 304 and as herein specified.
  - 1. Deposit concrete continuously or in layers of such thickness that no concrete will be placed on concrete which has hardened sufficiently to cause the formation of seams or planes of weakness within the section. If a section cannot be placed continuously, provide construction joints as herein specified. Perform concrete placing at such a rate that concrete which is being integrated with fresh concrete is still plastic. Deposit concrete as nearly as practicable to its final location to avoid segregation due to rehandling or flowing. Do not subject concrete to any procedure which will cause segregation.
  - 2. Screen concrete which is to receive other construction to the proper level to avoid excessive skimming or grouting.
  - 3. Do not use concrete which becomes non-plastic and unworkable, or does not meet the required quality control limits, or which has been contaminated by foreign materials. Do not use retempered concrete. Remove rejected concrete from the project site and dispose of it in an acceptable location.
- B. Concrete Conveying
  - 1. Handle concrete from the point of delivery and transfer to the concrete conveying equipment and to the locations of final deposit as rapidly as practicable by

methods which will prevent segregation and loss of concrete mix materials.

2. Provide mechanical equipment for conveying concrete to ensure a continuous flow of concrete at the delivery end. Provide runways for wheeled concrete conveying equipment from the concrete delivery point to the locations of final deposit. Keep interior surfaces of conveying equipment, including chutes, free of hardened concrete, debris water, and other deleterious materials.

C. Placing Concrete Slabs

1. Deposit and consolidate concrete slabs in a continuous operation, within the limits of construction joints, until the placing of a panel or section is completed.
2. Consolidate concrete during placing operations using mechanical vibrating equipment, so that concrete is thoroughly worked around reinforcement and other embedded items and into corners.
3. Bring slab surfaces to the correct level with a straightedge and strike off. Use bull floats or darbies to smooth the surface, leaving it free of humps or hollows. Do not sprinkle water on the plastic surface. Do not disturb the slab surfaces prior to beginning finishing operations.
4. Maintain reinforcing steel in the proper position continuously during concrete placement operations.

- D. Dowel installation where shown. Prepare for bonding of dowels and anchors to existing concrete by using drilled holes and a two-component epoxy which is manufactured for this specific purpose. Install in accordance with manufacturer's requirements to develop strength of dowels.

3.03 CONCRETE SLAB FINISHES

Slabs: Finish by tamping the concrete to force aggregate away from the surface and screen at the proper level. Float the surface and lightly trowel. When concrete has set sufficiently to ring under the trowel, give a second troweling to produce a smooth, dense surface free from trowel marks and sweeps, air bubbles or other imperfections of troweling.

3.04 CONCRETE CURING AND PROTECTION

A. General

1. Protect freshly placed concrete from premature drying and excessive cold or hot temperature, and maintain without drying at relatively constant temperature for the period of time necessary for hydration of the cement and proper hardening of the concrete.
2. Start initial curing as soon as free moisture has disappeared from the concrete surface after placing and finishing. Weather permitting, keep continuously moist for not less than 72 hours.

3. Begin final curing procedures immediately following initial curing and before the concrete has dried. Continue final curing for at least 7 days and in accordance with ACI 301 procedures. Avoid rapid drying at the end of the final curing period.

B. Curing Methods

1. Perform curing of concrete by moist curing, or by moisture retaining cover curing, by membrane curing, or by combinations thereof, as herein specified for a continuous period of 14 days.
2. Liquid Curing-Hardening Compound: Apply to horizontal surfaces when concrete is dry to touch by means of power spray, hand spray, or hair broom in accordance with manufacturer's directions.

C. Curing Unformed Surfaces

1. Initially cure unformed surfaces, such as slabs, floor topping, and other flat surfaces by moist curing, whenever possible.
2. Moist cure surfaces to receive fluid applied waterproof membranes and composition flooring. Do not cure by membrane curing or curing compounds.
3. All slabs not receiving a finish floor material shall receive a liquid curing-hardening compound in accordance with the manufacturer's recommendations.
4. Final cure unformed surfaces, unless otherwise specified, by any of the methods specified above, as applicable.

- D. Protection from Mechanical Injury: During the curing period, protect concrete from damaging mechanical disturbances including load stresses, heavy shock, excessive vibration, and from damage caused by rain or flowing water. Protect all finished concrete surfaces from damage by subsequent construction operations.

3.05 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures from the passage of work by other trades, unless otherwise shown or directed, after the work or other trades is in place. Mix, place and cure concrete as herein specified, to blend with in-place construction. Provide all other miscellaneous concrete filling shown or required to complete the work.
- B. Epoxy Adhesive: For application on corrective work where the ordinary methods of remedy are deemed inadequate by the Engineer. Type of adhesive shall be subject to the approval of the Engineer.

### 3.06 CONCRETE SURFACE REPAIRS

#### A. Repair of Unformed Surfaces

1. Test unformed surfaces such as monolithic slabs, for smoothness and to verify surface plane to the tolerance specified for each surface and finish. Correct low and high areas as herein specified.
2. Test unformed surfaces sloped to drain for trueness of slope, in addition to smoothness, using a template having the required slope. Correct high and low areas as herein specified.
3. Repair finish unformed surfaces that contain defects which adversely affect the durability of the concrete. Surface defects, as such, include cracks in excess of 0.03 inch wide or which penetrate to the reinforcement or completely through non-reinforced sections regardless of width, spalling, popouts, honeycomb, rock pockets, and other objectionable conditions.
4. Correct high areas in unformed surfaces by grinding, after the concrete has cured sufficiently so that repairs can be made without damage to adjacent areas.
5. Correct low areas in unformed surfaces during, or immediately after completion of surface finishing operations by cutting out the low areas and replacing with fresh concrete. Finish repaired areas to blend into adjacent concrete. Proprietary patching compounds may be used when acceptable to the Engineer.

#### B. Finishing of Formed Surfaces

1. Joint marks and fins shall be removed and surfaces left smooth and dense. Tieholes and honeycombing shall be repaired with cement and sand mortar.
2. Exposed concrete surfaces shall be vigorously and thoroughly rubbed with a sand cement mortar the consistency of a thick paint to fill all voids and provide a smooth surface. There shall be no discernible thickness of mortar on the surface.

END OF SECTION



STATE OF HAWAII  
**SPECIAL CONDITIONS**

**Project:** Keokea-Waiohuli Subdivision Phase 1A Grading and Drainage Improvements  
**Location:** Kula and Leialii, Island of Maui  
**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”.

**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



STATE OF HAWAII  
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.



STATE OF HAWAII  
**SPECIAL CONDITIONS**

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

The CONTRACTOR shall complete all work as specified or indicated in the Contract Documents on or before 270 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.

**SC-04 PROCESS THROUGH DHHL**

Any and all submittals, reports, requests, claims and notices under the contract shall be processed through Land Development Division Project Manager, at Hale Kalanianaʻole, 91-5420 Kapolei Parkway, Kapolei, Hawaii 96707.

**SC-05 SURVEYING SERVICES**

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 Registered Land Surveyor. Six (6) copies of the as-built plan shall be submitted to the Construction Manager and Engineer. The as-built plan shall be incidental to the contract. No separate payment shall be made.

**SC-06 ALLOWANCES**

The proposal may contain payment items designated as allowances. 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.



STATE OF HAWAII  
**SPECIAL CONDITIONS**

**SC-07 PERMITS AND FEES**

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

**SC-08 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 Maui Electric Company, Inc. and Maui Department of Water.

**SC-09 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-10 WATER CHARGES AND REQUIREMENTS**

The CONTRACTOR shall be solely responsible for obtaining water to meet any requirements of the contract. Unless otherwise indicated or provided for, any work, costs, charges and fees necessary to obtain water for this contract shall not be paid for separately but shall be considered incidental to the various contract items; no separate or additional payment will be made therefore.

**SC-11 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-12 FINAL INSPECTION**

Throughout the construction period, the work may be subject to periodic inspection by the Department, designated Construction Inspector, the County of Maui and other applicable government agencies. Once work has been satisfactorily completed, the County and/or the Department and Construction Inspector, will make the final inspection 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 DHHL and its Project Manager two (2) weeks prior to said inspection.



STATE OF HAWAII  
**SPECIAL CONDITIONS**

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

**SC-13 GENERAL CONDITIONS**

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

**SC-14 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-15 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>
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.



STATE OF HAWAII  
**SPECIAL CONDITIONS**

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-16 COMPLIANCE WITH 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-17 ENERGY EFFICIENCY**

The Contractor shall comply with the Energy Policy and Conservation Act (P.L. 94-163). Mandatory standards and policies relating to energy efficiency, contained in any applicable State Energy Conservation Plan, shall be utilized.

**SC-18 ARCHAEOLOGICAL SITES**

The CONTRACTOR should be aware that 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 and the State Historic Preservation Division.

**SC-19 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, DHHL Project Manager, Office of Hawaiian Affairs and the Maui - Lanai Islands Burial Council.

DHHL shall 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.

**SC-20 GEOTECHNICAL ENGINEER**



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**SPECIAL CONDITIONS**

The services of a geotechnical engineering firm are not anticipated; however, the CONTRACTOR may engage the services of a geotechnical consultant at its own cost. Any geotechnical costs shall be incidental to the contract. No separate payment shall be made.

**SC-21 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.

**SC-22 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 Engineer 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.
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.



STATE OF HAWAII  
**SPECIAL CONDITIONS**

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 Engineer.
13. Be provided with electrical service and lighting.

At the discretion of the Engineer: 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 Engineer throughout the duration of the Project. Should the Engineer, 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 Engineer. The ownership of the field office and equipment shall remain with the Contractor and shall not be removed until instructed by the Engineer.

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-23 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.

**SC-24 EARTHWORK QUANTITIES**

Prior to any grading operations, the CONTRACTOR shall submit to the Engineer a list of estimated quantities for excavation to complete the drainage grading work. The CONTRACTOR is responsible to dispose of all excavated material offsite. Borrow material may be imported prior to completion of all excavation work; however,



STATE OF HAWAII  
**SPECIAL CONDITIONS**

CONTRACTOR is responsible to ensure that the imported material meets the project specifications and testing results are provided to the Project Manager, then authorized by the Project Manager. CONTRACTOR is responsible to ensure that there is adequate site area to store imported materials. CONTRACTOR is responsible to restore the area used to store imported materials to similar or better condition.

**SC-25 STATE GENERAL EXCISE TAX**

This project is exempt from the State of Hawaii General Excise Tax. The CONTRACTOR's prices shall exclude the General Excise Tax for all work.

**SC-26 FEDERAL LABOR STANDARDS**

The CONTRACTOR shall comply with U.S. Department of Housing and Urban Development (HUD) Federal Labor Standards Provisions (Form HUD- 4010) attached as Exhibit "A".

**SC-27 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.

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-28 PROJECT SIGN**

PROJECT SIGN SPECIFICATIONS

LETTER STYLE



STATE OF HAWAII  
**SPECIAL CONDITIONS**

COPY IS CENTERED AND SET IN ADOBE TYPE FUTURA HEAVY. IF THIS SPECIFIC TYPE IS NOT AVAILABLE, FUTURA DEMI BOLD MAY BE SUBSTITUTED. COPY SHOULD BE SET AND SPACED BY A PROFESSIONAL TYPESETTER AND ENLARGED PHOTOGRAPHICALLY FOR PHOTO STENCIL SCREEN PROCESS.

ART WORK

CONSTANT ELEMENTS OF THE SIGN LAYOUTS -- FRAME, OUTLINE, STRIPE, AND OFFICIAL STATE INFORMATION -- MAY BE DUPLICATED FOLLOWING WORKING DRAWING MEASUREMENTS OR BE REPRODUCED AND ENLARGED PHOTOGRAPHICALLY USING A LAYOUT TEMPLATE IF PROVIDED. THE STATE OF HAWAII” MASTHEAD SHOULD BE REPRODUCED AND ENLARGED AS INDICATED USING THE ARTWORK PROVIDED.

TITLES

THE SPECIFIC MAJOR WORK OF THE PROJECT UNDER CONSTRUCTION IS EMPHASIZED BY USING 3-3/4” TYPE (OR AS SPECIFIED BY DHHL), ALL CAPITALS. SECONDARY INFORMATION SUCH AS LOCATIONS OR BUILDING USES 2-1/4” TYPE, ALL CAPITALS. OTHER RELATED INFORMATION OF LESSER IMPORTANCE USES 2-1/4” (CAPITAL HEIGHT) TYPE IN LOWER CASE LETTERS. ALL LINES OF TYPE SHOULD NOT EXCEED THE WIDTH OF THE 6’— 2” STRIPE.

MATERIALS

PANEL IS 3/4” THICK, “AC” EXTERIOR GRADE FIR PLYWOOD WITH RESIN BONDED SURFACES ON BOTH SIDES.

PAINT AND INKS

SCREEN PAINT INKS ARE MATTE FINISH. PAINTS ARE SATIN FINISH, EXTERIOR GRADE. REFERENCE TO AMERITONE COLOR KEY PAINT IS FOR COLOR WHICH MATCH ONLY.

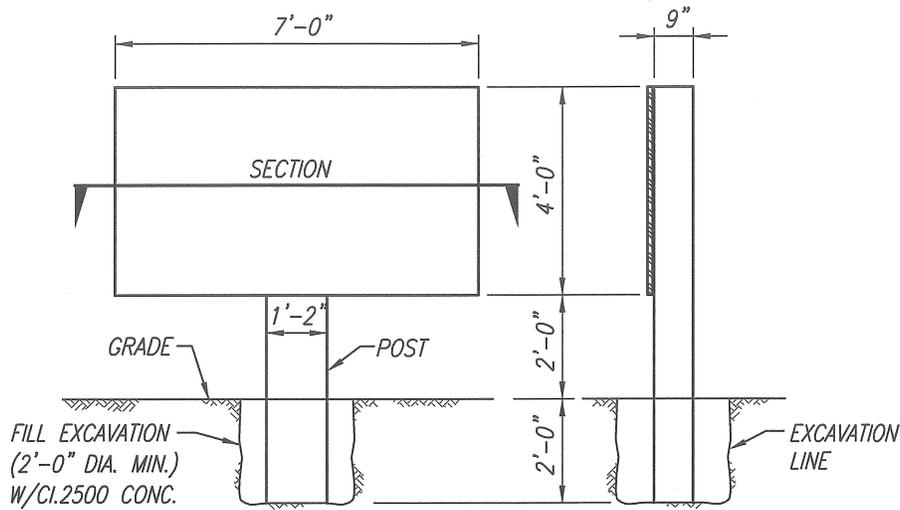
COLOR:

1. 1BL10A BOHEMIAN BLUE
2. 2H16P SOFTLY (WHITE)
3. 2VR2A HOT TANGO (RED)
4. 1M52E TOKAY (GRAY)





# STATE OF HAWAII SPECIAL CONDITIONS

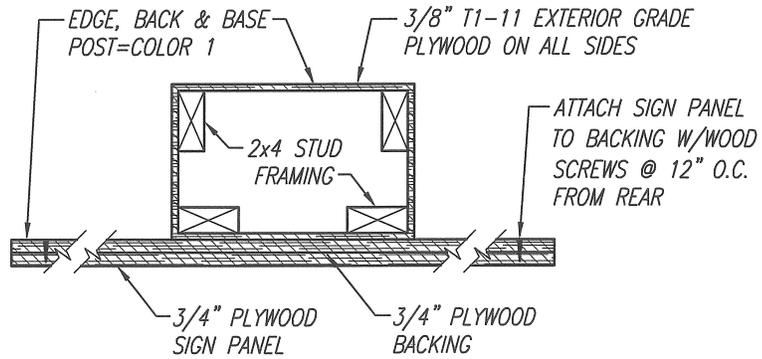


**FRONT**

**SIDE**

## ELEVATIONS

NOT TO SCALE



## SECTION

NOT TO SCALE



STATE OF HAWAII  
**SPECIAL CONDITIONS**

**SC-29      ENDANGERED SPECIES**

The CONTRACTOR shall abide by the Endangered Species Act of 1973. A critical habitat area (CHA) has been established west of the project site for the endangered Blackburn's Sphinx Moth. In addition, correspondence from the U.S. Fish and Wildlife Service suggests that five federally listed species including the endangered Hawaiian hoary bat, Hawaiian goose, Blackburn's sphinx moth, Hawaiian petrel, and the threatened Newell's shearwater are known to transit through the construction site. In the event that the CONTRACTOR encounters any of the species listed above, the following avoidance measures are proposed based on USFWS suggestions:

*Hawaiian hoary bat:*

1. No trees greater than 15 feet tall shall be removed or trimmed during the bat breeding and pupping season of June 1 to September 15.
2. Federal funds shall not be used for the purchase or installation of barbed wire fencing.

*Hawaiian goose:*

1. If a Hawaiian goose appears within 100 feet of ongoing work, all activity shall be temporarily suspended until the bird moves off to a safe distance of its own volition.
2. A biologist shall survey the area around proposed construction areas during the Hawaiian goose breeding season (October to March) prior to the initiation of any work or after any subsequent delay of work of three or more days. If a nest is discovered within a radius of 100 feet of proposed construction activity, or a previously undiscovered nest is found within said radius after work has begun, all work shall cease and the Service will be contacted for further guidance.

*Blackburn's sphinx moth:*

1. A biologist shall survey the areas proposed for vegetation removal during the wettest portion of the year (November through April). If host plants are discovered in the area affected by the activity, host plants will not be cut or removed and the soil within 10 meters (33 feet) of the host plants not be disturbed. Upon soil disturbance, the site will be kept clear of host plants, with particular attention to ensuring that the non-native tree tobacco does not colonize the site.



STATE OF HAWAII  
**SPECIAL CONDITIONS**

*Hawaiian petrel (seabirds) & Newell's shearwater*

1. Any outdoor lighting will utilize systems which employ the lowest possible wattage for the application and be constructed in a manner that fully shields lighting sources and directs lighting completely downwards.

# GENERAL CONDITIONS

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## GENERAL CONDITIONS

1. Coordination of Services by the STATE. The head of the purchasing agency ("HOPA") (which term includes the designee of the HOPA) shall coordinate the services to be provided by the CONTRACTOR in order to complete the performance required in the Contract. The CONTRACTOR shall maintain communications with HOPA at all stages of the CONTRACTOR'S work, and submit to HOPA for resolution any questions which may arise as to the performance of this Contract. "Purchasing agency" as used in these General Conditions means and includes any governmental body which is authorized under chapter 103D, HRS, or its implementing rules and procedures, or by way of delegation, to enter into contracts for the procurement of goods or services or both.
2. Relationship of Parties: Independent Contractor Status and Responsibilities, Including Tax Responsibilities.
  - a. In the performance of services required under this Contract, the CONTRACTOR is an "independent contractor," with the authority and responsibility to control and direct the performance and details of the work and services required under this Contract; however, the STATE shall have a general right to inspect work in progress to determine whether, in the STATE'S opinion, the services are being performed by the CONTRACTOR in compliance with this Contract. Unless otherwise provided by special condition, it is understood that the STATE does not agree to use the CONTRACTOR exclusively, and that the CONTRACTOR is free to contract to provide services to other individuals or entities while under contract with the STATE.
  - b. The CONTRACTOR and the CONTRACTOR'S employees and agents are not by reason of this Contract, agents or employees of the State for any purpose, and the CONTRACTOR and the CONTRACTOR'S employees and agents shall not be entitled to claim or receive from the State any vacation, sick leave, retirement, workers' compensation, unemployment insurance, or other benefits provided to state employees.
  - c. The CONTRACTOR shall be responsible for the accuracy, completeness, and adequacy of the CONTRACTOR'S performance under this Contract. Furthermore, the CONTRACTOR intentionally, voluntarily, and knowingly assumes the sole and entire liability to the CONTRACTOR'S employees and agents, and to any individual not a party to this Contract, for all loss, damage, or injury caused by the CONTRACTOR, or the CONTRACTOR'S employees or agents in the course of their employment.
  - d. The CONTRACTOR shall be responsible for payment of all applicable federal, state, and county taxes and fees which may become due and owing by the CONTRACTOR by reason of this Contract, including but not limited to (i) income taxes, (ii) employment related fees, assessments, and taxes, and (iii) general excise taxes. The CONTRACTOR also is responsible for obtaining all licenses, permits, and certificates that may be required in order to perform this Contract.
  - e. The CONTRACTOR shall obtain a general excise tax license from the Department of Taxation, State of Hawaii, in accordance with section 237-9, HRS, and shall comply with all requirements thereof. The CONTRACTOR shall obtain a tax clearance certificate from the Director of Taxation, State of Hawaii, and the Internal Revenue Service, U.S. Department of the Treasury, showing that all delinquent taxes, if any, levied or accrued under state law and the Internal Revenue Code of 1986, as amended, against the CONTRACTOR have been paid and submit the same to the STATE prior to commencing any performance under this Contract. The CONTRACTOR shall also be solely responsible for meeting all requirements necessary to obtain the tax clearance certificate required for final payment under sections 103-53 and 103D-328, HRS, and paragraph 17 of these General Conditions.
  - f. The CONTRACTOR is responsible for securing all employee-related insurance coverage for the CONTRACTOR and the CONTRACTOR'S employees and agents that is or may be required by law, and for payment of all premiums, costs, and other liabilities associated with securing the insurance coverage.

- g. The CONTRACTOR shall obtain a certificate of compliance issued by the Department of Labor and Industrial Relations, State of Hawaii, in accordance with section 103D-310, HRS, and section 3-122-112, HAR, that is current within six months of the date of issuance.
- h. The CONTRACTOR shall obtain a certificate of good standing issued by the Department of Commerce and Consumer Affairs, State of Hawaii, in accordance with section 103D-310, HRS, and section 3-122-112, HAR, that is current within six months of the date of issuance.
- i. In lieu of the above certificates from the Department of Taxation, Labor and Industrial Relations, and Commerce and Consumer Affairs, the CONTRACTOR may submit proof of compliance through the State Procurement Office's designated certification process.

3. Personnel Requirements.

- a. The CONTRACTOR shall secure, at the CONTRACTOR'S own expense, all personnel required to perform this Contract.
- b. The CONTRACTOR shall ensure that the CONTRACTOR'S employees or agents are experienced and fully qualified to engage in the activities and perform the services required under this Contract, and that all applicable licensing and operating requirements imposed or required under federal, state, or county law, and all applicable accreditation and other standards of quality generally accepted in the field of the activities of such employees and agents are complied with and satisfied.

4. Nondiscrimination. No person performing work under this Contract, including any subcontractor, employee, or agent of the CONTRACTOR, shall engage in any discrimination that is prohibited by any applicable federal, state, or county law.

5. Conflicts of Interest. The CONTRACTOR represents that neither the CONTRACTOR, nor any employee or agent of the CONTRACTOR, presently has any interest, and promises that no such interest, direct or indirect, shall be acquired, that would or might conflict in any manner or degree with the CONTRACTOR'S performance under this Contract.

6. Subcontracts and Assignments. The CONTRACTOR shall not assign or subcontract any of the CONTRACTOR'S duties, obligations, or interests under this Contract and no such assignment or subcontract shall be effective unless (i) the CONTRACTOR obtains the prior written consent of the STATE, and (ii) the CONTRACTOR'S assignee or subcontractor submits to the STATE a tax clearance certificate from the Director of Taxation, State of Hawaii, and the Internal Revenue Service, U.S. Department of Treasury, showing that all delinquent taxes, if any, levied or accrued under state law and the Internal Revenue Code of 1986, as amended, against the CONTRACTOR'S assignee or subcontractor have been paid. Additionally, no assignment by the CONTRACTOR of the CONTRACTOR'S right to compensation under this Contract shall be effective unless and until the assignment is approved by the Comptroller of the State of Hawaii, as provided in section 40-58, HRS.

a. Recognition of a successor in interest. When in the best interest of the State, a successor in interest may be recognized in an assignment contract in which the STATE, the CONTRACTOR and the assignee or transferee (hereinafter referred to as the "Assignee") agree that:

- (1) The Assignee assumes all of the CONTRACTOR'S obligations;
- (2) The CONTRACTOR remains liable for all obligations under this Contract but waives all rights under this Contract as against the STATE; and
- (3) The CONTRACTOR shall continue to furnish, and the Assignee shall also furnish, all required bonds.

b. Change of name. When the CONTRACTOR asks to change the name in which it holds this Contract with the STATE, the procurement officer of the purchasing agency (hereinafter referred to as the "Agency procurement officer") shall, upon receipt of a document acceptable or satisfactory to the

Agency procurement officer indicating such change of name (for example, an amendment to the CONTRACTOR'S articles of incorporation), enter into an amendment to this Contract with the CONTRACTOR to effect such a change of name. The amendment to this Contract changing the CONTRACTOR'S name shall specifically indicate that no other terms and conditions of this Contract are thereby changed.

- c. Reports. All assignment contracts and amendments to this Contract effecting changes of the CONTRACTOR'S name or novations hereunder shall be reported to the chief procurement officer (CPO) as defined in section 103D-203(a), HRS, within thirty days of the date that the assignment contract or amendment becomes effective.
  - d. Actions affecting more than one purchasing agency. Notwithstanding the provisions of subparagraphs 6a through 6c herein, when the CONTRACTOR holds contracts with more than one purchasing agency of the State, the assignment contracts and the novation and change of name amendments herein authorized shall be processed only through the CPO's office.
7. Indemnification and Defense. The CONTRACTOR shall defend, indemnify, and hold harmless the State of Hawaii, the contracting agency, and their officers, employees, and agents from and against all liability, loss, damage, cost, and expense, including all attorneys' fees, and all claims, suits, and demands therefore, arising out of or resulting from the acts or omissions of the CONTRACTOR or the CONTRACTOR'S employees, officers, agents, or subcontractors under this Contract. The provisions of this paragraph shall remain in full force and effect notwithstanding the expiration or early termination of this Contract.
  8. Cost of Litigation. In case the STATE shall, without any fault on its part, be made a party to any litigation commenced by or against the CONTRACTOR in connection with this Contract, the CONTRACTOR shall pay all costs and expenses incurred by or imposed on the STATE, including attorneys' fees.
  9. Liquidated Damages. When the CONTRACTOR is given notice of delay or nonperformance as specified in paragraph 13 (Termination for Default) and fails to cure in the time specified, it is agreed the CONTRACTOR shall pay to the STATE the amount, if any, set forth in this Contract per calendar day from the date set for cure until either (i) the STATE reasonably obtains similar goods or services, or both, if the CONTRACTOR is terminated for default, or (ii) until the CONTRACTOR provides the goods or services, or both, if the CONTRACTOR is not terminated for default. To the extent that the CONTRACTOR'S delay or nonperformance is excused under paragraph 13d (Excuse for Nonperformance or Delay Performance), liquidated damages shall not be assessable against the CONTRACTOR. The CONTRACTOR remains liable for damages caused other than by delay.
  10. STATE'S Right of Offset. The STATE may offset against any monies or other obligations the STATE owes to the CONTRACTOR under this Contract, any amounts owed to the State of Hawaii by the CONTRACTOR under this Contract or any other contracts, or pursuant to any law or other obligation owed to the State of Hawaii by the CONTRACTOR, including, without limitation, the payment of any taxes or levies of any kind or nature. The STATE will notify the CONTRACTOR in writing of any offset and the nature of such offset. For purposes of this paragraph, amounts owed to the State of Hawaii shall not include debts or obligations which have been liquidated, agreed to by the CONTRACTOR, and are covered by an installment payment or other settlement plan approved by the State of Hawaii, provided, however, that the CONTRACTOR shall be entitled to such exclusion only to the extent that the CONTRACTOR is current with, and not delinquent on, any payments or obligations owed to the State of Hawaii under such payment or other settlement plan.
  11. Disputes. Disputes shall be resolved in accordance with section 103D-703, HRS, and chapter 3-126, Hawaii Administrative Rules ("HAR"), as the same may be amended from time to time.
  12. Suspension of Contract. The STATE reserves the right at any time and for any reason to suspend this Contract for any reasonable period, upon written notice to the CONTRACTOR in accordance with the provisions herein.
    - a. Order to stop performance. The Agency procurement officer may, by written order to the CONTRACTOR, at any time, and without notice to any surety, require the CONTRACTOR to stop all or any part of the performance called for by this Contract. This order shall be for a specified

period not exceeding sixty (60) days after the order is delivered to the CONTRACTOR, unless the parties agree to any further period. Any such order shall be identified specifically as a stop performance order issued pursuant to this section. Stop performance orders shall include, as appropriate: (1) A clear description of the work to be suspended; (2) Instructions as to the issuance of further orders by the CONTRACTOR for material or services; (3) Guidance as to action to be taken on subcontracts; and (4) Other instructions and suggestions to the CONTRACTOR for minimizing costs. Upon receipt of such an order, the CONTRACTOR shall forthwith comply with its terms and suspend all performance under this Contract at the time stated, provided, however, the CONTRACTOR shall take all reasonable steps to minimize the occurrence of costs allocable to the performance covered by the order during the period of performance stoppage. Before the stop performance order expires, or within any further period to which the parties shall have agreed, the Agency procurement officer shall either:

- (1) Cancel the stop performance order; or
- (2) Terminate the performance covered by such order as provided in the termination for default provision or the termination for convenience provision of this Contract.

b. Cancellation or expiration of the order. If a stop performance order issued under this section is cancelled at any time during the period specified in the order, or if the period of the order or any extension thereof expires, the CONTRACTOR shall have the right to resume performance. An appropriate adjustment shall be made in the delivery schedule or contract price, or both, and the Contract shall be modified in writing accordingly, if:

- (1) The stop performance order results in an increase in the time required for, or in the CONTRACTOR'S cost properly allocable to, the performance of any part of this Contract; and
- (2) The CONTRACTOR asserts a claim for such an adjustment within thirty (30) days after the end of the period of performance stoppage; provided that, if the Agency procurement officer decides that the facts justify such action, any such claim asserted may be received and acted upon at any time prior to final payment under this Contract.

c. Termination of stopped performance. If a stop performance order is not cancelled and the performance covered by such order is terminated for default or convenience, the reasonable costs resulting from the stop performance order shall be allowable by adjustment or otherwise.

d. Adjustment of price. Any adjustment in contract price made pursuant to this paragraph shall be determined in accordance with the price adjustment provision of this Contract.

### 13. Termination for Default.

a. Default. If the CONTRACTOR refuses or fails to perform any of the provisions of this Contract with such diligence as will ensure its completion within the time specified in this Contract, or any extension thereof, otherwise fails to timely satisfy the Contract provisions, or commits any other substantial breach of this Contract, the Agency procurement officer may notify the CONTRACTOR in writing of the delay or non-performance and if not cured in ten (10) days or any longer time specified in writing by the Agency procurement officer, such officer may terminate the CONTRACTOR'S right to proceed with the Contract or such part of the Contract as to which there has been delay or a failure to properly perform. In the event of termination in whole or in part, the Agency procurement officer may procure similar goods or services in a manner and upon the terms deemed appropriate by the Agency procurement officer. The CONTRACTOR shall continue performance of the Contract to the extent it is not terminated and shall be liable for excess costs incurred in procuring similar goods or services.

b. CONTRACTOR'S duties. Notwithstanding termination of the Contract and subject to any directions from the Agency procurement officer, the CONTRACTOR shall take timely, reasonable, and

necessary action to protect and preserve property in the possession of the CONTRACTOR in which the STATE has an interest.

- c. Compensation. Payment for completed goods and services delivered and accepted by the STATE shall be at the price set forth in the Contract. Payment for the protection and preservation of property shall be in an amount agreed upon by the CONTRACTOR and the Agency procurement officer. If the parties fail to agree, the Agency procurement officer shall set an amount subject to the CONTRACTOR'S rights under chapter 3-126, HAR. The STATE may withhold from amounts due the CONTRACTOR such sums as the Agency procurement officer deems to be necessary to protect the STATE against loss because of outstanding liens or claims and to reimburse the STATE for the excess costs expected to be incurred by the STATE in procuring similar goods and services.
- d. Excuse for nonperformance or delayed performance. The CONTRACTOR shall not be in default by reason of any failure in performance of this Contract in accordance with its terms, including any failure by the CONTRACTOR to make progress in the prosecution of the performance hereunder which endangers such performance, if the CONTRACTOR has notified the Agency procurement officer within fifteen (15) days after the cause of the delay and the failure arises out of causes such as: acts of God; acts of a public enemy; acts of the State and any other governmental body in its sovereign or contractual capacity; fires; floods; epidemics; quarantine restrictions; strikes or other labor disputes; freight embargoes; or unusually severe weather. If the failure to perform is caused by the failure of a subcontractor to perform or to make progress, and if such failure arises out of causes similar to those set forth above, the CONTRACTOR shall not be deemed to be in default, unless the goods and services to be furnished by the subcontractor were reasonably obtainable from other sources in sufficient time to permit the CONTRACTOR to meet the requirements of the Contract. Upon request of the CONTRACTOR, the Agency procurement officer shall ascertain the facts and extent of such failure, and, if such officer determines that any failure to perform was occasioned by any one or more of the excusable causes, and that, but for the excusable cause, the CONTRACTOR'S progress and performance would have met the terms of the Contract, the delivery schedule shall be revised accordingly, subject to the rights of the STATE under this Contract. As used in this paragraph, the term "subcontractor" means subcontractor at any tier.
- e. Erroneous termination for default. If, after notice of termination of the CONTRACTOR'S right to proceed under this paragraph, it is determined for any reason that the CONTRACTOR was not in default under this paragraph, or that the delay was excusable under the provisions of subparagraph 13d, "Excuse for nonperformance or delayed performance," the rights and obligations of the parties shall be the same as if the notice of termination had been issued pursuant to paragraph 14.
- f. Additional rights and remedies. The rights and remedies provided in this paragraph are in addition to any other rights and remedies provided by law or under this Contract.

#### 14. Termination for Convenience.

- a. Termination. The Agency procurement officer may, when the interests of the STATE so require, terminate this Contract in whole or in part, for the convenience of the STATE. The Agency procurement officer shall give written notice of the termination to the CONTRACTOR specifying the part of the Contract terminated and when termination becomes effective.
- b. CONTRACTOR'S obligations. The CONTRACTOR shall incur no further obligations in connection with the terminated performance and on the date(s) set in the notice of termination the CONTRACTOR will stop performance to the extent specified. The CONTRACTOR shall also terminate outstanding orders and subcontracts as they relate to the terminated performance. The CONTRACTOR shall settle the liabilities and claims arising out of the termination of subcontracts and orders connected with the terminated performance subject to the STATE'S approval. The Agency procurement officer may direct the CONTRACTOR to assign the CONTRACTOR'S right, title, and interest under terminated orders or subcontracts to the STATE. The CONTRACTOR must still complete the performance not terminated by the notice of termination and may incur obligations as necessary to do so.

- c. Right to goods and work product. The Agency procurement officer may require the CONTRACTOR to transfer title and deliver to the STATE in the manner and to the extent directed by the Agency procurement officer:

- (1) Any completed goods or work product; and
- (2) The partially completed goods and materials, parts, tools, dies, jigs, fixtures, plans, drawings, information, and contract rights (hereinafter called "manufacturing material") as the CONTRACTOR has specifically produced or specially acquired for the performance of the terminated part of this Contract.

The CONTRACTOR shall, upon direction of the Agency procurement officer, protect and preserve property in the possession of the CONTRACTOR in which the STATE has an interest. If the Agency procurement officer does not exercise this right, the CONTRACTOR shall use best efforts to sell such goods and manufacturing materials. Use of this paragraph in no way implies that the STATE has breached the Contract by exercise of the termination for convenience provision.

- d. Compensation.

- (1) The CONTRACTOR shall submit a termination claim specifying the amounts due because of the termination for convenience together with the cost or pricing data, submitted to the extent required by chapter 3-122, HAR, bearing on such claim. If the CONTRACTOR fails to file a termination claim within one year from the effective date of termination, the Agency procurement officer may pay the CONTRACTOR, if at all, an amount set in accordance with subparagraph 14d(3) below.
- (2) The Agency procurement officer and the CONTRACTOR may agree to a settlement provided the CONTRACTOR has filed a termination claim supported by cost or pricing data submitted as required and that the settlement does not exceed the total Contract price plus settlement costs reduced by payments previously made by the STATE, the proceeds of any sales of goods and manufacturing materials under subparagraph 14c, and the Contract price of the performance not terminated.
- (3) Absent complete agreement under subparagraph 14d(2) the Agency procurement officer shall pay the CONTRACTOR the following amounts, provided payments agreed to under subparagraph 14d(2) shall not duplicate payments under this subparagraph for the following:
  - (A) Contract prices for goods or services accepted under the Contract;
  - (B) Costs incurred in preparing to perform and performing the terminated portion of the performance plus a fair and reasonable profit on such portion of the performance, such profit shall not include anticipatory profit or consequential damages, less amounts paid or to be paid for accepted goods or services; provided, however, that if it appears that the CONTRACTOR would have sustained a loss if the entire Contract would have been completed, no profit shall be allowed or included and the amount of compensation shall be reduced to reflect the anticipated rate of loss;
  - (C) Costs of settling and paying claims arising out of the termination of subcontracts or orders pursuant to subparagraph 14b. These costs must not include costs paid in accordance with subparagraph 14d(3)(B);
  - (D) The reasonable settlement costs of the CONTRACTOR, including accounting, legal, clerical, and other expenses reasonably necessary for the preparation of settlement claims and supporting data with respect to the terminated portion of the Contract and for the termination of subcontracts thereunder, together with reasonable storage, transportation, and other costs incurred in connection with the protection or disposition of property allocable to the terminated portion of this Contract. The total sum to be paid the CONTRACTOR under this subparagraph shall not exceed the

total Contract price plus the reasonable settlement costs of the CONTRACTOR reduced by the amount of payments otherwise made, the proceeds of any sales of supplies and manufacturing materials under subparagraph 14d(2), and the contract price of performance not terminated.

- (4) Costs claimed, agreed to, or established under subparagraphs 14d(2) and 14d(3) shall be in accordance with Chapter 3-123 (Cost Principles) of the Procurement Rules.

15. Claims Based on the Agency Procurement Officer's Actions or Omissions.

a. Changes in scope. If any action or omission on the part of the Agency procurement officer (which term includes the designee of such officer for purposes of this paragraph 15) requiring performance changes within the scope of the Contract constitutes the basis for a claim by the CONTRACTOR for additional compensation, damages, or an extension of time for completion, the CONTRACTOR shall continue with performance of the Contract in compliance with the directions or orders of such officials, but by so doing, the CONTRACTOR shall not be deemed to have prejudiced any claim for additional compensation, damages, or an extension of time for completion; provided:

- (1) Written notice required. The CONTRACTOR shall give written notice to the Agency procurement officer:

- (A) Prior to the commencement of the performance involved, if at that time the CONTRACTOR knows of the occurrence of such action or omission;

- (B) Within thirty (30) days after the CONTRACTOR knows of the occurrence of such action or omission, if the CONTRACTOR did not have such knowledge prior to the commencement of the performance; or

- (C) Within such further time as may be allowed by the Agency procurement officer in writing.

- (2) Notice content. This notice shall state that the CONTRACTOR regards the act or omission as a reason which may entitle the CONTRACTOR to additional compensation, damages, or an extension of time. The Agency procurement officer, upon receipt of such notice, may rescind such action, remedy such omission, or take such other steps as may be deemed advisable in the discretion of the Agency procurement officer;

- (3) Basis must be explained. The notice required by subparagraph 15a(1) describes as clearly as practicable at the time the reasons why the CONTRACTOR believes that additional compensation, damages, or an extension of time may be remedies to which the CONTRACTOR is entitled; and

- (4) Claim must be justified. The CONTRACTOR must maintain and, upon request, make available to the Agency procurement officer within a reasonable time, detailed records to the extent practicable, and other documentation and evidence satisfactory to the STATE, justifying the claimed additional costs or an extension of time in connection with such changes.

b. CONTRACTOR not excused. Nothing herein contained, however, shall excuse the CONTRACTOR from compliance with any rules or laws precluding any state officers and CONTRACTOR from acting in collusion or bad faith in issuing or performing change orders which are clearly not within the scope of the Contract.

c. Price adjustment. Any adjustment in the price made pursuant to this paragraph shall be determined in accordance with the price adjustment provision of this Contract.

16. Costs and Expenses. Any reimbursement due the CONTRACTOR for per diem and transportation expenses under this Contract shall be subject to chapter 3-123 (Cost Principles), HAR, and the following guidelines:

- a. Reimbursement for air transportation shall be for actual cost or coach class air fare, whichever is less.
- b. Reimbursement for ground transportation costs shall not exceed the actual cost of renting an intermediate-sized vehicle.
- c. Unless prior written approval of the HOPA is obtained, reimbursement for subsistence allowance (i.e., hotel and meals, etc.) shall not exceed the applicable daily authorized rates for inter-island or out-of-state travel that are set forth in the current Governor's Executive Order authorizing adjustments in salaries and benefits for state officers and employees in the executive branch who are excluded from collective bargaining coverage.

17. Payment Procedures; Final Payment; Tax Clearance.

- a. Original invoices required. All payments under this Contract shall be made only upon submission by the CONTRACTOR of original invoices specifying the amount due and certifying that services requested under the Contract have been performed by the CONTRACTOR according to the Contract.
- b. Subject to available funds. Such payments are subject to availability of funds and allotment by the Director of Finance in accordance with chapter 37, HRS. Further, all payments shall be made in accordance with and subject to chapter 40, HRS.
- c. Prompt payment.
  - (1) Any money, other than retainage, paid to the CONTRACTOR shall be disbursed to subcontractors within ten (10) days after receipt of the money in accordance with the terms of the subcontract; provided that the subcontractor has met all the terms and conditions of the subcontract and there are no bona fide disputes; and
  - (2) Upon final payment to the CONTRACTOR, full payment to the subcontractor, including retainage, shall be made within ten (10) days after receipt of the money; provided that there are no bona fide disputes over the subcontractor's performance under the subcontract.
- d. Final payment. Final payment under this Contract shall be subject to sections 103-53 and 103D-328, HRS, which require a tax clearance from the Director of Taxation, State of Hawaii, and the Internal Revenue Service, U.S. Department of Treasury, showing that all delinquent taxes, if any, levied or accrued under state law and the Internal Revenue Code of 1986, as amended, against the CONTRACTOR have been paid. Further, in accordance with section 3-122-112, HAR, CONTRACTOR shall provide a certificate affirming that the CONTRACTOR has remained in compliance with all applicable laws as required by this section.

18. Federal Funds. If this Contract is payable in whole or in part from federal funds, CONTRACTOR agrees that, as to the portion of the compensation under this Contract to be payable from federal funds, the CONTRACTOR shall be paid only from such funds received from the federal government, and shall not be paid from any other funds. Failure of the STATE to receive anticipated federal funds shall not be considered a breach by the STATE or an excuse for nonperformance by the CONTRACTOR.

19. Modifications of Contract.

- a. In writing. Any modification, alteration, amendment, change, or extension of any term, provision, or condition of this Contract permitted by this Contract shall be made by written amendment to this Contract, signed by the CONTRACTOR and the STATE, provided that change orders shall be made in accordance with paragraph 20 herein.
- b. No oral modification. No oral modification, alteration, amendment, change, or extension of any term, provision, or condition of this Contract shall be permitted.

- c. Agency procurement officer. By written order, at any time, and without notice to any surety, the Agency procurement officer may unilaterally order of the CONTRACTOR:
    - (A) Changes in the work within the scope of the Contract; and
    - (B) Changes in the time of performance of the Contract that do not alter the scope of the Contract work.
  - d. Adjustments of price or time for performance. If any modification increases or decreases the CONTRACTOR'S cost of, or the time required for, performance of any part of the work under this Contract, an adjustment shall be made and this Contract modified in writing accordingly. Any adjustment in contract price made pursuant to this clause shall be determined, where applicable, in accordance with the price adjustment clause of this Contract or as negotiated.
  - e. Claim barred after final payment. No claim by the CONTRACTOR for an adjustment hereunder shall be allowed if written modification of the Contract is not made prior to final payment under this Contract.
  - f. Claims not barred. In the absence of a written contract modification, nothing in this clause shall be deemed to restrict the CONTRACTOR'S right to pursue a claim under this Contract or for a breach of contract.
  - g. Head of the purchasing agency approval. If this is a professional services contract awarded pursuant to section 103D-303 or 103D-304, HRS, any modification, alteration, amendment, change, or extension of any term, provision, or condition of this Contract which increases the amount payable to the CONTRACTOR by at least \$25,000.00 and ten per cent (10%) or more of the initial contract price, must receive the prior approval of the head of the purchasing agency.
  - h. Tax clearance. The STATE may, at its discretion, require the CONTRACTOR to submit to the STATE, prior to the STATE'S approval of any modification, alteration, amendment, change, or extension of any term, provision, or condition of this Contract, a tax clearance from the Director of Taxation, State of Hawaii, and the Internal Revenue Service, U.S. Department of Treasury, showing that all delinquent taxes, if any, levied or accrued under state law and the Internal Revenue Code of 1986, as amended, against the CONTRACTOR have been paid.
  - i. Sole source contracts. Amendments to sole source contracts that would change the original scope of the Contract may only be made with the approval of the CPO. Annual renewal of a sole source contract for services should not be submitted as an amendment.
20. Change Order. The Agency procurement officer may, by a written order signed only by the STATE, at any time, and without notice to any surety, and subject to all appropriate adjustments, make changes within the general scope of this Contract in any one or more of the following:
- (1) Drawings, designs, or specifications, if the goods or services to be furnished are to be specially provided to the STATE in accordance therewith;
  - (2) Method of delivery; or
  - (3) Place of delivery.
- a. Adjustments of price or time for performance. If any change order increases or decreases the CONTRACTOR'S cost of, or the time required for, performance of any part of the work under this Contract, whether or not changed by the order, an adjustment shall be made and the Contract modified in writing accordingly. Any adjustment in the Contract price made pursuant to this provision shall be determined in accordance with the price adjustment provision of this Contract. Failure of the parties to agree to an adjustment shall not excuse the CONTRACTOR from proceeding with the Contract as changed, provided that the Agency procurement officer promptly and duly makes the provisional adjustments in payment or time for performance as may be reasonable. By

proceeding with the work, the CONTRACTOR shall not be deemed to have prejudiced any claim for additional compensation, or any extension of time for completion.

- b. Time period for claim. Within ten (10) days after receipt of a written change order under subparagraph 20a, unless the period is extended by the Agency procurement officer in writing, the CONTRACTOR shall respond with a claim for an adjustment. The requirement for a timely written response by CONTRACTOR cannot be waived and shall be a condition precedent to the assertion of a claim.
- c. Claim barred after final payment. No claim by the CONTRACTOR for an adjustment hereunder shall be allowed if a written response is not given prior to final payment under this Contract.
- d. Other claims not barred. In the absence of a change order, nothing in this paragraph 20 shall be deemed to restrict the CONTRACTOR'S right to pursue a claim under the Contract or for breach of contract.

21. Price Adjustment.

- a. Price adjustment. Any adjustment in the contract price pursuant to a provision in this Contract shall be made in one or more of the following ways:
  - (1) By agreement on a fixed price adjustment before commencement of the pertinent performance or as soon thereafter as practicable;
  - (2) By unit prices specified in the Contract or subsequently agreed upon;
  - (3) By the costs attributable to the event or situation covered by the provision, plus appropriate profit or fee, all as specified in the Contract or subsequently agreed upon;
  - (4) In such other manner as the parties may mutually agree; or
  - (5) In the absence of agreement between the parties, by a unilateral determination by the Agency procurement officer of the costs attributable to the event or situation covered by the provision, plus appropriate profit or fee, all as computed by the Agency procurement officer in accordance with generally accepted accounting principles and applicable sections of chapters 3-123 and 3-126, HAR.
- b. Submission of cost or pricing data. The CONTRACTOR shall provide cost or pricing data for any price adjustments subject to the provisions of chapter 3-122, HAR.

22. Variation in Quantity for Definite Quantity Contracts. Upon the agreement of the STATE and the CONTRACTOR, the quantity of goods or services, or both, if a definite quantity is specified in this Contract, may be increased by a maximum of ten per cent (10%); provided the unit prices will remain the same except for any price adjustments otherwise applicable; and the Agency procurement officer makes a written determination that such an increase will either be more economical than awarding another contract or that it would not be practical to award another contract.

23. Changes in Cost-Reimbursement Contract. If this Contract is a cost-reimbursement contract, the following provisions shall apply:

- a. The Agency procurement officer may at any time by written order, and without notice to the sureties, if any, make changes within the general scope of the Contract in any one or more of the following:
  - (1) Description of performance (Attachment 1);
  - (2) Time of performance (i.e., hours of the day, days of the week, etc.);
  - (3) Place of performance of services;

- (4) Drawings, designs, or specifications when the supplies to be furnished are to be specially manufactured for the STATE in accordance with the drawings, designs, or specifications;
  - (5) Method of shipment or packing of supplies; or
  - (6) Place of delivery.
- b. If any change causes an increase or decrease in the estimated cost of, or the time required for performance of, any part of the performance under this Contract, whether or not changed by the order, or otherwise affects any other terms and conditions of this Contract, the Agency procurement officer shall make an equitable adjustment in the (1) estimated cost, delivery or completion schedule, or both; (2) amount of any fixed fee; and (3) other affected terms and shall modify the Contract accordingly.
  - c. The CONTRACTOR must assert the CONTRACTOR'S rights to an adjustment under this provision within thirty (30) days from the day of receipt of the written order. However, if the Agency procurement officer decides that the facts justify it, the Agency procurement officer may receive and act upon a proposal submitted before final payment under the Contract.
  - d. Failure to agree to any adjustment shall be a dispute under paragraph 11 of this Contract. However, nothing in this provision shall excuse the CONTRACTOR from proceeding with the Contract as changed.
  - e. Notwithstanding the terms and conditions of subparagraphs 23a and 23b, the estimated cost of this Contract and, if this Contract is incrementally funded, the funds allotted for the performance of this Contract, shall not be increased or considered to be increased except by specific written modification of the Contract indicating the new contract estimated cost and, if this contract is incrementally funded, the new amount allotted to the contract.
24. Confidentiality of Material.
- a. All material given to or made available to the CONTRACTOR by virtue of this Contract, which is identified as proprietary or confidential information, will be safeguarded by the CONTRACTOR and shall not be disclosed to any individual or organization without the prior written approval of the STATE.
  - b. All information, data, or other material provided by the CONTRACTOR to the STATE shall be subject to the Uniform Information Practices Act, chapter 92F, HRS.
25. Publicity. The CONTRACTOR shall not refer to the STATE, or any office, agency, or officer thereof, or any state employee, including the HOPA, the CPO, the Agency procurement officer, or to the services or goods, or both, provided under this Contract, in any of the CONTRACTOR'S brochures, advertisements, or other publicity of the CONTRACTOR. All media contacts with the CONTRACTOR about the subject matter of this Contract shall be referred to the Agency procurement officer.
26. Ownership Rights and Copyright. The STATE shall have complete ownership of all material, both finished and unfinished, which is developed, prepared, assembled, or conceived by the CONTRACTOR pursuant to this Contract, and all such material shall be considered "works made for hire." All such material shall be delivered to the STATE upon expiration or termination of this Contract. The STATE, in its sole discretion, shall have the exclusive right to copyright any product, concept, or material developed, prepared, assembled, or conceived by the CONTRACTOR pursuant to this Contract.
27. Liens and Warranties. Goods provided under this Contract shall be provided free of all liens and provided together with all applicable warranties, or with the warranties described in the Contract documents, whichever are greater.

28. Audit of Books and Records of the CONTRACTOR. The STATE may, at reasonable times and places, audit the books and records of the CONTRACTOR, prospective contractor, subcontractor, or prospective subcontractor which are related to:
- a. The cost or pricing data, and
  - b. A state contract, including subcontracts, other than a firm fixed-price contract.

29. Cost or Pricing Data. Cost or pricing data must be submitted to the Agency procurement officer and timely certified as accurate for contracts over \$100,000 unless the contract is for a multiple-term or as otherwise specified by the Agency procurement officer. Unless otherwise required by the Agency procurement officer, cost or pricing data submission is not required for contracts awarded pursuant to competitive sealed bid procedures.

If certified cost or pricing data are subsequently found to have been inaccurate, incomplete, or noncurrent as of the date stated in the certificate, the STATE is entitled to an adjustment of the contract price, including profit or fee, to exclude any significant sum by which the price, including profit or fee, was increased because of the defective data. It is presumed that overstated cost or pricing data increased the contract price in the amount of the defect plus related overhead and profit or fee. Therefore, unless there is a clear indication that the defective data was not used or relied upon, the price will be reduced in such amount.

30. Audit of Cost or Pricing Data. When cost or pricing principles are applicable, the STATE may require an audit of cost or pricing data.

31. Records Retention.

- (1) Upon any termination of this Contract or as otherwise required by applicable law, CONTRACTOR shall, pursuant to chapter 487R, HRS, destroy all copies (paper or electronic form) of personal information received from the STATE.
- (2) The CONTRACTOR and any subcontractors shall maintain the files, books, and records that relate to the Contract, including any personal information created or received by the CONTRACTOR on behalf of the STATE, and any cost or pricing data, for at least three (3) years after the date of final payment under the Contract. The personal information shall continue to be confidential and shall only be disclosed as permitted or required by law. After the three (3) year, or longer retention period as required by law has ended, the files, books, and records that contain personal information shall be destroyed pursuant to chapter 487R, HRS or returned to the STATE at the request of the STATE.

32. Antitrust Claims. The STATE and the CONTRACTOR recognize that in actual economic practice, overcharges resulting from antitrust violations are in fact usually borne by the purchaser. Therefore, the CONTRACTOR hereby assigns to STATE any and all claims for overcharges as to goods and materials purchased in connection with this Contract, except as to overcharges which result from violations commencing after the price is established under this Contract and which are not passed on to the STATE under an escalation clause.

33. Patented Articles. The CONTRACTOR shall defend, indemnify, and hold harmless the STATE, and its officers, employees, and agents from and against all liability, loss, damage, cost, and expense, including all attorneys fees, and all claims, suits, and demands arising out of or resulting from any claims, demands, or actions by the patent holder for infringement or other improper or unauthorized use of any patented article, patented process, or patented appliance in connection with this Contract. The CONTRACTOR shall be solely responsible for correcting or curing to the satisfaction of the STATE any such infringement or improper or unauthorized use, including, without limitation: (a) furnishing at no cost to the STATE a substitute article, process, or appliance acceptable to the STATE, (b) paying royalties or other required payments to the patent holder, (c) obtaining proper authorizations or releases from the patent holder, and (d) furnishing such security to or making such arrangements with the patent holder as may be necessary to correct or cure any such infringement or improper or unauthorized use.

34. Governing Law. The validity of this Contract and any of its terms or provisions, as well as the rights and duties of the parties to this Contract, shall be governed by the laws of the State of Hawaii. Any action at law or in equity to enforce or interpret the provisions of this Contract shall be brought in a state court of competent jurisdiction in Honolulu, Hawaii.
35. Compliance with Laws. The CONTRACTOR shall comply with all federal, state, and county laws, ordinances, codes, rules, and regulations, as the same may be amended from time to time, that in any way affect the CONTRACTOR'S performance of this Contract.
36. Conflict Between General Conditions and Procurement Rules. In the event of a conflict between the General Conditions and the procurement rules, the procurement rules in effect on the date this Contract became effective shall control and are hereby incorporated by reference.
37. Entire Contract. This Contract sets forth all of the agreements, conditions, understandings, promises, warranties, and representations between the STATE and the CONTRACTOR relative to this Contract. This Contract supersedes all prior agreements, conditions, understandings, promises, warranties, and representations, which shall have no further force or effect. There are no agreements, conditions, understandings, promises, warranties, or representations, oral or written, express or implied, between the STATE and the CONTRACTOR other than as set forth or as referred to herein.
38. Severability. In the event that any provision of this Contract is declared invalid or unenforceable by a court, such invalidity or unenforceability shall not affect the validity or enforceability of the remaining terms of this Contract.
39. Waiver. The failure of the STATE to insist upon the strict compliance with any term, provision, or condition of this Contract shall not constitute or be deemed to constitute a waiver or relinquishment of the STATE'S right to enforce the same in accordance with this Contract. The fact that the STATE specifically refers to one provision of the procurement rules or one section of the Hawaii Revised Statutes, and does not include other provisions or statutory sections in this Contract shall not constitute a waiver or relinquishment of the STATE'S rights or the CONTRACTOR'S obligations under the procurement rules or statutes.
40. Pollution Control. If during the performance of this Contract, the CONTRACTOR encounters a "release" or a "threatened release" of a reportable quantity of a "hazardous substance," "pollutant," or "contaminant" as those terms are defined in section 128D-1, HRS, the CONTRACTOR shall immediately notify the STATE and all other appropriate state, county, or federal agencies as required by law. The Contractor shall take all necessary actions, including stopping work, to avoid causing, contributing to, or making worse a release of a hazardous substance, pollutant, or contaminant, and shall promptly obey any orders the Environmental Protection Agency or the state Department of Health issues in response to the release. In the event there is an ensuing cease-work period, and the STATE determines that this Contract requires an adjustment of the time for performance, the Contract shall be modified in writing accordingly.
41. Campaign Contributions. The CONTRACTOR is hereby notified of the applicability of 11-355, HRS, which states that campaign contributions are prohibited from specified state or county government contractors during the terms of their contracts if the contractors are paid with funds appropriated by a legislative body.
42. Confidentiality of Personal Information.
- a. Definitions.
- "Personal information" means an individual's first name or first initial and last name in combination with any one or more of the following data elements, when either name or data elements are not encrypted:
- (1) Social security number;
  - (2) Driver's license number or Hawaii identification card number; or

- (3) Account number, credit or debit card number, access code, or password that would permit access to an individual's financial information.

Personal information does not include publicly available information that is lawfully made available to the general public from federal, state, or local government records.

"Technological safeguards" means the technology and the policy and procedures for use of the technology to protect and control access to personal information.

b. Confidentiality of Material.

- (1) All material given to or made available to the CONTRACTOR by the STATE by virtue of this Contract which is identified as personal information, shall be safeguarded by the CONTRACTOR and shall not be disclosed without the prior written approval of the STATE.
- (2) CONTRACTOR agrees not to retain, use, or disclose personal information for any purpose other than as permitted or required by this Contract.
- (3) CONTRACTOR agrees to implement appropriate "technological safeguards" that are acceptable to the STATE to reduce the risk of unauthorized access to personal information.
- (4) CONTRACTOR shall report to the STATE in a prompt and complete manner any security breaches involving personal information.
- (5) CONTRACTOR agrees to mitigate, to the extent practicable, any harmful effect that is known to CONTRACTOR because of a use or disclosure of personal information by CONTRACTOR in violation of the requirements of this paragraph.
- (6) CONTRACTOR shall complete and retain a log of all disclosures made of personal information received from the STATE, or personal information created or received by CONTRACTOR on behalf of the STATE.

c. Security Awareness Training and Confidentiality Agreements.

- (1) CONTRACTOR certifies that all of its employees who will have access to the personal information have completed training on security awareness topics relating to protecting personal information.
- (2) CONTRACTOR certifies that confidentiality agreements have been signed by all of its employees who will have access to the personal information acknowledging that:
  - (A) The personal information collected, used, or maintained by the CONTRACTOR will be treated as confidential;
  - (B) Access to the personal information will be allowed only as necessary to perform the Contract; and
  - (C) Use of the personal information will be restricted to uses consistent with the services subject to this Contract.

d. Termination for Cause. In addition to any other remedies provided by this Contract, if the STATE learns of a material breach by CONTRACTOR of this paragraph by CONTRACTOR, the STATE may at its sole discretion:

- (1) Provide an opportunity for the CONTRACTOR to cure the breach or end the violation; or
- (2) Immediately terminate this Contract.

In either instance, the CONTRACTOR and the STATE shall follow chapter 487N, HRS, with respect to notification of a security breach of personal information.

e. Records Retention.

- (1) Upon any termination of this Contract or as otherwise required by applicable law, CONTRACTOR shall, pursuant to chapter 487R, HRS, destroy all copies (paper or electronic form) of personal information received from the STATE.
- (2) The CONTRACTOR and any subcontractors shall maintain the files, books, and records that relate to the Contract, including any personal information created or received by the CONTRACTOR on behalf of the STATE, and any cost or pricing data, for at least three (3) years after the date of final payment under the Contract. The personal information shall continue to be confidential and shall only be disclosed as permitted or required by law. After the three (3) year, or longer retention period as required by law has ended, the files, books, and records that contain personal information shall be destroyed pursuant to chapter 487R, HRS or returned to the STATE at the request of the STATE.

Department of Hawaiian Home Lands  
CONSTRUCTION GENERAL CONDITIONS  
Dated March 2014

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## ARTICLE 1: DEFINITIONS AND ABBREVIATIONS

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**1.1 DEFINITIONS.** Whenever the following terms or pronouns are used in these Construction General Conditions, or in any contract documents or instruments where these Construction General Conditions govern, the intent and meaning shall be interpreted as follows:

**ADDENDUM** (*plural - Addenda*). A written or graphic document, including Drawings and Specifications, issued by the Chairman during the bidding period which modifies or interprets the bidding documents, by additions, deletions, clarifications or corrections, which shall be considered and made a part of the bid proposal and the contract.

**ADDITION** (*to the contract sum*). Amount added to the contract sum by Change Order.

**ADMINISTRATIVE RULES.** Hawaii Administrative Rules for Chapter 103-D of the Hawaii Revised Statutes.

**ADVERTISEMENT.** A public announcement inviting bids for work to be performed or materials to be furnished.

**BAD WEATHER DAY.** When weather or other conditions prevent a minimum of four hours of work with the Contractor's normal work force on controlling items of work at the site. (See excess bad weather day.)

**BENEFICIAL OCCUPANCY.** The point of project completion when the Department can use the constructed facility in whole or in part for its intended purpose even though substantial completion may not be achieved.

**BID.** See PROPOSAL.

**BID SECURITY.** The security furnished by the Bidder from which the Department may recover its damages in the event the Bidder breaches its promise to enter into a contract with the Department and fails to execute the required bonds covering the work contemplated, if its proposal is accepted.

**BIDDER.** Any individual, partnership, firm, corporation, joint venture, or other legal entity submitting, directly or through a duly authorized representative or agent, a proposal for the work contemplated.

**BIDDING DOCUMENTS.** The advertisement "Notice to Contractors", or invitation to bid, instructions to Bidders, proposal requirements, the bid form and the proposed Contract Documents including all addenda issued prior to receipt of Bids.

**BULLETIN.** A written notice to the Contractor requesting a price and / or time proposal for contemplated changes preparatory to the issuance of a field order or change order.

**BY OR TO THE PROJECT MANAGER.** To avoid cumbersome and confusing repetition of expressions in these General Conditions, it is provided that whenever the following words or words of like import are used, they shall be understood as if they were followed by the words "by the Project Manager" or "to the Project Manager", unless the context clearly indicates another meaning: contemplated, required, determined, directed, specified, authorized, ordered, given, designated, indicated, considered necessary, deemed necessary, permitted, reserved, suspended, established, approval, approved, disapproved, acceptable, unacceptable, suitable, accepted, satisfactory, unsatisfactory, sufficient, insufficient, rejected or condemned.

**CALENDAR DAY.** Any day shown on the calendar beginning at midnight and ending at midnight the following day. If no designation of calendar or working day is made, “day” shall mean calendar day.

**CHAIRMAN.** The Chairman of the Hawaiian Homes Commission, Department of Hawaiian Home Lands.

**CHANGE ORDER.** A written order signed by the Chairman that establishes the full payment and final settlement of all claims for direct, indirect and consequential costs, including costs of delays, and establishes any adjustments to contract time related to the work covered and affected by one or more field orders, or for change work done or agreed to be done without issuance of a separate field order. A change order signed by all the parties to the contract constitutes a supplemental agreement.

**COMPLETION.** See SUBSTANTIAL COMPLETION and FINAL COMPLETION.

**CONSULTANT.** A person, firm or corporation having a contract with the Department to furnish services with respect to the project.

**CONTRACT.** The written agreement between the Contractor and the Department by its Chairman, by which the Contractor is bound to furnish all labor, equipment, and materials and to perform the specified work within the contract time stipulated, and by which DHHL is obligated to compensate the Contractor therefor at the prices set forth therein. The contract shall include the Contract Documents, also any and all amendments, and change orders, which are required to complete the construction in an acceptable manner.

**CONTRACT COMPLETION DATE.** The calendar day on which all work on the project, required by the contract, must be completed. See CONTRACT TIME and FINAL COMPLETION.

**CONTRACT DOCUMENTS.** The Contract, Addenda (which pertain to the Contract Documents, Contractor’s Proposal (including Wage Schedule, List of Subcontractors and other documentation accompanying the Bid and any post bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the contract, the Notice to Proceed, the Bonds, these General Conditions, the SPECIAL CONDITIONS, the Specifications and the Drawings as the same are more specifically identified in the contract together with all written Amendments, Change Orders, Field Orders, any written order for minor changes in the work and Project Manager’s written interpretations and clarifications issued on or after the effective date of the contract.

**CONTRACT PRICE.** The amount designated on the face of the contract for the performance of work including allowances, if any.

**CONTRACT TIME.** The number of working or calendar days provided in the contract for completion of the contract, exclusive of authorized time extensions. The number of days shall begin running on the effective date in the Notice to Proceed. If in lieu of providing a number of working or calendar days, the contract requires completion by a certain date, the work shall be completed by that date.

**CONTRACTOR.** Any individual, partnership, firm, corporation, joint venture, or other legal entity undertaking the execution of the work under the terms of the contract with the State of Hawaii, and acting directly or through its agents, or employees.

**DEPARTMENT.** The Department of Hawaiian Home Lands (abbreviated DHHL).

***DRAWINGS (or Plans).*** The contract drawings in graphic or pictorial form, which show the design, location, character, dimensions and details of the work to be done and which shall be a part of the Contract Documents.

***EQUAL OR APPROVED EQUAL.*** Whenever this term is used in the drawings or specifications, it shall be interpreted to mean a brand or article, prequalified in accordance with Section 6.3 SUBSTITUTION OF MATERIALS AND EQUIPMENT AFTER BID OPENING, that may be used in place of the one specified.

***EXCESS BAD WEATHER DAY.*** A working day on which inclement weather prevents work on the contract and is beyond the average weather for the location of the project and the time of the year.

***FIELD ORDER.*** A written order issued by the Project Manager to the Contractor requiring the contract work to be performed in accordance with a change or changes in the work. A field order may (1) establish a price adjustment and/or time adjustment in an amount the Project Manager believes is reasonable for the change; or (2) may declare that the Project Manager does not intend to adjust contract time or price for the work; or (3) may request the Contractor to submit a proposal for an adjustment to the contract time and/or price by a certain date.

***FINAL COMPLETION.*** The date set by the Chairman that all work required by the contract and any amendments or changes thereto is in full compliance with the contract.

***FORCE ACCOUNT.*** Term used when work is ordered to be done at the sole option of the Department and is to be billed for at cost of labor, materials and equipment, insurance(s), taxes, etc., plus a percentage for overhead and profit.

***GUARANTEE.*** Legally enforceable assurance of the duration of satisfactory performance of quality of a product or work.

***HAZARDOUS MATERIALS.*** Any and all radioactive materials, asbestos, polychlorinated biphenyls, petroleum, crude oil, chemicals known to cause cancer or reproductive toxicity, pollutants, contaminants, toxic substances or materials cited in Hazardous Material Laws. Abandoned motor vehicles or parts thereof are not hazardous material.

***HOLIDAYS.*** The days of each year which are set apart and established as State holidays pursuant to Chapter 8, Hawaii Revised Statutes.

***INSPECTOR.*** The person assigned by the Department to make detailed inspections of contract performance and materials supplied for the work.

***LAWS.*** All Federal, State, City and County Laws, ordinances, rules and regulations, and standard specifications, including any amendments thereto effective as of the date of the call for sealed bids.

***LETTER OF AWARD.*** A written notice from the Chairman to the successful Bidder(s) stating that the Department has accepted its proposal.

***LIQUIDATED DAMAGES.*** The amount prescribed in the Special Conditions, LIQUIDATED DAMAGES to be paid to the Department or to be deducted from any payments due or to become due the Contractor for each working day or calendar day (as applicable) delay in completing the whole or any specified portion of the work beyond the Contract Time.

**MAJOR UNIT PRICE ITEM.** A unit price item which, when extended on its estimated quantities in the proposal form, exceeds five percent (5%) of the total base bid proposal less any allowance and contingent items included in the proposal.

**NON-CONFORMING WORK.** Work that does not meet the requirements of the Contract Documents.

**NOTICE TO PROCEED.** A written notice from the Project Manager to the Contractor advising it of the date on which it is to begin the prosecution of the work, which date shall also be the beginning of Contract Time.

**POST CONTRACT DRAWINGS.** Drawings issued after the award of the contract for the purpose of clarification and / or changes to the work indicated in the original drawings and which may be made a part of the contract.

**PROJECT ACCEPTANCE DATE.** The calendar day on which the Project Manager accepts the project as sufficiently completed in compliance with the contract so that the Department can occupy or utilize the work for its intended use. See SUBSTANTIAL COMPLETION.

**PROJECT CONTRACT LIMITS (or CONTRACT ZONE).** The portion of the site as delineated on the drawings which define the Contractor's primary area of operation for the prosecution of the work. It does not define the exact limits of all construction that may be required under the contract.

**PROJECT MANAGER.** The Department's Contract Administrator as described in ARTICLE 5, CONTROL OF WORK.

**PROJECT GUARANTEE.** A guarantee issued by the Contractor to the Department. See GUARANTEE.

**PROPOSAL (BID).** The executed document submitted by a Bidder in the prescribed manner, in response to a request for proposals or invitation to Bid, to perform at the prices quoted, for the work specified under the contract, within the time prescribed for performance.

**PROPOSAL FORM.** The form prepared by the Department on which the written offer or formal bid for the work to be done is submitted by the Bidder. By submitting a bid on the proposal form, a Bidder adopts the language therein as its own.

**PUNCHLIST.** A list compiled by the Project Manager (or Contractor) stating work yet to be completed or corrected by the Contractor in order to substantially complete or finally complete the contract requirements.

**SHOP DRAWINGS/SUBMITTALS.** All drawings, diagrams illustrations, schedules and other data or information which are prepared or assembled by the Contractor and submitted by Contractor to illustrate some portion of the work.

**SPECIAL CONDITIONS.** The specific clauses that supplements or modify the standard clauses of the GENERAL CONDITIONS setting forth conditions or requirements peculiar to the individual project under consideration, which are not thoroughly or satisfactorily covered, described or explained in these GENERAL CONDITIONS.

**SPECIFICATIONS.** That portion of the Contract Documents consisting of written descriptions for materials, equipment, construction systems, standards, workmanship, directions, provisions and

requirements that pertain to the method and manner of performing the work and certain administrative requirements applicable thereto.

**STATE.** The State of Hawaii acting through its authorized representative.

**SUBCONTRACT.** Any written agreement between the Contractor and its subcontractors which contains the conditions under which the subcontractor is to perform a portion of the work for the Contractor.

**SUBCONTRACTOR.** An individual, partnership, firm, corporation, joint venture or other legal entity, as covered in Chapter 444, Hawaii Revised Statutes, which enters into an agreement with the Contractor to perform a portion of the work for the Contractor.

**SUBSTANTIAL COMPLETION.** The status of the project when the Contractor has completed all the work and (1) all utilities and services are connected and working; (2) all equipment is in acceptable working condition; (3) additional activity by the Contractor to correct punchlist items as described herein will not prevent or disrupt use of the work or the facility in which the work is located; and 4) the building, structure, improvement or facility can be used for its intended purpose.

**SUPERINTENDENT.** The employee of the Contractor, authorized to receive and fulfill instructions from the Project Manager, who is charged with the responsibility of all the work.

**SURETY.** The qualified individual, firm or corporation other than the Contractor, which executes a bond with and for the Contractor to ensure its acceptable performance of the contract.

**UNUSUALLY SEVERE WEATHER.** Uncommonly harsh weather including but not limited to hurricanes, tornadoes, tropical storms and tropical depressions.

**WORK.** The furnishing of all labor, materials, equipment, and other incidentals necessary or convenient for the successful completion of the project and the execution of all the duties and obligations imposed by the contract.

**WORKING DAY.** A calendar day, exclusive of Saturdays, Sundays and State-recognized legal holidays for the month in question.

1.2 ABBREVIATIONS

<b>DHHL</b>	Department of Hawaiian Home Lands.
<b>HAR</b>	Hawaii Administrative Rules
<b>HRS</b>	Hawaii Revised Statutes
<b>VECP</b>	Value Engineering Cost Proposal

~ END OF ARTICLE 1~

ARTICLE 2: [reserved]

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ARTICLE 3: CONTRACT

3.1 NOTICE TO PROCEED

3.1.1 After the contract is fully executed and signed by the Chairman, the Contractor will be sent a formal Notice to Proceed letter advising the Contractor of the date on which it may proceed with the work. The Contractor shall be allowed ten (10) consecutive working days from said date to begin its work. In the event that the Contractor refuses or neglects to start the work, the Chairman may terminate the contract in accordance with Section 7.27, TERMINATION OF CONTRACT FOR CAUSE.

3.1.2 The Contractor may commence its operations strictly at its own risk prior to receipt of the formal notice to proceed, provided it makes a written request and has received approval from the Chairman in writing. All work performed shall be conducted in accordance with Section 7.1, PROSECUTION OF THE WORK.

3.1.3 In certain cases, the Department, with agreement of the Contractor, may issue a Notice to Proceed before full execution of the contract by the Chairman and it may further issue a Notice to Proceed concurrently with the Notice of Award.

3.1.4 In the event the Notice to Proceed is not issued within one hundred eighty (180) days after (1) the date the contract is executed by all parties; or (2) for projects funded with State Capital Improvement Project (CIP) funds, the date that the written certificate that funds are available is issued, whichever is later, the Contractor may submit a claim for increased labor and material costs (but not overhead costs) which are directly attributable to the delay beyond the first one hundred eighty (180) days. Such claims shall be accompanied with the necessary documentation to justify the claim. No payment will be made for assumed escalation costs.

3.2 RELATIONSHIP OF PARTIES. Independent Contractor Status and Responsibilities, including Tax Responsibilities.

3.2.1 In the performance of services required under this Contract, the CONTRACTOR is an “independent contractor,” with the authority and responsibility to control and direct the performance and details of the work and services required under this Contract; however, the STATE shall have a general right to inspect work in progress to determine whether, in the STATE’s opinion, the services are being performed by the CONTRACTOR in compliance with this Contract. Unless otherwise provided by special condition, it is understood that the STATE does not agree to use the CONTRACTOR exclusively, and that the CONTRACTOR is free to contract to provide services to other individuals or entities while under contract with the STATE.

3.2.2 The CONTRACTOR and the CONTRACTOR’s employees and agents are not by reason of this Contract, agents or employees of the State for any purpose, and the CONTRACTOR and the CONTRACTOR’s employees and agents shall not be entitled to claim or receive from the STATE any vacation, sick leave, retirement, workers’ compensation, unemployment insurance, or other benefits provided to state employees.

3.2.3 The CONTRACTOR shall be responsible for the accuracy, completeness, and adequacy of the CONTRACTOR’s performance under this Contract. Furthermore, the CONTRACTOR intentionally, voluntarily, and knowingly assumes the sole and entire liability to the CONTRACTOR’s employees

and agents, and to any individual not a party to this Contract, for all loss, damage, or injury caused by the CONTRACTOR, or the CONTRACTOR's employees or agents in the course of their employment.

- 3.2.4 The CONTRACTOR shall be responsible for payment of all applicable federal, state, and county taxes and fees which may become due and owing by the CONTRACTOR by reason of this Contract, including but not limited to (i) income taxes, (ii) employment related fees, assessments, and taxes, and (iii) general excise taxes. The CONTRACTOR also is responsible for obtaining all licenses, permits, and certificates that may be required in order to perform this Contract.
- 3.2.5 The CONTRACTOR shall obtain a general excise tax license from the Department of Taxation, State of Hawaii, in accordance with Section 237-9, HRS, and shall comply with all requirements thereof.
- 2.2.6 The CONTRACTOR is responsible for securing all employee-related insurance coverage for the CONTRACTOR and the CONTRACTOR's employees and agents that is or may be required by law, and for payment of all premiums, costs, and other liabilities associated with securing the insurance coverage.
- 3.3 PERSONNEL REQUIREMENTS:
- 3.3.1 The CONTRACTOR shall secure, at the CONTRACTOR's own expense, all personnel required to perform this Contract.
- 3.3.2 The CONTRACTOR shall ensure that the CONTRACTOR's employees or agents are experienced and fully qualified to engage in the activities and perform the services required under this Contract, and that all applicable licensing and operating requirements imposed or required under federal, state, or county law, and all applicable accreditation and other standards of quality generally accepted in the field of the activities of such employees and agents are complied with and satisfied.
- 3.4 NONDISCRIMINATION. No person performing work under this Contract, including any subcontractor, employee, or agent of the Contractor, shall engage in any discrimination that is prohibited by any applicable federal, state, or county law.
- 3.5 CONFLICTS OF INTEREST. The CONTRACTOR represents that neither the CONTRACTOR, nor any employee or agent of the CONTRACTOR, presently has any interest, and promises that no such interest, direct or indirect, shall be acquired, that would or might conflict in any manner or degree with the CONTRACTOR's performance under this Contract.
- 3.6 EMPLOYMENT OF STATE RESIDENTS (§103B-3 HRS). The Contractor shall ensure that Hawaii residents comprise not less than eighty per cent of the workforce employed to perform the contract work on the project. The 80% requirement shall be determined by dividing the total number of hours worked on the contract by Hawaii residents, by the total number of hours worked on the contract by all employees of the Contractor in the performance of the contract. The hours worked by any Subcontractor of the Contractor shall count towards the calculation for this section. The hours worked by employees within shortage trades, as determined by the Department of Labor and Industrial Relations (DLIR), shall not be included in the calculation for this section.

*~END OF ARTICLE 3~*

## ARTICLE 4: SCOPE OF WORK

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- 4.1 INTENT OF CONTRACT, DUTY OF CONTRACTOR. The intent of the Contract is to provide for the construction, complete in every detail, of the work described at the accepted bid price and within the time established by the contract. The Contractor has the duty to furnish all labor, materials, equipment, tools, transportation, incidentals and supplies and to determine the means, methods and schedules required to complete the work in accordance with the drawings, specifications and terms of the contract.
- 4.1.1 ENTIRE CONTRACT. This Contract sets forth all of the Contract, conditions, understandings, promises, warranties, and representations between the STATE and the CONTRACTOR relative to this Contract. This Contract supersedes all prior Contracts, conditions, understandings, promises, warranties and representations, which shall have no further force or effect. There are no Contracts, conditions, understandings, promises, warranties, or representations, oral or written, express or implied, between the STATE and the CONTRACTOR other than as set forth or as referred to herein.
- 4.2 CHANGES. The Project Manager may at any time, during the progress of the work, by written order, and without notice to the sureties, make changes in the work as may be found to be necessary or desirable. Such changes shall not invalidate the Contract nor release the Surety, and the Contractor will perform the work as changed, as though it had been a part of the original Contract.
- 4.2.1 MINOR CHANGES. Minor changes in the work may be directed by the Project Manager with no change in contract price or time of performance. Minor changes are consistent with the intent of the Contract Documents and do not substantially alter the type of work to be performed or involve any adjustment to the contract sum or extension of the contract time.
- 4.2.2 ORAL ORDERS
- 4.2.2.1 Any oral order, direction, instruction, interpretation or determination from the Chairman or any other person which in the opinion of the Contractor causes any change, shall be considered as a change only if the Contractor gives the Chairman written notice of its intent to treat such oral order, direction, instruction, interpretation or determination as a change directive. Such written notice must be delivered to both the Chairman and the Project Manager before the Contractor acts in conformity with the oral order, direction, instruction, interpretation or determination, but not more than five (5) days after delivery of the oral order to the Contractor. The written notice shall state the date, circumstances, whether a time extension will be requested, and source of the order that the Contractor regards as a change. Such written notice may not be waived and shall be a condition precedent to the filing of any claim by the Contractor. Unless the Contractor acts in accordance with this procedure, any such oral order shall not be treated as a change for which the Contractor may make a claim for an increase in the contract time or contract price related to such work.
- 4.2.2.2 No more than five (5) days after receipt of the written notice from the Contractor, a Field Order shall be issued for the subject work if the Department agrees that it constitutes a change. If no Field Order is issued in the time established, it shall be deemed a rejection of Contractor's claim for a change. If the Contractor objects to the failure to issue a Field Order, it shall file a written protest with the Chairman within thirty (30) days after delivery to the Chairman of the Contractor's written notice of its intention to treat the oral order as a change. In all cases, the Contractor shall proceed with the work. The protest shall be determined as provided in Section 7.25, DISPUTES AND CLAIMS.
- 4.2.3 FIELD ORDERS. All changes will be set forth in a field order or change order. Upon receipt of a field order, the Contractor shall proceed with the changes as ordered. If the Contractor does not agree

with any of the terms or conditions or in the adjustment or non-adjustment to the contract time and/or contract price set forth therein, it shall file with the Chairman a written protest setting forth its reasons in detail within thirty (30) days after receipt of the field order. In all cases, the Contractor shall proceed with the work as changed. The protest shall be determined as provided in Section 7.25, DISPUTES AND CLAIMS. Failure to file such a protest within the time specified shall constitute agreement on the part of the Contractor with the terms, conditions, amounts and adjustments or non-adjustment to the contract price and/or contract time set forth in the field order.

#### 4.2.4 CHANGE ORDERS

4.2.4.1 The Department will issue sequentially numbered change orders at times it deems appropriate during the contract period. A change order may contain the adjustment in contract price and / or time for a number of Field Orders. No payment for any change will be made until the change order is issued.

4.2.4.2 The penal sum of the Surety Performance and Payment Bonds will be adjusted by the amount of each and every change order.

#### 4.3 DUTY OF CONTRACTOR TO PROVIDE PROPOSAL FOR CHANGES

4.3.1 A Field Order may request the Contractor to supply the Department with a proposal for an adjustment to the contract time or contract price for the work described therein. Any such request for a proposal shall not affect the duty of the Contractor to proceed as ordered with the work described in the Field Order.

4.3.2 The Project Manager from time to time may issue a Bulletin to the Contractor requesting price and / or time adjustment proposals for contemplated changes in the work. A Bulletin is not a directive for the Contractor to perform the work described therein.

4.3.3 Within seven (7) days after receipt of a Bulletin or Field Order containing a request for proposal, the Contractor shall submit to the Project Manager a detailed written statement setting forth all charges the Contractor proposes for the change and the proposed adjustment of the contract time, all properly itemized and supported by sufficient substantiating data to permit evaluation. No time extension will be granted for delays caused by late Contractor pricing of changes or proposed changes. If the project is delayed because Contractor failed to submit the cost proposal within the seven (7) days, or longer as allowed by the Project Manager, liquidated damages will be assessed in accordance with Section 7.26, FAILURE TO COMPLETE THE WORK ON TIME.

4.3.4 No payment shall be allowed to the Contractor for pricing or negotiating proposed or actual changes. No time extension will be granted for delay caused by late Contractor pricing of changes or proposed changes.

4.3.5 The Chairman may accept the entire proposal, or any discreet cost item contained within the proposal or the proposed adjustment to contract time by a notice in writing to the Contractor delivered to the Contractor within thirty (30) days after receipt of the proposal. The written acceptance by the Chairman of all or part of the Contractor's proposal shall create a binding agreement between the parties for that aspect of the change.

4.3.6 If the Department refuses to accept the Contractor's entire proposal, the Chairman may issue a Field Order for the work; or if a Field Order has already been issued, the Department may issue a supplemental Field Order establishing the remaining adjustments to contract price and/or contract time for the ordered changes. If the Contractor disagrees with any term, condition or adjustment

contained in such Field Order or supplemental Field Order, it shall follow the protest procedures set forth in and be subject to the other terms of Subsection 4.2.3, FIELD ORDERS.

4.4 PRICE ADJUSTMENT (§3-125-13 HAR)

4.4.1 Any adjustment in the contract price pursuant to a change or claim in this contract shall be made in one or more of the following ways:

4.4.1.1 By agreement on a fixed price adjustment before commencement of the pertinent performance or as soon thereafter as practicable;

4.4.1.2 By unit prices specified in the contract or subsequently agreed upon;

4.4.1.3 Whenever there is a variation in quantity for any work covered by any line item in the schedule of costs submitted as required by Section 7.2, COMMENCEMENT REQUIREMENTS, by the Department at its discretion, adjusting the lump sum price proportionately;

4.4.1.4 In such other manner as the parties may mutually agree;

4.4.1.5 At the sole option of the Project Manager, by the costs attributable to the event or situation covered by the change, plus appropriate profit or fee, all as specified in Section 4.5, ALLOWANCES FOR OVERHEAD AND PROFIT and the force account provision of Section 8.3, PAYMENT FOR ADDITIONAL WORK; or

4.4.1.6 In the absence of an agreement between the two parties, by a unilateral determination by the Department of the reasonable and necessary costs attributable to the event or situation covered by the change, plus appropriate profit or fee, all as computed in accordance with applicable Sections of Chapters 3-123 and 3-126 of the Hawaii Administrative Rules and Regulations, and Section 4.5, ALLOWANCES FOR OVERHEAD AND PROFIT.

4.5 ALLOWANCES FOR OVERHEAD AND PROFIT (§3-125-13 HAR)

4.5.1 In determining the cost or credit to the Department resulting from a change, the allowances for all overhead, including, extended overhead resulting from adjustments to contract time (including home office, branch office and field overhead, and related delay impact costs) and profit combined, shall not exceed the percentages set forth below:

4.5.1.1 For the Contractor, for any work performed by its own labor forces, twenty percent (20%) of the direct cost;

4.5.1.2 For each subcontractor involved, for any work performed by its own forces, twenty percent (20%) of the direct cost;

4.5.1.3 For the Contractor or any subcontractor, for work performed by their subcontractors, ten percent (10%) of the amount due the performing subcontractor.

4.5.1.4 Field overhead includes, but is not limited to all costs of supervision, engineering, clerical, layout, temporary facilities, improvements and structures, all general condition expenditures, storage, transport and travel, housing, small tools (as defined in 8.3.4.5(h)), pickup trucks and automobiles.

- 4.5.2 Not more than three markup allowance line item additions not exceeding the maximum percentage shown above will be allowed for profit and overhead, regardless of the number of tier subcontractors.
- 4.5.3 The allowance percentages will be applied to all credits and to the net increase of direct costs where work is added and deleted by the changes.
- 4.6 PAYMENT FOR DELETED MATERIAL
- 4.6.1 CANCELED ORDERS. If acceptable material was ordered by the Contractor for any item deleted by an ordered change in the work prior to the date of notification of such deletion by the Project Manager, the Contractor shall use its best efforts to cancel the order. The Department shall pay reasonable cancellation charges required by the supplier excluding any markup for overhead and profit to the Contractor.
- 4.6.2 RETURNED MATERIALS - If acceptable deleted material is in the possession of the Contractor or is ultimately received by the Contractor, if such material is returnable to the supplier and the Project Manager so directs, the material shall be returned and the Contractor will be paid for the reasonable charges made by the supplier for the return of the material, excluding any markup for overhead and profit to the Contractor. The cost to the Contractor for handling the returned material will be paid for as provided in Section 4.4, PRICE ADJUSTMENT.
- 4.6.3 UNCANCELLED MATERIALS. If orders for acceptable deleted material cannot be canceled at a reasonable cost, it will be paid for at the actual cost to the Contractor including an appropriate markup for overhead and profit as set forth in Section 4.5, ALLOWANCES FOR OVERHEAD AND PROFIT. In such case, the material paid for shall become the property of the Department and the cost of further storage and handling shall be paid for as provided in Section 4.4, PRICE ADJUSTMENT.
- 4.7 VARIATIONS IN ESTIMATED QUANTITIES (§3-125-10 HAR)
- 4.7.1 Where the quantity of a major unit price item in this contract is estimated on the proposal form and where the actual quantity of such pay item varies more than fifteen percent (15%) above or below the estimated quantity stated in this contract, an adjustment in the contract price shall be made upon demand of either party. The adjustment shall be based upon any increase or decrease in costs due solely to the variation above one hundred fifteen percent (115%) or below eighty-five percent (85%) of the estimated quantity. The adjustment shall be subject to Section 4.4 PRICE ADJUSTMENT and Section 4.5, ALLOWANCES FOR OVERHEAD AND PROFIT. If the quantity variation is such as to cause an increase in the time necessary for completion, the Chairman shall, upon receipt of a written request for an extension of time within thirty (30) days of the item's completion, ascertain the facts and make such adjustment to the completion date as the Chairman finds justified.
- 4.8 VARIATIONS IN BOTTOM ELEVATIONS. The Contractor shall plan and construct to the bottom elevations of footings, piles, drilled shafts, or cofferdams as shown on the drawings. When the bottom of a footing, pile, drilled shaft, or cofferdam is shown as an estimated or approximate elevation, the Contractor shall plan and construct to that elevation or to any deeper elevation required by the drawings or direction of the Project Manager. In the event the bottom elevation is lowered, the Contractor shall be entitled to additional payment in accordance with Sections 4.4 PRICE ADJUSTMENT and 4.5 ALLOWANCES FOR OVERHEAD AND PROFIT. In the event the bottom elevation is raised, the Department shall be entitled to a credit in accordance with Sections 4.2 CHANGES, 4.4, PRICE ADJUSTMENT and 4.5, ALLOWANCES FOR OVERHEAD AND PROFIT.

- 4.9 DIFFERING SITE CONDITIONS (§3-125-11 HAR)
- 4.9.1 During the progress of the work, if the Contractor encounters conditions at the site differing materially from those shown in the drawings and specifications, Contractor shall promptly, and before any such conditions are disturbed or damaged (except in an emergency as required by Subsection 7.17.8. EMERGENCIES), notify the Project Manager in writing of:
- 4.9.1.1 Subsurface or latent physical conditions at the site differing materially from those indicated in the contract; or
- 4.9.1.2 Unknown physical conditions at the site, of an unusual nature differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in this contract. Unclaimed motor vehicles or parts thereof and discarded materials or unclaimed items are not unknown or unforeseen physical conditions. (See also Section 5.8, EXAMINATION OF DRAWINGS, SPECIFICATIONS, PROJECT SITE).
- 4.9.2 After receipt of written notice, the Chairman shall promptly investigate the site, and if it is found that such conditions do materially differ and cause an increase in the Contractor's cost of, or the time required to, perform any part of the work, whether or not changed as a result of such conditions, an adjustment shall be made and the contract modified accordingly. Any adjustment in contract price made pursuant to this Section 4.9. DIFFERING SITE CONDITIONS (§3-125-11 HAR) shall be determined in accordance with Sections 4.4, PRICE ADJUSTMENT and 7.25, DISPUTES AND CLAIMS.
- 4.9.3 Nothing contained in this Section 4.9, DIFFERING SITE CONDITONS shall be grounds for an adjustment in compensation if the Contractor had actual knowledge or should have known of the existence of such conditions prior to the submission of bids.
- 4.10 COSTS AND EXPENSES. Any reimbursement due the CONTRACTOR for per diem and transportation expenses under this Contract shall be subject to Chapter 3-123 (Cost Principles) of the Procurement Rules and the following guidelines:
- 4.10.1 Reimbursement for air transportation shall be actual cost or coach class air fare, whichever is less.
- 4.10.2 Reimbursement for ground transportation costs shall not exceed the actual cost of renting an intermediate-sized vehicle.
- 4.10.3 Unless prior written approval of the CHAIRMAN is obtained, reimbursement for subsistence allowance (i.e., hotel and meals, etc.) shall not exceed the applicable daily authorized rates for interisland or out-of-state travel that are set forth in the current Governor's Executive Order authorizing adjustments in salaries and benefits for state officers and employees in the Chairman branch who are excluded from collective bargaining coverage.

~END OF ARTICLE 4~

## ARTICLE 5: CONTROL OF WORK

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- 5.1 **AUTHORITY OF THE CHAIRMAN** - The Chairman shall make final and conclusive decisions on all questions which may arise relating to the quality and acceptability of the materials furnished and work performed, the manner of performance and the rate of progress of the work, the interpretation of the plans and specifications, the acceptable fulfillment of the contract on the part of the Contractor, the compensation under the contract and the mutual rights of the parties to the contract. The Chairman shall have the authority to enforce and make effective such decisions and orders at the Contractor's expense when the Contractor fails to carry such decisions and orders out promptly and diligently. The Chairman shall have the authority to suspend the work wholly or in part as provided in Section 7.24, SUSPENSION OF WORK.
- 5.2 **AUTHORITY OF THE PROJECT MANAGER.** The Project Manager has the authority to act on behalf of the Department on all matters regarding the contract and the work that are not reserved for the Chairman. The Project Manager's authority is vested exclusively in the Project Manager except when specific authority to act for the Project Manager has been delegated to a specific person or persons. Such delegation of authority may be established by the Contract Documents; otherwise, it is not effective or binding upon the Department until such written notification of the delegation is received by the Contractor. The Administrator of the Land Development Division of the Department, or his designee, shall also have authority to act on behalf of the Department on all matters regarding the contract that are not reserved for the Chairman.
- 5.3 **AUTHORITY OF THE INSPECTOR**
- 5.3.1 The Inspector shall observe and inspect the contract performance and materials. The Inspector does not have any authority vested in the Project Manager unless specifically delegated in writing.
- 5.3.2 The Inspector may offer advice and recommendations to the Contractor, but any such advice or recommendations are not directives from the Project Manager.
- 5.3.3 The Inspector has no authority to allow deviations from the Contract Documents and may reject any and all work that the Inspector deems is not in conformity with the contract requirements. Failure of an Inspector at any time to reject non-conforming work shall not be considered a waiver of the Department's right to require work in strict conformity with the Contract Documents as a condition of final acceptance.
- 5.4 **AUTHORITY OF CONSULTANT(S).** The Department may engage Consultant(s) for limited or full observation to supplement the inspections performed by the Department and respective Counties. Unless otherwise specified in writing to the Contractor, such retained Consultant(s) will have the authority of an Inspector.
- 5.5 **SHOP DRAWINGS AND OTHER SUBMITTALS.** The following documents shall be submitted where required by the Contract Documents:
- 5.5.1 **SHOP DRAWING**
- (a) The Contractor shall prepare, thoroughly check, and approve all shop drawings, including those prepared by subcontractors or any other persons. The Contractor shall indicate its approval by stamping and signing each drawing. Any shop drawing submitted without being reviewed, stamped and signed will be considered as not having been submitted, and any delay caused thereby shall be the Contractor's responsibility.

- (b) Shop drawings shall indicate in detail all parts of an item of work, including erection and setting instructions and engagements with work of other trades or other separate contractors. Shop drawings for structural steel, millwork and pre-cast concrete shall consist of calculations, fabrication details, erection drawings and other working drawings to show the details, dimensions, sizes of members, anchor bolt plans, insert locations and other information for the complete fabrication and erection of the structure to be constructed.
- (c) The Contractor shall be responsible for the design of all structural curtain walls, all connections and fasteners for structural steel and architectural and structural precast concrete. Curtain walls, connections and fasteners shall be designed by a licensed professional engineer to carry the indicated or necessary loads. The precast concrete pieces shall be designed to withstand erection, transportation and final loading stresses. All calculations shall be performed by a licensed professional engineer and submitted to the Project Manager for review.
- (d) The cost of shop drawings or any other submittal shall not be a separate or individual pay item. All costs of furnishing shop drawings required by the contract shall be included in the price agreed to be paid for the various contract items of work, and no additional allowances will be made therefor.
- (e) All shop drawings as required by the contract, or as determined by the Project Manager to be necessary to illustrate details of the work shall be submitted to the Project Manager with such promptness as to cause no delay in the work or in that of any other Contractor. Delay caused by the failure of the Contractor to submit shop drawings on a timely basis to allow for review, possible resubmittal and acceptance will not be considered as a justifiable reason for a contract time extension. Contractor, at its own risk, may proceed with the work affected by the shop drawings before receiving acceptance; however the Department shall not be liable for any costs or time required for the correction of work done without the benefit of accepted shop drawings.
- (f) It is the Contractor's obligation and responsibility to check all of its and its subcontractor's shop drawings and be fully responsible for them and for coordination with connecting and other related work. The Contractor shall prepare, and submit to the Project Manager coordination drawings showing the installation locations of all plumbing, piping, duct and electrical work including equipment throughout the project. By approving and submitting shop drawings, the Contractor thereby represents that it has determined and verified all field measurements and field construction criteria, or will do so, and that it has checked and coordinated each shop drawing with the requirements of the work and the contract documents. When shop drawings are prepared and processed before field measurements and field construction criteria can be or have been determined or verified, the Contractor shall make all necessary adjustments in the work or resubmit further shop drawings, all at no change in contract price or time.

5.5.1.1 SHOP DRAWING FORM. Each drawing and/or series of drawings submitted must be accompanied by a letter of transmittal giving a list of the titles and number of the drawings. Each series shall be numbered consecutively for ready reference and each drawing shall be marked with the following information:

- (a) Date of Submission
- (b) Name of Project
- (c) Project Number
- (d) Location of Project
- (e) Name of submitting Contractor and Subcontractor
- (f) Revision Number
- (g) Specification and/or any drawing reference by article or sheet number.

- 5.5.1.2 No shop drawing shall be smaller than 24" x 36" nor larger than 28" x 42". At the determination of the Project Manager, each sheet of drawings for the submittal shall consist of either (1) reproducible transparency and three ozalid prints; or (2) six ozalid prints.
- 5.5.1.3 The Department will not be responsible for any cost of modifying/adjusting precast structures to fit the final as-built design, actual field conditions and finished work. To this end, the Contractor shall follow the following procedures:
- (a) Submit shop drawings for general design conformity for approval. Delay precasting operations.
  - (b) Start infrastructure work. Expose, check grade and install improvements requiring precast structures. Resubmit shop drawings with schedule for all structures indicating required deviations, correct and final inverts, depths, openings, special reinforcing and details, alignments, correct configurations, tops, grating, etc. The Contractor shall submit a schedule for the precasting work. Precast operations may commence based on approved shop drawings. During precast operations, the Project Manager may inspect the operations at least once per differing group of structures. The Contractor shall assume all risks and costs associated with modifying/adjusting the precast structures due to incomplete field verification, premature analysis and shop drawings.
- 5.5.2 **DESCRIPTIVE SHEETS AND OTHER SUBMITTALS.** When a submittal is required by the contract, the Contractor shall submit to the Project Manager eight (8) complete sets of descriptive sheets such as brochures, catalogs, illustrations, etc., which will completely describe the material, product, equipment, furniture or appliances to be used in the project as shown in the drawings and specifications. Prior to the submittal, the Contractor will review and check all descriptive sheets for conformity to the contract requirements and indicate such conformity by marking or stamping and signing each sheet. It is the responsibility of the Contractor to submit descriptive sheets for review and acceptance by the Project Manager as required at the earliest possible date after the date of award in order to meet the construction schedule. Delays caused by the failure of the Contractor to submit descriptive sheets as required will not be considered as justifiable reasons for contract time extension. The submittal shall list the seven (7) items of information as listed in Subsection 5.5.1, Shop Drawing.
- 5.5.3 **MATERIAL SAMPLES AND COLOR SAMPLES.** Prior to their submittal, all color samples and material shall be assembled and presented as required by the Department. When sample submittals are required by the contract, the Contractor shall review, approve, indicate its approval and submit to the Project Manager samples of the materials to be used in the project and color selection samples. It is the responsibility of the Contractor to submit material and color samples for review as required at the earliest possible date after the date of award in order to meet the construction schedule. Delays caused by the failure of the Contractor to submit material and color samples will not be considered as justifiable reasons for contract time extension. The submittal shall list the seven (7) items of information as listed in Subsection 5.5.1, Shop Drawing.
- 5.5.4 **SUBMITTAL VARIANCES.** The Contractor shall include with the submittal, written notification clearly identifying all deviations or variances from the contract drawings, specifications and other Contract Documents. The notice shall be in a written form separate from the submittal. The variances shall also be clearly indicated on the shop drawing, descriptive sheet, material sample or color sample. Failure to so notify of and identify such variances shall be grounds for the subsequent rejection of the related work or materials, notwithstanding that the submittal was accepted by the Project Manager. If the variances are not acceptable to the Project Manager, the Contractor will be

required to furnish the item as specified or indicated on the Contract Documents at no additional cost or time.

- 5.5.5 REVIEW AND ACCEPTANCE PROCESS. The Project Manager shall check shop drawings and within forty-five (45) days of receipt return them to the Contractor unless otherwise agreed between the Contractor and the Department. Submittals required for work to be installed within the first sixty days after the notice to proceed shall be returned by the Project Manager within twenty (20) days. If the volume of shop drawings submitted at any time for review is unusually large, the Contractor may inform the Project Manager of its preferred order for review and the Project Manager shall use reasonable efforts to accommodate the Contractor's priorities.
- 5.5.5.1 The acceptance by the Project Manager of the Contractor's submittal relates only to their sufficiency and compliance with the intention of the contract. Acceptance by the Project Manager of the Contractor's submittal does not relieve the Contractor of any responsibility for accuracy of dimensions, details, and proper fit, and for agreement and conformity of submittal with the Contract Drawings and Specifications. Nor will the Project Manager's acceptance relieve the Contractor of responsibility for variance from the Contract Documents unless the Contractor, at the time of submittal, has provided notice and identification of such variances required by this section. Acceptance of a variance shall not justify a contract price or time adjustment unless the Contractor requests such an adjustment at the time of submittal and the adjustment are explicitly agreed to in writing by the Department. Any such request shall include price details and proposed scheduling modifications. Acceptance of a variance is subject to all contract terms, stipulations and covenants, and is without prejudice to any and all rights under the surety bond.
- 5.5.5.2 If the Project Manager returns a submittal to the Contractor that has been rejected, the Contractor, so as not to delay the work, shall promptly make a resubmittal conforming to the requirements of the Contract Documents and indicating in writing on the transmittal and the subject submittal what portions of the resubmittal has been altered in order to meet the acceptance of the Project Manager. Any other differences between the resubmittal and the prior submittal shall also be specifically described in the transmittal.
- 5.5.5.3 No mark or notation made by the Project Manager or Consultant(s) on or accompanying the return of any submittal to the Contractor shall be considered a request or order for a change in work. If the Contractor believes any such mark or notation constitutes a request for a change in the work for which it is entitled to an adjustment in contract price and/or time, the Contractor must follow the same procedures established in Section 4.2, CHANGES for oral orders, directions, instructions, interpretations or determinations from the Project Manager or else lose its right to claim for an adjustment.
- 5.6 COORDINATION OF CONTRACT DOCUMENTS. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. The Contract Documents are complementary: any requirement occurring in one document is as binding as though occurring in all. In the event of conflict or discrepancy the priorities stated in the following Subsections shall govern:
- 5.6.1 Addenda shall govern over all other Contract Documents. Subsequent addenda issued shall govern over prior addenda only to the extent specified.
- 5.6.2 Special Conditions and Proposal shall govern over the General Conditions and Specifications.
- 5.6.3 Specifications shall govern over drawings.

- 5.6.4 Specification Error - Should an error or conflict appear within the specification, the Contractor shall immediately notify the Project Manager. The Project Manager shall promptly issue instructions as to procedure. Any requirement occurring in one or more parts of the specification is as binding as though occurring in all applicable parts.
- 5.6.4.1 Should an error or conflict appear within a specification section, between a listed manufacturer / product and the performance requirements of the specification section, the performance requirements shall govern.
- 5.6.4.2: In the event of a conflict between AG-008 103D General Conditions (the “General Conditions”) and these DHHL Construction General Conditions, the requirements of these DHHL Construction General Conditions will apply to the extent provided by and as allowed under law.
- 5.6.5 DRAWINGS
- 5.6.5.1 Schedules shall govern over all other notes and drawings.
- 5.6.5.2 Bottom elevations of footings shown on drawings shall govern over a general note such as: “All footings shall rest on firm, undisturbed soil and extend a minimum of a certain number of feet into natural or finish grade, whichever is lower.” In the event the footing must be lowered below the bottom elevation shown, the Contractor shall be entitled to additional payment as provided in Section 4.2, CHANGES. In the event the footing is raised above the bottom elevation shown, the Department shall be entitled to a credit as provided in Section 4.2, CHANGES.
- 5.6.5.3 When a bottom of pile, drilled shaft, piling or cofferdam is shown as an estimated or approximate elevation, the Contractor shall plan and construct to that elevation or to any deeper elevation required by the plans or the direction by the Project Manager. The Project Manager, at the Project Manager’s sole discretion, may order in writing termination of all or part of the work above the estimated or approximate elevation.
- 5.6.5.4 Except for drawing schedules and bottom elevations as noted above, general notes shall govern over all other portions of the drawings:
- 5.6.5.5 Larger scale drawings shall govern over smaller scale drawings.
- 5.6.5.6 Figured or numerical dimensions shall govern over dimensions obtained by scaling. Measurements from the drawings when scaled shall be subject to the approval of the Project Manager.
- 5.6.5.7 In cases of discrepancies in the figures or drawings, the discrepancies shall be immediately referred to the Project Manager without whose decision said discrepancy shall not be corrected by the Contractor save at its own risk and in the settlement of any complications arising from such adjustment without the knowledge and consent of the Project Manager, the Contractor shall bear all extra expense involved.
- 5.6.5.8 Items shown on the drawings that are completely void in terms of description, details, quality and / or performance standards in both the Drawings and Specifications to make a price determination shall be considered an omission and the Contractor shall immediately refer same to the Project Manager for a decision.

- 5.6.5.9 Where there is a conflict between the architectural sheets and the civil or landscaping or electrical sheets, etc., the conflict shall be considered a discrepancy and the Contractor shall immediately refer same to the Project Manager for a decision.
- 5.6.5.10 Any requirement occurring in one or more of the sheets is as binding as though occurring in all applicable sheets.
- 5.7 INTERPRETATION OF DRAWINGS AND SPECIFICATIONS. The Contractor shall carefully study and compare the Contract Documents with each other, with field conditions and with the information furnished by the Department and shall at once report to the Project Manager errors, conflicts, ambiguities, inconsistencies or omissions discovered. Should an item not be sufficiently detailed or explained in the Contract Documents, Contractor shall report and request the Project Manager's clarification and interpretation. The Project Manager will issue a final clarification or final interpretation.
- 5.8 EXAMINATION OF DRAWINGS, SPECIFICATIONS, PROJECT SITE
- 5.8.1 The Contractor shall examine carefully the Project Site to become familiar with the conditions to be encountered in performing the work and the requirements of the Contract Documents.
- 5.8.1.1 No extra compensation will be given by reason of the Contractor's misunderstanding or lack of knowledge of the requirements of the work to be accomplished or the conditions to be encountered in performing the project.
- 5.8.1.2 No extra compensation will be given by reason of the Contractor's misunderstanding or lack of knowledge when the existence of differing site, subsurface or physical conditions could have been reasonably discovered or revealed as a result of any examination, investigation, exploration, test or study of the site and contiguous areas required by the bidding requirements or contract documents to be conducted by or for the Contractor.
- 5.8.2 When the contract drawings include a log of test borings showing a record of the data obtained by the Department's investigation of subsurface conditions, said log represents only the opinion of the Department as to the character of material encountered in its test borings and at only the location of each boring. The Contractor acknowledges that underground site conditions in Hawaii vary widely. There is no warranty, either expressed or implied, that the conditions indicated are representative of those existing throughout the work or any part of it, or that other conditions may not occur.
- 5.8.3 Reference is made to the Special Conditions for identification of subsurface investigations, reports, explorations and tests utilized by the Department in preparation the Contract Documents. Such reports, drawings, boring logs etc., if any, are not part of the Contract Documents.
- 5.9 COOPERATION BETWEEN THE CONTRACTOR AND THE DEPARTMENT
- 5.9.1 FURNISHING DRAWINGS AND SPECIFICATIONS. Contractor will be supplied copies of the Contract Drawings and Specifications as specified in the Special Conditions. Contractor shall have and maintain at least one unmarked copy of the Contract Drawings and Specifications on the work site, at all times. Contractor shall cooperate with the Project Manager, the Inspector(s), and other contractors in every possible way.
- 5.9.2 SUPERINTENDENT. The Contractor shall have a competent superintendent on the work site as its designated agent. The superintendent shall be able to read and understand the project plans and

specifications and shall be experienced in the type of project being undertaken and the work being performed. The superintendent shall receive instructions from the Project Manager or its authorized representative. The Contractor shall authorize the superintendent to (a) execute the orders and directions of the Project Manager or its authorized representative without delay and (b) promptly supply such materials, equipment, tools, labor and incidentals as may be required to complete the project within the prescribed contract time. The Contractor shall furnish a superintendent regardless of the amount of project work sublet.

- 5.9.2.1 If the superintendent or agent is not present at the work site, the Project Manager shall have the right to suspend the work as described under Section 7.24, SUSPENSION OF WORK.
- 5.9.2.2 The Contractor shall file with the Project Manager a written statement giving the name of the superintendent or agent assigned to the project. The Contractor shall be responsible for notifying the Project Manager in writing of any change in the superintendent or agent.
- 5.9.2.3 The requirements of this Subsection 5.9.2, SUPERINTENDENT may be waived by the Project Manager.
- 5.9.3 ENGINEERING WORK. The Contractor shall properly and accurately lay out the work, perform all engineering work, and furnish all engineering materials and equipment required to establish and maintain all lines, grades, dimensions and elevations called for in the drawings or required in the progress of construction, unless otherwise noted in the contract documents. The Contractor will be held definitely and absolutely responsible for any errors in lines, grades, dimensions and elevations and shall at once, on instruction from the Project Manager, correct and make good such errors or any errors, or faults in the work resulting from errors in engineering performed under the requirements of its contract to the entire satisfaction of the Project Manager. Full compensation for the work shall be included in the prices paid for contract items of work. No additional allowance will be made for the correction of incorrect engineering work.
  - 5.9.3.1 The Project Manager shall furnish the requisite bench elevations.
  - 5.9.3.2 The Contractor shall locate and verify all lines, grades, dimensions and elevations indicated on the drawings before any excavation, or construction begins. Any discrepancy shall be immediately brought to the attention of the Project Manager; any change shall be made in accordance with the Project Manager's instruction.
  - 5.9.3.3 The Contractor shall verify all street survey monuments (horizontal and vertical alignment) prior to final acceptance by the Project Manager in accordance with any governmental requirements.
  - 5.9.3.4 The Contractor shall provide a surveyor or Civil Engineer licensed in the State of Hawaii to verify and establish all lines, grades, dimensions and elevations.
- 5.9.4 USE OF STRUCTURE OR IMPROVEMENT. The Department shall have the right, at any time during construction of the structure or improvements, to enter same for the purpose of installing by government labor or by any other Contractor or utility any necessary work in connection with the installation of facilities, it being mutually understood and agreed, however, that the Contractors, utilities and the Department will, so far as possible work to the mutual advantage of all, where their several works in the above mentioned or in unforeseen instances touch upon or interfere with each other. As a convenience to those involved, the Project Manager shall allocate the work and designate the sequence of construction in case of controversy between Contractors on separate projects under Department jurisdiction.

- 5.9.4.1 The Department shall also have the right to use the structure, equipment, improvement or any part thereof, at any time after it is considered by the Project Manager as available. In the event that the structure, equipment or any part thereof is so used, the Department shall be responsible for all expenses incidental to such use and any damages resulting from the Department's use.
- 5.9.4.2 Equipment warranty will commence to run before the work is complete when and if the Department begins actual use of the equipment for the purpose for which the equipment was designed and installed.
- 5.9.4.3 If the Department enters the structure for construction and/or occupancy and the Contractor is delayed because of interference by the Department or by extra work resulting from damage which the Contractor is not responsible for, or by extraordinary measures the Contractor must take to accommodate the Department, the Contractor shall be granted an extension of time in accordance with Section 7.21, CONTRACT TIME. However, if such use increases the cost or delays the completion of the remaining portions of work, the Contractor shall be entitled to such extra compensation or extension of time or both, as the Department may determine to be proper. Any additional work necessary will be paid in accordance with Section 8.3, PAYMENT FOR ADDITIONAL WORK.
- 5.10 INSPECTION. The Project Manager, the Department's consultants, inspectors employed by the Department and other representatives duly authorized by the Department shall at all times have access to the work during its construction and shall be furnished with every reasonable facility for ascertaining at any time that the materials and the workmanship are in accordance with the requirements and intentions of the contract. All work done and all materials furnished shall be subject to inspection and acceptance.
- 5.10.1 Such inspection and approval may extend to all or part of the work, and to the preparation, fabrication or manufacture of the materials to be used. By entering into a contract for the supply of materials, equipment or performance of labor in connection with the work, such material and equipment supplier or labor contractor consents to and is subject to the terms of Section 5.9, COOPERATION BETWEEN THE CONTRACTOR AND THE DEPARTMENT to the same extent as the Contractor.
- 5.10.2 AUTHORITY TO SUSPEND OPERATIONS. The Project Manager shall have the authority to suspend operations of any work being improperly performed by issuing a written order giving the reason for shutting down the work. Should the Contractor disregard such written order, the work done thereafter will not be accepted nor paid for.
- 5.10.3 The inspection of the work shall not relieve the Contractor of any of its obligations to fulfill the contract as prescribed. Notwithstanding prior payment and acceptance by the Project Manager, any defective and nonconforming work shall be corrected to comply with the contract requirements. Unsuitable, unspecified or unapproved materials may be rejected.
- 5.10.4 FEDERAL AGENCY INSPECTION. Projects financed in whole or in part with Federal funds shall be subject to inspection and corrective requirements at all times by the Federal Agency involved at no cost to the Department.
- 5.11 REMOVAL OF DEFECTIVE, NON-CONFORMING AND UNAUTHORIZED WORK
- 5.11.1 All work which has been rejected as not conforming to the requirements of the Contract shall be remedied or removed and replaced by the Contractor in an acceptable manner and no compensation

will be allowed for such removal or replacement. Any work done beyond the work limits shown on the drawings and specifications or established by the Project Manager or any additional work done without written authority will be considered as unauthorized and will not be paid for. work so done may be ordered removed at the Contractor's expense.

- 5.11.2 SCHEDULING CORRECTIVE WORK. The Contractor shall perform its corrective or remedial work at the convenience of the Department and shall obtain the Project Manager's approval of its schedule.
- 5.11.3 FAILURE TO CORRECT WORK. Upon failure on the part of the Contractor to comply promptly with any order of the Project Manager made under the provisions of Section 5.10, the Project Manager shall have authority to cause defective work to be remedied or removed and replaced, and unauthorized work to be removed, at the Contractor's expense, and to deduct the costs from any monies due or to become due the Contractor.
- 5.12 VALUE ENGINEERING INCENTIVE (§3-132 HAR amended by Act 149 SLH 1999). On projects with contract amounts in excess of \$250,000 (two hundred fifty thousand dollars), the following Value Engineering Incentive Clause shall apply to allow the Contractor to share in cost savings that ensue from cost reduction proposals it submits.
  - 5.12.1 The Value Engineering Incentive Clause applies to all Value Engineering Change Proposals (cost reduction proposals, hereinafter referred to as (VECP) initiated and developed by the Contractor for changing the drawings, designs, specifications or other requirements of this contract. This clause does not however, apply to any VECP unless it is identified as such by the Contractor at the time of its submission to the Project Manager.
  - 5.12.2 VALUE ENGINEERING CHANGE PROPOSAL (VECP). All VECP must:
    - 5.12.2.1 Result in a savings to the Department of at least \$4000 (four thousand dollars) by providing less costly items and without impairing any essential functions and characteristics such as service life, reliability, economy of operation, ease of maintenance and all necessary features of the completed work;
    - 5.12.2.2 Require, in order to be applied to this Contract, a change order to this Contract; and
    - 5.12.2.3 Not adversely impact on the schedule of performance or the Contract completion date.
  - 5.12.3 VECP REQUIRED INFORMATION. The VECP will be processed expeditiously and in the same manner as prescribed for any other change order proposal. As a minimum, the following information will be submitted by the Contractor with each proposal:
    - 5.12.3.1 A description of the difference between the existing contract requirements and the VECP, and the comparative advantages and disadvantages of each including durability, service life, reliability, economy of operation, ease of maintenance, design safety standards, desired appearance, impacts due to construction and other essential or desirable functions and characteristics as appropriate;
    - 5.12.3.2 An itemization of the requirements of the contract which must be changed if the VECP is adopted and a recommendation as to how to make each such change;

- 5.12.3.3 An estimate of the reduction in performance costs that will result from adoption of the VECP taking into account the costs of implementation by the Contractor, including any amounts attributable to subcontracts, and the basis for the estimate;
- 5.12.3.4 A prediction of any effects the VECP would have on other costs to the Department, such as Department furnished property costs, costs of related items, and costs of maintenance and operation over the anticipated life of the material, equipment, or facilities as appropriate; the construction schedule, sequence and time; and bid item totals used for evaluation and payment purposes;
- 5.12.3.5 A statement of the time by which a change order adopting the VECP must be issued so as to obtain the maximum cost reduction during the remainder of this contract noting any effect on the contract time; and 5.12.3.6 The dates of any previous submissions of the VECP, the numbers of any Government contracts under which submitted and the previous actions by the Government, if known.
- 5.12.4 **REQUIRED USE OF LICENSED ARCHITECT OR ENGINEER.** When, in the judgment of the Project Manager, a VECP alters the design prepared by a registered professional architect or engineer, the Contractor shall ensure the changes to be prepared are by or under the supervision of a licensed professional architect or engineer, and stamped and so certified.
- 5.12.5 Unless and until a change order applies a VECP to a contract, the Contractor shall remain obligated to perform in accordance with the terms of the contract and the Department shall not be liable for delays incurred by the Contractor resulting from the time required for the Department's determination of the acceptability of the VECP.
- 5.12.5.1 The determination of the Project Manager as to the acceptance of any VECP under a contract shall be final.
- 5.12.6 **ACCEPTANCE OF VECP.** The Project Manager may accept in whole or in part any VECP submitted pursuant to this section by issuing a change order to the Contract. Prior to issuance of the change order, the Contractor shall submit complete final contract documents similar to those of the original Contract showing the accepted changes and the new design and features as well as the following:
- 5.12.6.1 Design calculations;
- 5.12.6.2 The design criteria used; and
- 5.12.6.3 A detailed breakdown of costs and expenses to construct or implement such revisions.
- 5.12.6.4 The change order will identify the final VECP on which it is based.
- 5.12.7 **VECP PRICE ADJUSTMENTS.** When a VECP is accepted under a contract, an adjustment in the contract price shall be made in accordance with Section 4.4, PRICE ADJUSTMENT. The adjustment shall first be established by determining the effect on the Contractor's cost of implementing the change, including any amount attributable to subcontractors and to the Department's charges to the Contractor for architectural, engineering, or other consultant services, and the staff time required to examine and review the proposal. The contract price shall then be reduced by fifty percent (50%) of the net estimated decrease in the cost of performance.

- 5.12.8 The Contractor may restrict the Department's right to use the data or information or both, on any sheet of a VECP or of the supporting data, submitted pursuant to this Subsection, if it is stated on that sheet as follows:
- 5.12.8.1 "This data or information or both shall not be disclosed outside the Department or be duplicated, used, or disclosed, in whole or in part, for any purpose other than to evaluate this VECP. This restriction shall not limit the Department's right to use this data or information or both if obtained from another source, or is otherwise available, without limitations. If this VECP is accepted by the Department by issuance of a change order after the use of this data or information or both in such an evaluation, the Department shall have the right to duplicate, use and disclose any data or information or both pertinent to the proposal as accepted in any manner and for any purpose whatsoever and have others so do."
- 5.12.9 In the event of acceptance of a VECP, the Department shall have all rights to use, duplicate or disclose in whole or in part in any manner and for any purpose whatsoever, and to have or permit others to do so, any data or information or both reasonably necessary to fully utilize such proposal.
- 5.12.10 The Contractor shall submit with each VECP all required information and provide all additional information as may be required by the Project Manager to evaluate and implement the VECP. The cost for preparing the VECP shall be the Contractor's responsibility, and any part of the Contractor's cost for implementing the change shall be due only when the proposal is accepted and a change order is issued.
- 5.12.11 If the service of the Department's architect, Project Manager or consultant is necessary to review and evaluate a VECP, the cost therefor shall be paid for by the Contractor.
- 5.12.12 Each VECP shall be evaluated as applicable to this contract, and past acceptance on another Department project for a similar item shall not be automatic grounds for approval.
- 5.12.13 The method by which the Contractor will share a portion of the cost savings from an accepted VECP shall be for this contract only, and no consideration shall be made for future acquisition, royalty type payment or collateral savings.
- 5.12.13.1 The Department may accept the proposed VECP in whole or in part. The Chairman shall issue a contract change order to identify and describe the accepted VECP.
- 5.13 SUBCONTRACTS. Nothing contained in the contract documents shall create a contractual relationship between the Department and any subcontractor.
- 5.13.1 SUBSTITUTING SUBCONTRACTORS. Contractors may enter into subcontracts only with subcontractors listed in the proposal. No subcontractor may be added or deleted and substitutions will be allowed only if the subcontractor:
- 5.13.1.1 Fails, refuses or is unable to enter into a subcontract; or
- 5.13.1.2 Becomes insolvent; or
- 5.13.1.3 Has its subcontractor's license suspended or revoked; or
- 5.13.1.4 Has defaulted or has otherwise breached the subcontract in connection with the subcontracted work;  
or

- 5.13.1.5 Is unable to comply with other requirements of law applicable to contractors, subcontractors and public works projects.
- 5.13.2 Requesting Approval to Substitute a Subcontractor. Requests to substitute a subcontractor shall be submitted to the Project Manager for approval. Contractor agrees to hold the Department harmless and indemnify the Department for all claims, liabilities, or damages whatsoever, including attorney's fees arising out of or related to the approval or disapproval of the substitution.
- 5.13.3 The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the Contractor by the terms of the General Conditions and the other contract documents insofar as applicable to the work of the subcontractor and to give the Contractor the same rights regarding the termination of a subcontractor as the Department may exercise over the Contractor.
- 5.13.4 The Contractor shall not sponsor any unliquidated subcontractor's claim against the Department and shall defend, indemnify and hold the Department harmless against any direct claims by its subcontractors. Any claim for additional compensation by a subcontractor in connection with the work shall be made only against the Contractor. The Contractor may not assert any such claim against the Department until the liability of the Contractor has been unconditionally established by negotiation, arbitration or litigation, and the amount due the subcontractor has been determined, save for interest due.
- 5.13.5 Once a subcontractor's claim is established, should the Contractor intend to make the claim against the Department, it shall follow the procedure set forth under Section 7.25, DISPUTES AND CLAIMS.
- 5.13.6 SUBCONTRACTING. Contractor shall perform with its own organization, work amounting to not less than twenty percent (20%) of the total contract cost, exclusive of costs for materials and equipment the Contractor purchases for installation by its subcontractors, except that any items designated by the Department in the contract as "specialty items" may be performed by a subcontractor and the cost of any such specialty items so performed by the subcontractor may be deducted from the total contract cost before computing the amount of work required to be performed by the Contractor with its own organization. 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.

*~END OF ARTICLE 5~*

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## **ARTICLE 6: CONTROL OF MATERIALS AND EQUIPMENT**

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- 6.1 MATERIALS AND EQUIPMENT. Contractor shall furnish, pay for and install all material and equipment as called for in the drawings and specifications. Materials and equipment shall be new and the most suitable for the purpose intended unless otherwise specified. The Department does not guarantee that the specified or pre-qualified product listed in the drawings and specifications are available at the time of bid or during the contract period.
- 6.2 SOURCE OF SUPPLY AND QUALITY OF MATERIALS
- 6.2.1 Only materials conforming to the drawings and specifications and, when required by the contract have been accepted by the Project Manager, shall be used. In order to expedite the inspection and testing of materials, at the request of the Project Manager, the Contractor shall identify its proposed sources of materials within ten (10) days after notification by the Project Manager.
- 6.2.2 At the option of the Project Manager, the materials may be accepted by the Project Manager at the source of supply before delivery is started. Representative preliminary samples of the character and quantity prescribed shall be submitted by the Contractor or producer for examination and tested in accordance with the methods referred to under samples and tests.
- 6.2.3 PROJECT MANAGER'S AUTHORIZATION TO TEST MATERIALS. Materials proposed to be used may be inspected and tested whenever the Project Manager deems necessary to determine conformance to the specified requirements. The cost of testing shall be borne by the Contractor. However, should test results show that the material(s) is in compliance with the specified requirements; the cost of the testing will be borne by the Department.
- 6.2.4 UNACCEPTABLE MATERIALS. In the event material(s) are found to be unacceptable, the Contractor shall cease their use, remove the unacceptable material(s) that have already been installed or applied, and furnish acceptable materials all at no additional cost to the Department. No material which is in any way unfit for use shall be used.
- 6.3 SUBSTITUTION OF MATERIALS AND EQUIPMENT
- 6.3.1 SUBSTITUTION OF MATERIALS AND EQUIPMENT BEFORE BID OPENING For materials and equipment submitted in compliance with Instructions to Bidders, if after installing the substituted product, an unlisted variance is discovered the Contractor shall immediately replace the product with a specified product at no cost to the Department.
- 6.3.2 SUBSTITUTION AFTER CONTRACT AWARD. Subject to the Project Manager's determination if the material or equipment is equal to the one specified or prequalified, substitution of material or equipment may be allowed after the Letter of Award is issued only:
- 6.3.2.1 If the specified or prequalified item is delayed by unforeseeable contingencies beyond the control of the Contractor which would cause a delay in the project completion; or
- 6.3.2.2 If any specified or prequalified item is found to be unusable or unavailable due to a change by the manufacturer or other circumstances; or
- 6.3.2.3 If the Contractor desires to provide a more recently developed material, equipment, or manufactured model from the same named manufacturer than the one specified or prequalified; or
- 6.3.2.4 If the specified material and / or equipment inadvertently lists only a single manufacturer.

- 6.3.3 A substitution request after the Contract is awarded shall be fully explained in writing. Contractor shall provide brochures showing that the substitute material and / or equipment is equal or better in essential features and also provide a matrix showing comparison of the essential features. Contractor shall justify its request and include quantities and unit prices involved, respective supplier's price quotations and such other documents necessary to fully support the request. Any savings in cost will be credited to the Department. Contractor shall absorb any additional cost for the substitute item(s) or for its installation. Submitting a substitution request, does not imply that substitutions, for brand name specified materials and equipment will be allowed. The Project Manager may reject and deny any request deemed irregular or not in the best interest of the Department. A request for substitution shall not in any way be grounds for an extension of contract time. At the discretion of the Project Manager, a time extension may be granted for an approved substitution.
- 6.4 ASBESTOS CONTAINING MATERIALS. The use of materials or equipment containing asbestos is prohibited under this contract. Contractor warrants that all materials and equipment incorporated in the project are asbestos-free.
- 6.5 TEST SAMPLES
- 6.5.1 The Project Manager may require any or all materials to be tested by means of samples or otherwise. Contractor shall collect and forward samples requested by the Project Manager. Contractor shall not use or incorporate any material represented by the samples until all required tests have been made and the material has been accepted. In all cases, the Contractor shall furnish the required samples without charge. Where samples are required from the completed work, the Contractor shall cut and furnish samples from the completed work. Samples so removed shall be replaced with identical material and refinished. No additional compensation will be allowed for furnishing test samples and their replacement with new materials.
- 6.5.2 Tests of the material samples will be made in accordance with the latest standards of the American Society for Testing and Materials (ASTM), as amended prior to the contract date unless otherwise provided. In cases where a particular test method is necessary or specifications and serial numbers are stipulated, the test shall be made by the method stated in the above-mentioned publication. Where the test reference is the American Association of State Highway and Transportation Officials (AASHTO), it means the specifications and serial numbers of the latest edition and amendments prior to the bid date.
- 6.5.3 The Project Manager may, at no extra cost to the Department retest any materials which have been tested and accepted at the source of supply after the same has been delivered to the work site. The Project Manager shall reject all materials which, when retested, do not meet the requirements of the Contract.
- 6.6 MATERIAL SAMPLES
- 6.6.1 The Contractor shall furnish all samples required by the drawings and specifications or that may be requested by the Project Manager of any and all materials or equipment it proposes to use. Unless specifically required, samples are not to be submitted with the bid.
- 6.6.2 No materials or equipment of which samples are required shall be used on the work until the Project Manager has received and accepted the samples. If the Contractor proceeds to use such materials before the Project Manager accepts the samples, the Contractor shall bear the risk.

- 6.6.3 Contractor shall furnish two (2) copies of a transmittal letter with each shipment of samples. The letter shall provide a list of the samples, the name of the building or work for which the materials are intended and the brands of the materials and names of the manufacturers. Also, each sample submitted shall have a label indicating the material represented, its place of origin, the names of the producer, the Contractor and the building or work for which the material is intended. Samples of finished materials shall be marked to indicate where the materials represented are required by the drawings or specifications.
- 6.6.4 Acceptance of any sample(s) shall be only for the characteristics or for the uses named in such acceptance and for no other purpose. Acceptance of samples shall not change or modify any contract requirement. All samples will be provided by the Contractor at no extra cost to the Department. See also Section 5.5, SHOP DRAWINGS AND OTHER SUBMITTALS.
- 6.7 **NON-CONFORMING MATERIALS.** All materials not conforming to the requirements of this contract documents, whether in place or not, shall be rejected and removed immediately from the site of work unless otherwise permitted by the Project Manager in writing. No rejected material which has subsequently been made to conform shall be used unless and until written acceptance has been given by the Project Manager. If the Contractor fails to comply forthwith with any order of the Project Manager made under the provisions of this Section 6.7, **NON-CONFORMING MATERIALS** the Project Manager shall have the authority to remove and replace non-conforming materials and charge the cost of removal and replacement to the Contractor.
- 6.8 **HANDLING MATERIALS.** Contractor shall handle all materials to preserve their quality and fitness for work. Transport aggregates from the source or storage site to the work in tight vehicles to prevent loss or segregation of materials after loading and measuring.
- 6.9 **STORAGE OF MATERIALS.** Contractor shall store all materials to preserve their quality and fitness for the work. Unless otherwise provided, any portion of the project site within the Project Contract Limit not required for public travel may be used for storage purposes and for the Contractor's plant and equipment. Any additional space required shall be provided by the Contractor at its expense subject to the Project Manager's acceptance. Contractor shall store materials on wooden platforms or other hard, clean surfaces and covered to protect it from the weather and damage. Stored materials shall be located to allow prompt inspection.
- 6.10 **PROPERTY RIGHTS IN MATERIALS.** Nothing in the contract shall be construed to vest in the Contractor any right to any materials and equipment after such materials and equipment have been attached, affixed to, or placed in the work.
- 6.11 **ANTITRUST CLAIMS.** The STATE and the CONTRACTOR recognized that in actual economic practice, overcharges resulting from antitrust violations are in fact usually borne by the purchaser. Therefore, the CONTRACTOR hereby assigns to STATE any and all claims for overcharges as to goods and material purchased in connection with this Contract, except as to overcharges which result from violations commencing after the price is established under this Contract and which are not passed on to the STATE under an escalation clause.

*~END OF SECTION 6~*

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**ARTICLE 7: PROSECUTION AND PROGRESS (Including Legal Relations and Responsibility)**

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7.1 PROSECUTION OF THE WORK

7.1.1 After approval of the Contract by the Chairman, a Notice to Proceed will be given to the Contractor as described in Section 3.10, NOTICE TO PROCEED. The Notice to Proceed will indicate the date the Contractor is expected to begin the construction and from which date contract time will be charged.

7.1.2 The Contractor shall begin work no later than ten (10) working days from the date in the Notice to Proceed and shall diligently prosecute the same to completion within the contract time allowed. The Contractor shall notify the Project Manager at least three (3) working days before beginning work.

7.1.3 If any subsequent suspension and resumption of work occurs, the Contractor shall notify the Project Manager at least twenty-four (24) hours before stopping or restarting actual field operations.

7.1.4 WORKING PRIOR TO NOTICE TO PROCEED. The Contractor shall not begin work before the date in the Notice to Proceed. Should the Contractor begin work before receiving the Notice to Proceed, any work performed in advance of the specified date will be considered as having been done at the Contractor's risk and as a volunteer and subject to the following conditions:

7.1.4.1 Under no circumstances shall the Contractor commence work on site until it has notified the Project Manager of its intentions and has been advised by the Project Manager in writing that the project site is available to the Contractor. The project site will not be made available until the Contractor has complied with commencement requirements under Section 7.2, COMMENCEMENT REQUIREMENTS.

7.1.4.2 In the event the contract is not executed, the Contractor shall, at its own expense, do such work as is necessary to leave the site in a neat condition to the satisfaction of the Project Manager. The Contractor shall not be reimbursed for any work performed.

7.1.4.3 All work done prior to the Notice to Proceed shall be performed in accordance with the Contract Documents, but will only be considered authorized work and be paid for as provided in the Contract after the Notice to Proceed is issued.

7.1.5 For repairs and/or renovations of existing buildings, unless otherwise permitted by the Project Manager, the Contractor shall not commence with the physical construction unless all or sufficient amount of materials are available for either continuous construction or completion of a specified portion of the work. When construction is started, the Contractor shall work expeditiously and pursue the work diligently until it is complete. If only a portion of the work is to be done in stages, the Contractor shall leave the area safe and usable for the user agency at the end of each stage.

7.2 COMMENCEMENT REQUIREMENTS. Prior to beginning work on site, the Contractor shall submit the following to the Project Manager:

7.2.1 Identification of the Superintendent or authorized representative on the job site. Refer to Section 5.9, COOPERATION BETWEEN THE CONTRACTOR AND THE DEPARTMENT;

7.2.1.1 Identification of the surveyor who shall be licensed in the State of Hawaii and will work for it throughout the course of the project. Refer to Section 5.9.3.4.

- 7.2.2 Proposed Working Hours on the job. Refer to Section 7.5, NORMAL WORKING HOURS;
- 7.2.3 Permits and Licenses. Refer to Section 7.4, PERMITS AND LICENSES;
- 7.2.4 Schedule of Prices to be accepted for the agreed Monthly Payment Application. Unless the proposal provides unit price bids on all items in this project, the successful Bidder will be required, after the award of contract, to submit a schedule of prices for the various items of construction included in the contract. For projects involving more than a single building and / or facility, the breakdown cost shall reflect a separate schedule of prices for the various items of work for each building and/or facility. The sum of the prices submitted for the various items must equal the lump sum bid in the Bidder's proposal. This schedule will be subject to acceptance by the Project Manager who may reject same and require the Bidder to submit another or several other schedules if in the Project Manager's opinion the prices are unbalanced or not sufficiently detailed. This schedule of prices shall be used for the purpose of determining the value of monthly payments due the Contractor for work installed complete in place; and may be used as the basis for determining cost and credit of added or deleted items of work, respectively;
- 7.2.4.1 The Contractor shall estimate at the close of each month the percentage of work completed under each of the various construction items during such month and submit the Monthly Payment Application to the Project Manager for review and approval. The Contractor shall be paid the approved percentage of the price established for each item less the retention provided in Section 8.4, PROGRESS AND/OR PARTIAL PAYMENTS; and
- 7.2.5 PROOF OF INSURANCE COVERAGE. Certificate of Insurance or other documentary evidence satisfactory to the Project Manager that the Contractor has in place all insurance coverage required by the contract. Refer to Section 7.3, INSURANCE REQUIREMENTS.
- 7.2.6 Until such time as the above items are processed and approved, the Contractor shall not be allowed to commence on any operations unless authorized by the Project Manager.
- 7.3 INSURANCE REQUIREMENTS
- 7.3.1 OBLIGATION OF CONTRACTOR. Contractor shall not commence any work until it obtains, at its own expense, all required herein insurance. Such insurance shall be provided by an insurance company authorized by the laws of the State to issue such insurance in the State of Hawaii. Coverage by a "Non-Admitted" carrier is permissible provided the carrier has a Best's Rating of "A-VII" or better.
- 7.3.2 All insurance described herein will be maintained by the Contractor for the full period of the contract and in no event will be terminated or otherwise allowed to lapse prior to written certification of final acceptance of the work by the Department.
- 7.3.3 Certificate(s) of Insurance acceptable to the Department shall be filed with the Project Manager prior to commencement of the work. Certificates shall identify if the insurance company is a "captive" insurance company or a "Non-Admitted" carrier to the State of Hawaii. The Best's rating must be stated for the "Non-Admitted" carrier. Certificates shall contain a provision that coverage(s) being certified will not be cancelled or materially changed without giving the Project Manager at least thirty (30) days prior written notice. The Department is to be named as Additional Insured on any of the required insurance and it shall be so noted on the certificate. Should any policy be cancelled before final acceptance of the work by the Department, and the Contractor fails to immediately procure replacement insurance as specified, the Department, in addition to all other remedies it may have for

such breach, reserves the right to procure such insurance and deduct the cost thereof from any money due to the Contractor.

- 7.3.4 Nothing contained in these insurance requirements is to be construed as limiting the extent of Contractor's responsibility for payment of damages resulting from its operations under this Contract, including the Contractor's obligation to pay liquidated damages, nor shall it affect the Contractor's separate and independent duty to defend, indemnify and hold the Department harmless pursuant to other provisions of this Contract. In no instance will the Department's exercise of an option to occupy and use completed portions of the work relieve the Contractor of its obligation to maintain the required insurance until the date of final acceptance of the work.
- 7.3.5 All insurance described herein shall be primary and cover the insured for all work to be performed under the Contract, all work performed incidental thereto or directly or indirectly connected therewith, including traffic detour work or other work performed outside the work area and all change order work.
- 7.3.6 The Contractor shall, from time to time, furnish the Project Manager, when requested, satisfactory proof of coverage of each type of insurance required covering the work. Failure to comply with the Project Manager's request may result in suspension of the work, and shall be sufficient grounds to withhold future payments due the Contractor and to terminate the contract for Contractor's default.
- 7.3.7 **TYPES OF INSURANCE.** Contractor shall purchase and maintain insurance described below which shall provide coverage against claims arising out of the Contractor's operations under the Contract, whether such operations be by the Contractor itself or by any subcontractor or by anyone directly or indirectly employed by any of them or by anyone for whose acts any of them may be liable.
- 7.3.7.1 **WORKER'S COMPENSATION.** The Contractor shall obtain worker's compensation insurance for all persons whom they employ in carrying out the work under this contract. This insurance shall be in strict conformity with the requirements of the most current and applicable State of Hawaii Worker's Compensation Insurance laws in effect on the date of the execution of this contract and as modified during the duration of the contract.
- 7.3.7.2 **COMMERCIAL GENERAL LIABILITY INSURANCE AND AUTOMOBILE INSURANCE.** Contractor's commercial general liability insurance and automobile liability insurance shall both be obtained in a combined, single limit of not less than \$1,000,000 (one million dollars) unless otherwise indicated in the Special Conditions per occurrence that shall include coverage for bodily injury, sickness, disease or death of any person, arising directly or indirectly out of, in connection with, the performance of work under this contract.
- 7.3.7.3 "General Liability and Automobile Insurance. CONTRACTOR shall maintain, at its own expense, the minimum insurance coverage specified below, or as amended in the Special Conditions, throughout the term of this Contract.
- a. General Liability insurance providing coverage of no less than ONE MILLION DOLLARS (\$1,000,000.00) per occurrence and TWO MILLION DOLLARS (\$2,000,000.00) in the aggregate.
  - b. Automobile insurance providing coverage of no less than ONE MILLION DOLLARS (\$1,000,000.00) per accident."
- 7.3.7.4 The Contractor shall either (a) Require each of its subcontractors to procure and to maintain during the life of its subcontract, subcontractor's comprehensive general liability, automobile liability and

property damage liability insurance of the type and in the same amounts specified herein; or (b) Insure the activities of its subcontractors in its own policy.

7.3.7.5 BUILDERS RISK INSURANCE. Unless excluded by the Special Conditions of this contract, the Contractor shall provide builder's risk insurance during the progress of the work and until final acceptance by the Department upon completion of the contract. It shall be "All Risk" (including but not limited to earthquake, windstorm and flood damage) completed value insurance coverage on all completed work and work in progress to the full replacement value thereof. Such insurance shall include the Department as an additional named insured. The Contractor shall submit to the Project Manager for its approval all items deemed to be uninsurable. The policy may provide for a deductible in an amount of up to twenty five percent (25%) of the amount insured by the policy. With respect to all losses up to any deductible amount, the relationship between the Contractor and the Department shall be that of insurer and the additional insured respectively as if no deductible existed. The Contractor is responsible for theft, if any item of the contract is stolen prior to, or after installation, until the work is accepted by the Department. Progress payment does not constitute acceptance.

#### 7.4 PERMITS AND LICENSES

7.4.1 The Department or its representative may process Federal (e.g. Army Corps of Engineers), State and county permit applications. The Contractor shall pick up the preprocessed Permits at the appropriate governmental agency and pay the required fees. Other permits necessary for the proper execution of the work such as utility connection permits, elevator installation permits etc., unless processed by the Department and paid for by the Contractor, shall be obtained and paid for by the Contractor.

7.4.2 Until such time as the above permits are approved, the Contractor shall not be allowed to commence any operations without written approval of the Project Manager.

7.4.3 The Project Manager reserves the right to waive application and processing of the building permit.

7.5 NORMAL WORKING HOURS. Prior to beginning operations, unless otherwise established by the Department, the Contractor shall notify the Project Manager in writing of the time in hours and minutes, A.M. and P.M. respectively, at which it desires to begin and end the day's work. If the Contractor desires to change the working hours, it shall request the Project Manager's approval three (3) consecutive working days prior to the date of the change.

#### 7.6 HOURS OF LABOR (§104-2 HRS)

7.6.1 No laborer or mechanic employed on the job site of any public work of the Department or any political sub-division thereof shall be permitted or required to work on Saturday, Sunday or a legal holiday of the State or in excess of eight (8) hours on any other day unless the laborer or mechanic receives overtime compensation for all hours worked on Saturday, Sunday and a legal holiday of the State or in excess of eight (8) hours on any other day. For the purposes of determining overtime compensation under this Section 7.6, HOURS OF LABOR (§104-2 HRS) the basic hourly rate of any laborer or mechanic shall not be less than the basic hourly rate determined by the Department of Labor and Industrial Relations to be the prevailing basic hourly rate for corresponding classes of laborers and mechanics on projects of similar character in the Department.

7.6.2 Overtime compensation means compensation based on one and one-half times the laborers or mechanics basic hourly rate of pay plus the cost to an employer of furnishing a laborer or mechanic with fringe benefits.

7.7 PREVAILING WAGES (State §104-2 HRS & Federal Davis-Bacon)

7.7.1 The Contractor shall at all time observe and comply with all provisions of Chapter 104, HRS, the significant requirements of which are emphasized in the Department of Labor and Industrial Relations Publication No. H104-3 entitled “Requirements of Chapter 104, Hawaii Revised Statutes, Wages and Hours of Employees on Public Works Law”. The Contractor must also comply with all provisions of Federal Davis-Bacon Act (40 U.S.C. 276-276a-5 and Code of Federal Regulation (CFR) Title 29 and related Acts.

7.7.2 WAGE RATE SCHEDULE. The wage rate schedule may not be physically enclosed in the bid documents. However, the wage rate schedule is incorporated herein by reference and made a part of the Bid and Contract Documents. The bidder must obtain and use the latest minimum rates ten (10) days prior to the date set for the bid opening of bids. The wage rate schedule may be obtained from the DHHL, Labor Compliance Specialist, Hale Kalanianaʻole, 91-5420 Kapolei Parkway, Kapolei, Hawaii, 96707 or, State Department of Labor and Industrial Relations web site:

<http://labor.hawaii.gov/rs/home/wages/72-2/>

or the Federal Department of Labor (Davis- Bacon) wage rate schedule web site:

<http://www.wdol.gov>.

7.7.3 The Contractor or its subcontractor(s) shall pay all laborers and mechanics employed on the job site, unconditionally and not less often than once a week, and without deduction or rebate on any account except as allowed by law, the full amounts of their wages including overtime, accrued to not more than five (5) working days prior to the time of payment, at wage rates not less than those stated in the contract, regardless of any contractual relationship which may be alleged to exist between the Contractor and subcontractor and such laborers and mechanics. The wages stated in the contract shall not be less than the minimum prevailing wages (basic hourly rate plus fringe benefits), as determined by the of Labor and Industrial Relations and published in wage rate schedules. Any increase in wage rates, as determined by the of Labor and Industrial Relations and issued in the wage rate schedule, shall be applicable during the performance of the contract, in accordance with Section 104-2(a) and (b), Hawaii Revised Statutes. Notwithstanding the provisions of the original contract, if the of Labor and Industrial Relations determines that prevailing wages have increased during the performance of the contract, the rate of pay of laborers and mechanics shall be raised accordingly.

7.7.4 The applicable wage rate schedule shall be physically included in the Contract Documents executed by the successful Bidder.

7.7.5 POSTING WAGE RATE SCHEDULE. The rates of wages to be paid shall be posted by the Contractor in a prominent and easily accessible place at the job site and a copy of such wages required to be posted shall be given to each laborer and mechanic employed under the contract by the Contractor at the time the person is employed thereunder, provided that where there is a collective bargaining agreement, the Contractor does not have to provide its employees the wage rate schedules. Any revisions to the schedule of wages issued by the Department of Labor and Industrial Relations during the course of the Contract shall also be posted by the Contractor and a copy provided to each laborer and mechanic employed under the Contract as required above.

7.7.6 The Chairman may withhold from the Contractor so much of the accrued payments as the Chairman may consider necessary to pay to laborers and mechanics employed by the Contractor or any

subcontractor on the job site. The accrued payments withheld shall be the difference between the wages required by this Contract and the wages actually received by such laborers or mechanics.

7.8 FAILURE TO PAY REQUIRED WAGES (§104-4, HRS or Federal Davis-Bacon). If the Department finds that any laborer or mechanic employed on the job site by the Contractor or any subcontractor has been or is being paid wages at a rate less than the required rate by the Contract, or has not received their full overtime compensation, the Department may, by written notice to the Contractor, terminate its right, or the right of any subcontractor, to proceed with the work or with the part of the work on which the required wages or overtime compensation have not been paid and may complete such work or part by contract or otherwise, and the Contractor and its sureties shall be liable to the Department for any excess costs occasioned thereby.

7.9 PAYROLLS AND PAYROLL RECORDS (§104-3 HRS)

7.9.1 A certified copy of each weekly payroll shall be submitted to the Chairman within seven (7) calendar days after the end of each weekly payroll period. Failure to do so on a timely basis shall be cause for withholding of payments, termination of the contract, and/or debarment. The Contractor shall be responsible for the timely submission of certified copies of payrolls of all subcontractors. The certification shall affirm that payrolls are correct and complete, that the wage rates contained therein are not less than the applicable rates contained in the wage determination decision, any amendments thereto during the period of the contract, and that the classifications set forth for each laborer and mechanic conform with the work they performed.

7.9.2 Payroll records for all laborers and mechanics working at the site of the work shall be maintained by the General Contractor and its subcontractors, if any, during the course of the work and preserved for a period of four (4) years thereafter. Such records shall contain the name of each employee, their address, their correct classification, rate of pay, daily and weekly number of hours worked, itemized deductions made and actual wages paid. Such records shall be made available for inspection at a place designated by the Chairman, the U.S. Department of Labor and any authorized persons who may also interview employees during working hours on the job site.

7.9.3 Note that the falsification of certifications noted in this Section 7.9, PAYROLLS AND PAYROLL RECORDS (§104-3 HRS) may subject the Contractor or subcontractor to penalties and debarment under the laws referenced in Section 7.14, LAWS TO BE OBSERVED and / or criminal prosecution.

7.10 OVERTIME AND NIGHT WORK

7.10.1 Overtime work shall be considered as work performed in excess of eight (8) hours in any one (1) day or work performed on Saturday, Sunday or legal holiday of the State. Overtime and night work are permissible when approved by the Project Manager in writing, or as called for elsewhere within these Contract Documents.

7.10.2 OVERTIME NOTIFICATION. Contractor shall inform the Project Manager in writing at least two (2) working days in advance as to exactly what specific work is to be done during any overtime and night period to ensure that proper inspection will be available.

7.10.3 In the event that work other than that contained in the above notification is performed and for which the Project Manager determines Department inspection services were necessary but not available because of the lack of notification, the Contractor may be required to remove all such work and perform the work over again in the presence of Department inspection personnel.

- 7.10.4 Any hours worked in excess of the normal eight (8) working hours per day or on Saturdays, Sundays or legal State holidays will not be considered a working day.
- 7.10.5 The Department hereby reserves the right to cancel the overtime, night, Saturday, Sunday or legal State holiday work when it is found that work during these periods is detrimental to the public welfare or the user agency.
- 7.11 OVERTIME AND NIGHT PAYMENT FOR DEPARTMENT INSPECTION SERVICE
- 7.11.1 Whenever the Contractor's operations require the Department's inspection and staff personnel to work overtime or at night, the Contractor shall reimburse the Department for the cost of such services unless otherwise instructed in the Contract. The Project Manager will notify the Contractor of the minimum number of required Department employees and other personnel engaged by the Department prior to the start of any such work. The costs chargeable to the Contractor shall include but not be limited to the following:
- 7.11.1.1 The cost of salaries which are determined by the Department and includes overtime and night time differential for the Department's staff and inspection personnel. In addition to the cost of the salaries, the Contractor shall reimburse the Department's share of contributions to the employee's retirement, medical plan, social security, vacation, sick leave, worker's compensation funds, per diem, and other applicable fringe benefits and overhead expenses;
- 7.11.1.2 The transportation cost incurred by the Department's staff and inspection personnel which are based on established rental rates or mileage allowance in use by the Department for the particular equipment or vehicle; and/or
- 7.11.1.3 Fees and other costs billed the Department by Consultants engaged on the project for overtime and/or night time work.
- 7.11.2 PAYMENT FOR INSPECTION SERVICES. The monies due the Department for staff and inspection work and use of vehicles and equipment as determined in Subsection 7.11.1, OVERTIME AND NIGHT PAYMENT FOR DEPARTMENT INSPECTION SERVICE shall be deducted from the monies due or to become due the Contractor. In any and all events, the Contractor shall not pay the Department's employees directly.
- 7.12 LIMITATIONS OF OPERATIONS
- 7.12.1 Contractor shall at all times conduct the work in such manner and in such sequence as will ensure the least practicable interference with pedestrian and motor traffic passageways. The Contractor shall furnish convenient detours and provide and plan other appropriate signs, flashers, personnel, warnings, barricades and other devices for handling pedestrian and motor traffic.
- 7.12.2 In the event that other contractors are also employed on the job site, the Contractor shall arrange its work and dispose of materials so as not to interfere with the operations of the other contractors engaged upon adjacent work. The Contractor shall join its work to that of others and existing buildings in a proper manner, and in accordance with the drawings and specifications, and perform its work in the proper sequence in relation to that of others, all as may be directed by the Project Manager.

- 7.12.3 Each Contractor shall be responsible for any damage done by it to work performed by another contractor. Each Contractor shall conduct its operations and maintain the work in such condition that no fugitive dust shall be created and adequate drainage shall be in effect at all times.
- 7.12.4 In the event that the Contractor fails to prosecute its work as provided in this Section 7.12, LIMITATIONS OF OPERATIONS or disregards the directions of the Project Manager, the Project Manager may suspend the work until such time as the Contractor provides for the prosecution of the work with minimum interference to traffic and passageways or other contractors, dust control, adequate drainage, the repair of damage and complies with the direction of the Project Manager. No payment will be made to the Contractor for the costs of such suspension.
- 7.13 ASSIGNMENT OR CHANGE OF NAME (§3-125-14 HAR)
- 7.13.1 SUBCONTRACTS AND ASSIGNMENT. The CONTRACTOR shall not assign or subcontract any of the CONTRACTOR's duties, obligations, or interests under this Contract and no such assignment or subcontract shall be effective unless (i) the CONTRACTOR obtains the prior written consent of the STATE and (ii) the CONTRACTOR's assignee or subcontractor submits to the STATE a tax clearance certificate from the of Taxation, State of Hawaii, showing that all delinquent taxes, if any, levied or accrued under state law against the CONTRACTOR's assignee or subcontractor have been paid. Additionally, no assignment by the CONTRACTOR of the CONTRACTOR's right to compensation under this Contract shall be effective unless and until the assignment is approved by the Comptroller of the State of Hawaii, as provided in Section 40-58, HRS.
- 7.13.2 RECOGNITION OF A SUCCESSOR IN INTEREST. When in the best interest of the State, a successor in interest may be recognized in an assignment Contract in which the STATE, the CONTRACTOR and the assignee or transferee (hereinafter referred to as the "Assignee") agree that:
- 7.13.2.1 The Assignee assumes all of the CONTRACTOR's obligations;
- 7.13.2.2 The CONTRACTOR remains liable for all obligations under this Contract but waives all rights under this Contract as against the STATE; and
- 7.13.2.3 The CONTRACTOR shall continue to furnish, and the Assignee shall also furnish, all required bonds.
- 7.13.3 CHANGE OF NAME. When the CONTRACTOR asks to change the name in which it holds this Contract with the STATE, the procurement officer of the purchasing agency (hereinafter referred to as the "Agency procurement officer") shall, upon receipt of a document acceptable or satisfactory to the Agency procurement officer indicating change of name (for example, an amendment to the CONTRACTOR's articles of incorporation), enter into an amendment to this Contract with the CONTRACTOR to effect such a change of name. The amendment to this Contract changing the CONTRACTOR's name shall specifically indicate that no other terms and conditions of this Contract are thereby changed.
- 7.13.4 REPORTS. All assignment Contracts and amendments to this Contract effecting changes of the CONTRACTOR's name or novations hereunder shall be reported to the CPO within thirty days of the date that the assignment Contract or amendment becomes effective.
- 7.13.5 ACTIONS AFFECTING MORE THAN ONE PURCHASING AGENCY. Notwithstanding the provisions of Subsections 7.13.2 through 7.13.4 herein, when the CONTRACTOR holds Contracts

with more than one purchasing agency of the State, the assignment Contracts and the novation and change of name amendments herein authorized shall be processed only through the CPO's office.

- 7.14 LAWS TO BE OBSERVED. The CONTRACTOR shall comply with all federal, state, and county laws, ordinances, codes, rules, and regulations, as the same may be amended from time to time, that in any way affect the CONTRACTOR's performance of this Contract.
- 7.14.1 The Contractor at all times shall observe and comply with all Federal, State and local laws or ordinances, rules and regulations which in any manner affect those engaged or employed in the work, the materials used in the work, and the conduct of the work. The Contractor shall also comply with all such orders and decrees of bodies or tribunals having any jurisdiction or authority over the work. Any reference to such laws, ordinances, rules and regulations shall include any amendments thereto before and after the date of this Contract.
- 7.14.2 The Contractor shall defend, protect, hold harmless and indemnify the State and its departments and agencies and all their officers, representatives, employees or agents against any claim or liability arising from or based on the violation of any such laws, ordinances, rules and regulations, orders or decrees, whether such violation is committed by the Contractor or its Subcontractor(s) or any employee of either or both. If any discrepancy or inconsistency is discovered in the contract for the work in relation to any such laws, ordinances, rules and regulations, orders or decrees, the Contractor shall forthwith report the same to the Project Manager in writing.
- 7.14.3 While the Contractor must comply with all applicable laws, attention is directed to: Wage and Hours of Employees on Public Works, Chapter 104, Hawaii Revised Statutes (HRS); Hawaii Public Procurement Code, Authority to debar or suspend, Section 103D-702, HRS; Hawaii Employment Relations Act, Chapter 377, HRS; Hawaii Employment Security Law, Chapter 383, HRS; Worker's Compensation Law, Chapter 386, HRS; Wage and Hour Law, Chapter 387, HRS; Occupational Safety and Health, Chapter 396, HRS; and Authority to Debar or Suspend, Chapter 126, subchapter 2, Hawaii Administrative Rules (HAR).
- 7.14.4 CONFLICT BETWEEN GENERAL CONDITIONS AND PROCUREMENT RULES. In the event of a conflict between the General Conditions and the Procurement Rules, the Procurement Rules in effect on the date this Contract became effective shall control and are hereby incorporated by reference.
- 7.15 PATENTED DEVICES, MATERIALS AND PROCESSES. If the Contractor desires to use any design, device, material, or process covered by letters of patent or copyright, the right for such use shall be procured by the Contractor from the patentee or owner. The Contractor shall defend, protect, indemnify and hold harmless the State of Hawaii, the contracting agency, and their officers, employees, and agents from and against all liability, loss, damage, cost, and expense, including attorney' fees, and all claims, suits, and demands arising out of or resulting from any claims, demands, or actions by the patent holder for infringement or other improper or unauthorized use of any patented article, patented design, patented device, patented process, patented appliance or patented material in connection with this Contract. The Contractor shall be solely responsible for correcting or curing to the satisfaction of the DHHL any such infringement or improper or unauthorized use, including, without limitation: (a) furnishing at no cost to the DHHL a substitute article, design, device, process, appliance or material acceptable to the DHHL; (b) paying royalties or other required payments to the patent holder; (c) obtaining proper authorizations or releases from the patent holder; and (d) furnishing such security to or making such arrangement with the patent holder as may be necessary to correct or cure any such infringement or improper or unauthorized use. This

section shall not apply to any article, design, device, material, appliance or process covered by letters of patent or copyright, which the Contractor is required to use by the Drawings or Specifications.

7.16 SANITARY, HEALTH AND SAFETY PROVISIONS

7.16.1 The Contractor shall provide and maintain in a neat, sanitary condition such accommodations for the use of its employees as may be necessary to comply with the requirements of the State and local boards of health, or other bodies or tribunals having jurisdiction. Unless otherwise stated in the drawings or specifications, the Contractor shall install toilet facilities conveniently located at the job site and maintain same in a neat and sanitary condition for the use of the employees on the job site for the duration of the Contract. The toilet facilities shall conform to the requirements of the State Department of Health. The cost of installing, maintaining and removing the toilet facilities shall be considered incidental to and paid for under various contract pay items for work or under the lump sum bids as the case may be, and no additional compensation will be made therefor. These requirements shall not modify or abrogate in any way the requirements or regulations of the State Department of Health.

7.16.2 Attention is directed to Federal, State and local laws, rules and regulations concerning construction safety and health standards. The Contractor shall not require any worker to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to their health or safety.

7.17 PROTECTION OF PERSONS AND PROPERTY

7.17.1 SAFETY PRECAUTIONS AND PROGRAMS. The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract. The Contractor shall take reasonable precautions for the safety of, and shall provide reasonable protection to prevent damage, injury or loss to:

7.17.1.1 All persons on the work site or who may be affected by the work;

7.17.1.2 All the work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor and its subcontractors; and

7.17.1.3 Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavement, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

7.17.2 Contractor shall give notices and comply with applicable laws, ordinances, regulations, rules, and lawful orders of any public body having jurisdiction for the safety of persons or property or their protection from damage, injury or loss; and the Contractor shall erect and maintain reasonable safeguards for safety and protection, including posting danger signs, or other warnings against hazards.

7.17.3 The Contractor shall notify owners of adjacent properties and of underground (or overhead) utilities when performing work which may affect the owners; and shall cooperate with the owners in the protection, removal and replacement of their property.

7.17.4 All damage, injury or loss to any property referred to in Subsections 7.17.1.2 and 7.17.1.3 caused by the fault or negligence or damage or loss attributable to acts or omissions directly or indirectly in whole or part by the Contractor a subcontractor or any one directly or indirectly employed by them, or by anyone for whose acts they might be liable, shall be remedied promptly by the Contractor.

- 7.17.5 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the protection of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor.
- 7.17.6 The Contractor shall not load or permit any part of the construction to be loaded so as to endanger its safety. The Contractor shall not injure or destroy trees or shrubs nor remove or cut them without permission of the Project Manager. Contractor shall protect all land monuments and property marks until an authorized agent has witnessed or otherwise referenced their location and shall not remove them until directed.
- 7.17.7 In the event the Contractor encounters on the site, material reasonably believed to be asbestos or other hazard material that has not been rendered harmless, the Contractor shall stop work in the area and notify the Project Manager promptly. The work in the affected area shall be resumed in the absence of hazard materials or when the hazard has been rendered harmless.
- 7.17.8 EMERGENCIES. In an emergency affecting the safety and protection of persons or the work or property at the site or adjacent thereto, Contractor without special instructions or authorization from the Project Manager, shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss. Contractor shall give the Project Manager prompt written notice of the emergency and actions taken. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined under the provisions of Section 7.25, DISPUTES AND CLAIMS.
- 7.18 ARCHAEOLOGICAL SITES
- 7.18.1 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 shall cease in the immediate vicinity of the find and the find shall be protected from further damage. The Contractor shall immediately notify the Project Manager and contact the State Historic Preservation Division which will assess the significance of the find and recommend the appropriate mitigation measures, if necessary.
- 7.18.2 When required, the Contractor shall provide and install any temporary fencing to protect archaeological sites within the project. The fencing shall be installed prior to any construction activity and shall be maintained by the Contractor for the duration of the project. Fence installation and maintenance shall be to the satisfaction of the Project Manager. The Contractor shall remove the fencing upon completion of construction, or as directed by the Project Manager.
- 7.18.3 No work shall be done within the temporary fencing area. If any construction work is done within the temporary fencing, the Contractor shall notify the Project Manager immediately; and if the Contractor entered the archaeological site area without permission, it shall stop work in this area immediately. The Project Manager shall notify the archaeologist to assess any damage to the area. The Contractor shall allow the archaeologist sufficient time to perform the field investigation.
- 7.18.4 Any site requiring data recovery within the project shall not be disturbed until data recovery is completed.
- 7.19 RESPONSIBILITY FOR DAMAGE CLAIMS; INDEMNITY
- 7.19.1 The CONTRACTOR shall defend, indemnify, and hold harmless the State of Hawaii, the contracting agency, and their officers, employees, and agents from and against all liability, loss, damage, cost,

and expense, including all attorneys' fees, and all claims, suits, and demands therefor, arising out of or resulting from the acts or omissions of the CONTRACTOR or the CONTRACTOR's employees, officers, agents, or subcontractors under this Contract. The provisions of this Subsection shall remain in full force and effect notwithstanding the expiration or early termination of this Contract.

- 7.19.2 The Contractor agrees that it will not attempt to hold the State and the Department, their officers, representatives, employees or agents, liable or responsible for any losses or damages to third parties from the action of the elements, the nature of the work to be done under these Contract Documents or from any unforeseen obstructions, acts of God, vandalism, fires or encumbrances which may be encountered in the prosecution of the work.
- 7.19.3 The Contractor shall pay all just claims for materials, supplies, tools, labor and other just claims against the Contractor or any subcontractor in connection with this contract and the surety bond will not be released by final acceptance and payment by the Department unless all such claims are paid or released. The Department may, but is not obligated to, withhold or retain as much of the monies due or to become due the Contractor under this contract considered necessary by the Project Manager to cover such just claims until satisfactory proof of payment or the establishment of a payment plan is presented.
- 7.19.4 The Contractor shall defend, indemnify and hold harmless the State and the Department, their officers, representatives, employees or agents from all suits, actions or claims of any character brought on account of any claims or amounts arising out of or recovered under the Workers' Compensation Laws or violation of any other law, by-law, ordinance, order or decree.
- 7.19.5 COST OF LITIGATION. In case the STATE shall, without any fault on its part, be made a party to any litigation commenced by or against the CONTRACTOR in connection with this Contract, the CONTRACTOR shall pay all costs and expenses incurred by or imposed on the STATE, including attorneys' fees.
- 7.20 CHARACTER OF WORKERS OR EQUIPMENT
- 7.20.1 The Contractor shall at all times provide adequate supervision and sufficient labor and equipment for prosecuting the work to full completion in the manner and within the time required by the contract.
- 7.20.2 Character and Proficiency of Workers - All workers shall possess the proper license and/or certification, job classification, skill and experience necessary to properly perform the work assigned to them. All workmen engaged in special work or skilled work, such as bituminous courses or mixtures, concrete pavement or structures, electrical installation, plumbing installation, or in any trade shall have sufficient experience in such work and in the operation of the equipment required to properly and satisfactorily perform all work. All workers shall make due and proper effort to execute the work in the manner prescribed in these Contract Documents, otherwise, the Project Manager may take action as prescribed herein.
- 7.20.2.1 Any worker employed on the project by the Contractor or by any subcontractor who, in the opinion of the Project Manager, is not careful and competent, does not perform its work in a proper and skillful manner or is disrespectful, intemperate, disorderly or neglects or refuses to comply with directions given, or is otherwise objectionable shall at the written request of the Project Manager, be removed forthwith by the Contractor or subcontractor employing such worker and shall not be employed again in any portion of the work without the written consent of the Project Manager. Should the Contractor or subcontractor continue to employ, or again employ such person or persons on the project, the

Project Manager may withhold all payments which are or may become due, or the Project Manager may suspend the work until the Project Manager's orders are followed, or both.

- 7.20.3 **INSUFFICIENT WORKERS.** A sufficient number of workers shall be present to ensure the work is accomplished at an acceptable rate. In addition, the proper ratio of apprentice to journey worker shall be maintained to ensure the work is properly supervised and performed. In the event that the Project Manager finds insufficient workers are present to accomplish the work at an acceptable rate of progress or if a adequate number of journey workers are not present and no corrective action is taken by the Contractor after being informed in writing, the Chairman may terminate the Contract as provided for under Section 7.27, **TERMINATION OF CONTRACT FOR CAUSE.**
- 7.20.4 **EQUIPMENT REQUIREMENTS.** All equipment furnished by the Contractor and used on the work shall be of such size and of such mechanical condition that the work can be performed in an acceptable manner at a satisfactory rate of progress and the quality of work produced will be satisfactory.
- 7.20.4.1 Equipment used on any portion of the project shall be such that no injury to the work, persons at or near the site, adjacent property or other objects will result from its use.
- 7.20.4.2 If the Contractor fails to provide adequate equipment for the work, the contract may be terminated as provided under Section 7.27, **TERMINATION OF CONTRACT FOR CAUSE.**
- 7.20.4.3 In the event that the Contractor furnishes and operates equipment on a force account basis, it shall be operated to obtain maximum production under the prevailing conditions.
- 7.21 **CONTRACT TIME**
- 7.21.1 Time is of the essence for this Contract.
- 7.21.2 **CALCULATION OF CONTRACT TIME.** When the contract time is on a working day basis, the total contract time allowed for the performance of the work shall be the number of working days shown in the contract plus any additional working days authorized in writing as provided hereinafter. Refer to **ARTICLE 1, DEFINITIONS** for the definition of Working Day. The count of elapsed working days to be charged against contract time shall begin from the date of the Notice to Proceed and shall continue consecutively to the date of Project Acceptance determined by the Project Manager. When the contract completion time is a fixed calendar date, it shall be the date on which all work on the project shall be completed. Maintenance periods are not included within the contract time unless specifically noted in the Contract Documents. Failure to complete the work by contract completion date shall not terminate the Contract.
- 7.21.3 **MODIFICATIONS OF CONTRACT TIME (§3-125-4 HAR)**
- 7.21.3.1 **EXTENSIONS.** For increases in the scope for work caused by alterations and additional work made under Section 4.2, **CHANGES**, the Contractor will be granted a time extension only if the changes increase the time of performance for the Contract. If the Contractor believes an extension of time is justified and is not adequately provided for in a Field Order, it must request the additional time sought in writing when the detailed cost breakdown required by Section 4.2, **CHANGES**, is submitted. The Contractor must show how the time of performance for the critical path will be affected and must also support the time extension request with schedules and statements from its subcontractors, suppliers, and/or manufacturers. Compensation for any altered or additional work will be paid as provided in Section 4.2, **CHANGES.**

- 7.21.3.2 The Department may direct changes to the work at any time until the work is finally accepted. The issuance of a Field Order at any time may alter or modify the contract duration only by the days specified therein; or if not specified therein, for the days the critical path must be extended for the change. Additional time to perform the extra work will be added to the time allowed in the contract without regard to the date the change directive was issued, even if the contract completion date has passed. A change requiring time will not constitute a waiver of pre-existing Contractor delay.
- 7.21.4 DELAY FOR PERMITS. For delays beyond the control of the Contractor in obtaining necessary permits, one day extension for each day delay may be granted by the Project Manager, provided the Contractor notifies the Project Manager that the permits are not available, as soon as the delay occurs. Time extensions shall be the exclusive relief granted on account of such delays. No additional compensation will be paid for these time extensions.
- 7.21.5 DELAYS BEYOND CONTRACTOR'S CONTROL. For delays affecting the critical path caused by acts of God, or the public enemy, fire, unusually severe weather, earthquakes, floods, epidemics, quarantine restrictions, labor disputes, freight embargoes and other reasons beyond the Contractor's control, the Contractor may be granted an extension of time provided that:
- 7.21.5.1 The Contractor notifies the Project Manager in writing within five (5) work days after the occurrence of the circumstances described above and states the possible effects on the completion date of the contract.
- 7.21.5.2 No time extension will be granted for weather conditions other than unusually severe weather occurrences, and floods.
- 7.21.5.3 The Contractor, if requested, submits to the Project Manager within ten (10) work days after the request, a written statement describing the delay to the project. The extent of delay must be substantiated as follows:
- (a) State specifically the reason or reasons for the delay and fully explain in a detailed chronology the effect of this delay to the work and/or the completion date;
  - (b) Submit copies of purchase order, delivery tag, and any other pertinent documentation to support the time extension request;
  - (c) Cite the period of delay and the time extension requested; and
  - (d) A statement either that the above circumstances have been cleared and normal working conditions restored as of a certain day or that the above circumstances will continue to prevent completion of the project.
- 7.21.5.4 Time extensions shall be the exclusive relief granted and no additional compensation will be paid the Contractor for such delays.
- 7.21.6 DELAYS IN DELIVERY OF MATERIALS. For delays in delivery of materials and/or equipment which occur as a result of unforeseeable causes beyond the control and without fault or negligence of the Contractor, its subcontractor(s) or supplier(s), the Contractor may be granted an extension of time provided it complies with the following procedures:
- 7.21.6.1 The Contractor must notify the Project Manager in writing within five (5) consecutive working days after it first has any knowledge of delays or anticipated delays and state the effects such delays may have on the completion date of the Contract.

- 7.21.6.2 The Contractor, if requested, must submit to the Project Manager within ten (10) working days after a firm delivery date for the material and equipment is established, a written statement as to the delay to the progress of the project. The delay must be substantiated as follows:
- (a) State specifically the reason or reasons for the delay. Explain in a detailed chronology the effect of this delay to the other work and / or the completion date;
  - (b) Submit copies of purchase order(s), factory invoice(s), bill(s) of lading, shipping manifest(s), delivery tag(s) and any other pertinent correspondence to support the time extension request; and
  - (c) Cite the start and end date of the delay and the days requested therefore. The delay shall not exceed the difference between the originally scheduled delivery date versus the actual delivery date.
- 7.21.6.3 Time extensions shall be the exclusive relief granted and no additional compensation will be paid the Contractor on account of such delay.
- 7.21.7 DELAYS FOR SUSPENSION OF WORK. Delay during periods of suspension of the work by the Project Manager shall be computed as follows:
- 7.21.7.1 When the performance of the work is totally suspended for one (1) or more days (calendar or working days, as appropriate) by order of the Project Manager in accordance with Subsections 7.24.1.1, 7.24.1.2, 7.24.1.4 or 7.24.1.6 the number of days from the effective date of the Project Manager's order to suspend operations to the effective date of the Project Manager's order to resume operations shall not be counted as contract time and the contract completion date will be adjusted. Should the Contractor claim for additional days in excess of the suspension period, Contractor shall provide evidence justifying the additional time. During periods of partial suspensions of the work, the Contractor will be granted a time extension only if the partial suspension affects the critical path. If the Contractor believes that an extension of time is justified for a partial suspension of work, it must request the extension in writing at least five (5) working days before the partial suspension will affect the critical operation(s) in progress. The Contractor must show how the critical path was increased based on the status of the work and must also support its claim, if requested, with statements from its subcontractors. A suspension of work will not constitute a waiver of pre-existing Contractor delay.
- 7.21.8 CONTRACTOR CAUSED DELAYS - No time extension will be considered for the following:
- 7.21.8.1 Delays in performing the work caused by the Contractor, subcontractor and/or supplier;
  - 7.21.8.2 Delays in arrival of materials and equipment caused by the Contractor, subcontractor and / or supplier in ordering, fabricating, delivery, etc.;
  - 7.21.8.3 Delays requested for changes which the Project Manager determines unjustifiable due to the lack of supporting evidence or because the change is not on the critical path;
  - 7.21.8.4 Delays caused by the failure of the Contractor to submit for review and acceptance by the Project Manager, on a timely basis, pricing proposals, shop drawings, descriptive sheets, material samples, color samples, etc. except as covered in Subsection 7.21.5 and 7.21.6;
  - 7.21.8.5 Failure to follow the procedure within the time allowed to qualify for a time extension; and
  - 7.21.8.6 Days the Contractor is unable to work due to normal rainfall or other normal bad weather day conditions.

7.21.9 REDUCTION IN TIME - If the Department deletes any portion of the work, an appropriate reduction of contract time may be made in accordance with Section 4.2, CHANGES.

## 7.22 CONSTRUCTION SCHEDULE

7.22.1 The Contractor shall submit its detailed construction schedule to the Project Manager prior to the start of the work. The purpose of the schedule is to allow the Project Manager to monitor the Contractor's progress on the work. The schedule shall account for normal inclement weather, unusual soil or other conditions that may influence the progress of the work, schedules and coordination required by any utility, off or on site fabrications, and all other pertinent factors that relate to progress.

7.22.2 Submittal of and the Project Manager's receipt of the construction schedule shall not imply the Department's approval of the schedule's breakdown, its individual elements, and any critical path that may be shown. Any acceptance or approval of the schedule: (1) shall be for general format only and not for sequences or durations thereon; and (2) shall not be deemed an agreement by the Department that the construction means, methods and resources shown on the schedule will result in work that conforms to the contract requirements. The Contractor has the risk of all elements (whether or not shown) of the schedule and its execution.

7.22.3 In the event the Contractor submits and the Department receives an accelerated schedule (shorter than the contract time), such will not constitute an agreement to modify the contract time or completion date, nor will the receipt, acceptance or approval of such a schedule incur any obligation by the Department. The Contractor shall be solely responsible for and shall accept all risks and any delays that may materialize during the construction work until the contract completion date is reached. The contract time or completion date is established for the benefit of the Department and cannot be changed without an appropriate change order issued by the Department. All float on an accelerated schedule belongs exclusively to the Department. The Department will not be responsible for or obligated to accept the work before the completion date established by the Contract.

7.23 STATEMENT OF WORKING DAYS - For all contracts on a working day basis, the Contractor will submit a statement of the number of working days for each month together with the Monthly Payment Application. The Monthly Payment Application will not be processed without the statement of working days.

## 7.24 SUSPENSION OF WORK (§3-125-7 HAR)

7.24.1 PROCEDURE TO BE FOLLOWED. The Chairman may, by written order to the Contractor, at any time and without notice to any surety, suspend the performance of the work either in whole or in part for any cause, including but not limited to:

7.24.1.1 Weather or excess bad weather days, considered unsuitable by the Project Manager for prosecution of the work; or

7.24.1.2 Soil Conditions considered unsuitable by the Project Manager for prosecution of the work; or 7.24.1.3 Failure of the Contractor to:

- (a) Correct conditions unsafe for the general public or for the workers;
- (b) Carry out orders given by the Project Manager;
- (c) Perform the work in strict compliance with the provisions of the contract; or
- (d) Provide a qualified Superintendent on the jobsite as described under Subsection 5.9.2, SUPERINTENDENT.

- 7.24.1.4 When any redesign is deemed necessary by the Project Manager; or
- 7.24.1.5 Disturbance due to noise, odors or dust arising from the construction even if such disturbance does not violate the section on Environmental Protection contained in the Contract Documents; or
- 7.24.1.6 The convenience of the Department.
- 7.24.2 PARTIAL OR TOTAL SUSPENSION OF WORK. Suspension of work on some but not all items of work shall be considered a partial suspension. Suspension of work on the entire work at the job site shall be considered total suspension. The period of suspension shall be computed as set forth in Subsection 7.21.7, Delays for Suspension of Work.
- 7.24.3 PAYMENT
- 7.24.3.1 In the event that the Contractor is ordered by the Chairman in writing as provided herein to suspend all work under the contract in accordance with Subsections 7.24.1.4 or 7.24.1.6, the Contractor may be reimbursed for actual direct costs incurred on work at the jobsite, as authorized in writing by the Chairman, including costs expended for the protection of the work. Payment for equipment which must standby during such suspension of work shall be made as described in clause 8.3.4.5.(e). No payment will be made for profit on any suspension costs. An allowance of five percent (5%) will be paid on any reimbursed actual costs for indirect categories of delay costs, including extended branch and home-office overhead and delay impact costs.
- 7.24.3.2 However, no adjustment to the contract amount or time shall be made under this Section 7.24, SUSPENSION OF WORK (§3-125-7 HAR) for any suspension, delay, or interruption:
- (a) To the extent that performance would have been so suspended, delayed, or interrupted by any other cause, including the fault or negligence of the Contractor; or
  - (b) For which an adjustment is provided for or excluded under any other provision of this Contract.
- 7.24.3.3 Any adjustment in contract price made pursuant to this subsection shall be determined in accordance with this Section 7.24, SUSPENSION OF WORK (§3-125-7 HAR) and Section 4.2, CHANGES.
- 7.24.3.4 Claims for such compensation shall be filed with the Project Manager within ten (10) calendar days after the date of the order to resume work or such claims will be waived by the Contractor. Together with the claim, the Contractor shall submit substantiating documents supporting the entire amount shown on the claim. The Chairman may make such investigations as are deemed necessary and shall be the sole judge of the claim and the Chairman's decision shall be final.
- 7.24.4 CLAIMS NOT ALLOWED. No claim under this Section 7.24, SUSPENSION OF WORK (§3-125-7 HAR) shall be allowed:
- 7.24.4.1 For any direct costs incurred more than twenty (20) days before the Contractor shall have notified the Project Manager in writing of any suspension that the Contractor considers compensable. This requirement shall not apply as to a claim resulting from a suspension order under Subsections 7.24.1.4 or 7.24.1.6; and 7.24.4.2 Unless the claim is asserted in writing within ten (10) calendar days after the termination of such suspension, delay, or interruption, but in no case not later than the date of final payment under the contract.
- 7.24.4.2 No provision of this Section 7.24, SUSPENSION OF WORK (§3-125-7 HAR) shall be construed as entitling the Contractor to compensation for delays due to failure of surety, for suspensions made at

the request of the Contractor, for any delay required under the Contract, for partial suspension of work or for suspensions made by the Project Manager under the provisions of Subsections 7.24.1.1, 7.24.1.2, 7.24.1.3 and 7.24.1.5.

- 7.25 DISPUTES AND CLAIMS (§3-126-31 HAR). Disputes shall be resolved in accordance with Section 103D-703, HRS, and chapter 126, Procurement Rules, as the same may be amended from time to time.
- 7.25.1 REQUIRED NOTIFICATION. As a condition precedent for any claim, the Contractor must give notice in writing to the Project Manager in the manner and within the time periods stated in Section 4.2, CHANGES for claims for extra compensation, damages, or an extension of time due for one or more of the following reasons:
- 7.25.1.1 Requirements not clearly covered in the Contract, or not ordered by the Project Manager as an extra;
- 7.25.1.2 Failure by the Department and Contractor to agree to an Oral Order or an adjustment in price or contract time for a Field Order or a Change Order (which was not previously agreed on by a Field Order), issued by the Department;
- 7.25.1.3 An action or omission by the Project Manager requiring performance changes beyond the scope of the Contract; and/or
- 7.25.1.4 Failure of the Department to issue a Field Order for controversies within the scope of Section 4.2, CHANGES.
- 7.25.1.5 For any other type of claim, the Contractor shall give notice within the time periods set forth in contract provisions pertaining to that event. If no specific contract provisions pertain to the claim, then the written notice of claim must be submitted within fifteen (15) days of the event giving rise to the claim.
- 7.25.2 CONTINUED PERFORMANCE OF WORK. The Contractor shall at all times continue with performance of the contract in full compliance with the directions of the Project Manager. Continued performance by the Contractor shall not be deemed a waiver of any claim for additional compensation, damages, or an extension of time for completion, provided that the written notice of claim is submitted in accordance with Subsection 7.25.1, REQUIRED NOTIFICATION.
- 7.25.3 The requirement for timely written notice shall be a condition precedent to the assertion of a claim.
- 7.25.4 REQUIREMENTS FOR NOTICE OF CLAIM. The notice of claim shall clearly state the Contractor's intention to make claim and the reasons why the Contractor believes that additional compensation, changes or an extension of time may be remedies to which it is entitled. At a minimum, it shall provide the following:
- 7.25.4.1 Date of the protested order, decision or action;
- 7.25.4.2 The nature and circumstances which caused the claim;
- 7.25.4.3 The contract provision(s) that support the claim;
- 7.25.4.4 The estimated dollar cost, if any, of the protested work and how that estimate was determined; and

- 7.25.4.5 An analysis of the progress schedule showing the schedule change or disruption if the Contractor is asserting a schedule change or disruption.
- 7.25.5 If the protest or claim is continuing, the information required in Subsection 7.25.4 REQUIREMENTS FOR NOTICE OF CLAIMS above shall be supplemented as requested by the Project Manager.
- 7.25.6 FINAL STATEMENT FOR CLAIM. The Contractor shall provide a final written statement of the actual adjustment in contract price and/or contract time requested for each notice of claim. Such statement shall clearly set forth that it is the final statement for that notice of claim. All such final statements shall be submitted within thirty (30) days after completion of the work that is the subject of the claim, but in no event no later than thirty (30) days after the Project Acceptance Date or the date of termination of the Contractor, whichever comes first.
- 7.25.7 All claims of any nature are barred if asserted after final payment under this Contract has been made.
- 7.25.8 Contractor may protest the assessment or determination by the Project Manager of amounts due the Department from the Contractor by providing a written notice to the Chairman within thirty (30) days of the date of the written assessment or determination. Said notice shall comply with all requirements of Subsections 7.25.4, REQUIREMENTS FOR NOTICE OF CLAIM and 7.25.6, FINAL STATEMENT FOR CLAIM above. The requirement of such notice cannot be waived and it is a condition precedent to any claim by the Contractor. Failure to comply with these notice provisions constitutes a waiver of any claim.
- 7.25.9 In addition to the requirements of Subsections 7.25.4, 7.25.6, and 7.25.8, all final written statements of claim shall be certified. This certification requirement applies to the Contractor without exception, including, but not limited to, situations involving claims of subcontractors or suppliers which meet the requirements of Subsection 5.13.4. The certification must be executed by a person duly authorized to bind the Contractor with respect to the claim. The certification shall state as follows:
- “I certify that the claim is made in good faith; that the supporting data are accurate and complete to the best of my knowledge and belief; that the amount requested accurately reflects the contract adjustment for which the Contractor believes the Department is liable; and that I am duly authorized to certify the claim on behalf of the Contractor.”
- 7.25.10 DECISION ON CLAIM/APPEAL. The decision of the Chairman on the claim shall be final and conclusive, unless fraudulent, or unless the Contractor delivers to the Chairman a written appeal of the Chairman’s decision. Said appeal shall be delivered to the Chairman no later than thirty (30) days after the date of the Chairman’s decision.
- 7.25.10.1 In that event, the decision of the Chairman shall be final and conclusive, unless fraudulent or unless the Contractor brings an action seeking judicial review of the Chairman’s decision in an appropriate circuit court of this State within six (6) months from the date of the Chairman’s decision.
- 7.25.11 PAYMENT AND INTEREST. The amount determined payable pursuant to the decision, less any portion already paid, normally should be paid without awaiting Contractor action concerning appeal. Such payments shall be without prejudice to the rights of either party. Interest on amounts ultimately determined to be due to a Contractor shall be payable at the Statutory rate applicable to judgments against the State under Chapter 662, HRS from the date of receipt of a properly certified final written statement of actual adjustment required until the date of decision; except, however, that if an action is initiated in circuit court, interest under this Section 7.25, DISPUTES AND CLAIMS (§3-126-31 HAR) shall only be calculated until the time such action is initiated. Interest on amounts due the

Department from the Contractor shall be payable at the same rate from the date of issuance of the Project Manager's notice to the Contractor. Where such payments are required to be returned by a subsequent decision, interest on such payments shall be paid at the statutory rate from the date of payment.

7.25.12 Contractor shall comply with any decision of the Chairman and proceed diligently with performance of this contract pending final resolution by a circuit court of this State of any controversy arising under, or by virtue of, this Contract, except where there has been a material breach of contract by the Department; provided that in any event the Contractor shall proceed diligently with the performance of the Contract where the Project Manager has made a written determination that continuation of work under the Contract is essential to the public health and safety.

7.25.13 **WAIVER OF ATTORNEY'S FEES.** In the event of any litigation arising under, or by virtue of, this Contract, the Contractor and the Department agree to waive all claims against each other for attorney's fees and agree to refrain from seeking attorney's fees as part of any award or relief from any court.

#### 7.26 **FAILURE TO COMPLETE THE WORK ON TIME**

7.26.1 Completion of the work within the required time is important because delay in the prosecution of the work will inconvenience the public and interfere with the Department's business. In addition, the Department will be damaged by the inability to obtain full use of the completed work and by increased engineering, inspection, superintendence, and administrative services in connection with the work. Furthermore, delay may detrimentally impact the financing, planning, or completion of other Department projects because of the need to devote Department resources to the project after the required completion date. The monetary amount of such public inconvenience, interference with Department business, and damages, is difficult, if not impossible, to accurately determine and precisely prove. Therefore, it is hereby agreed that the amount of such damages shall be the appropriate sum of liquidated damages.

7.26.1.1 When the Contractor fails to complete the work or any portion of the work within the time or times fixed in the contract or any extension thereof, it is agreed the Contractor shall pay liquidated damages to the Department in the amount of \$1,000 (one thousand dollars) per calendar day, unless otherwise indicated in the Special Conditions.

7.26.1.2 If the Contractor fails to correct Punchlist deficiencies as required by Section 7.32, **PROJECT ACCEPTANCE DATE**, the Department will be inconvenienced and damaged, therefore, it is agreed that the Contractor shall pay liquidated damages to the Department based upon the amount stated in Section 7.26.1.1. Liquidated damages shall accrue for all days after the Contract Completion Date or any extension thereof, until the date the Punchlist items are corrected and accepted by the Project Manager.

7.26.1.3 If the Contractor fails to submit final documents as required by Section 7.33, **FINAL SETTLEMENT OF CONTRACT**, the Department will be inconvenienced and damaged, therefore, it is agreed that the Contractor shall pay liquidated damages to the Department in the amount stated in the Section 7.26.1.1. Liquidated damages shall accrue for all days after the Contract Completion Date or any extension thereof, until the date the final documents are received by the Project Manager.

7.26.1.4 The Project Manager shall assess the total amount of liquidated damages in accordance with the amount of \$1,000 (one thousand dollars) per day, unless otherwise indicated in the Special Conditions, and provide written notice of such assessment to the Contractor.

- 7.26.2 ACCEPTANCE OF LIQUIDATED DAMAGES. The assessment of liquidated damages by the Project Manager shall be accepted by the parties hereto as final, unless the Contractor delivers a written appeal of the Project Manager's decision in accordance with Subsection 7.25.10, DECISION ON CLAIM/APPEAL REQUIREMENTS. Any allowance of time or remission of charges or liquidated damages shall in no other manner affect the rights or obligations of the parties under this contract nor be construed to prevent action under Section 7.27, TERMINATION OF CONTRACT FOR CAUSE. If the Department terminates the Contractor's right to proceed, the resulting damage will include such liquidated damages for such time as may be required for final completion of the work after the required contract completion date.
- 7.26.3 PAYMENTS FOR LIQUIDATED DAMAGES. Liquidated damages shall be deducted from monies due or that may become due to the Contractor under the contract or from other monies that may be due or become due to the Contractor from the Department.
- 7.26.4 If the Contractor contests the per diem liquidated charge, the Department may elect to recover the actual damages caused by the Contractor's delay. Should the Department claim liquidated damages for delay and if such liquidated damages are disallowed for any reason, the Department shall recover the actual damages to which it is legally entitled as a result of the Contractor's delay or other breach.
- 7.27 TERMINATION OF CONTRACT FOR CAUSE (§3-125-18 HAR)
- 7.27.1 DEFAULT. If the Contractor refuses or fails to perform the work, or any separable part thereof, with such diligence as will assure its completion within the time specified in this contract, or any extension thereof, fails to complete the work within such time, or commits any other material breach of this contract, and further fails within seven (7) days after receipt of written notice from the Project Manager to commence and continue correction of the refusal or failure with diligence and promptness, the Chairman may, by written notice to the Contractor, declare the Contractor in breach and terminate the Contractor's right to proceed with the work or the part of the work as to which there has been delay or other breach of contract. In such event, the Department may take over the work and perform the same to completion, by contract or otherwise, and may take possession of, and utilize in completing the work, the materials, appliances, and plant as may be on the site of the work and necessary therefor. Whether or not the Contractor's right to proceed with the work is terminated, the Contractor and the Contractor's sureties shall be liable for any damage to the Department resulting from the Contractor's refusal or failure to complete the work within the specified time.
- 7.27.2 ADDITIONAL RIGHTS AND REMEDIES. The rights and remedies of the Department provided in this contract are in addition to any other rights and remedies provided by law.
- 7.27.3 COSTS AND CHARGES
- 7.27.3.1 All costs and charges incurred by the Department, together with the cost of completing the work under contract, will be deducted from any monies due or which would or might have become due to the Contractor had it been allowed to complete the work under the contract. If such expense exceeds the sum which would have been payable under the contract, then the Contractor and the surety shall be liable and shall pay the Department the amount of the excess.
- 7.27.3.2 In case of termination, the Chairman shall limit any payment to the Contractor to the part of the contract satisfactorily completed at the time of termination. Payment will not be made until the work has satisfactorily been completed and the tax clearance required by Section 8.8, FINAL PAYMENT

is submitted by the Contractor. Termination shall not relieve the Contractor or Surety from liability for liquidated damages.

- 7.27.4 **ERRONEOUS TERMINATION FOR CAUSE.** If, after notice of termination of the Contractor's right to proceed under this Section 7.27, **TERMINATION OF CONTRACT FOR CAUSE** (§3-125-18 HAR) it is determined for any reason that good cause did not exist to allow the Department to terminate as provided herein, the rights and obligations of the parties shall be the same as, and the relief afforded the Contractor shall be limited to, the provisions contained in Section 7.28, **TERMINATION FOR CONVENIENCE.**
- 7.28 **TERMINATION FOR CONVENIENCE** (§3-125-22 HAR)
- 7.28.1 **TERMINATION.** The Chairman may, when the interests of the Department so require, terminate this contract in whole or in part, for the convenience of the Department. The Chairman shall give written notice of the termination to the Contractor specifying the part of the contract terminated and when termination becomes effective.
- 7.28.2 **CONTRACTOR'S OBLIGATIONS.** The Contractor shall incur no further obligations in connection with the terminated work and on the date set in the notice of termination the Contractor will stop work to the extent specified. The Contractor shall also terminate outstanding orders and subcontracts as they relate to the terminated work. The Contractor shall settle the liabilities and claims arising out of the termination of subcontracts and orders connected with the terminated work subject to the Department's approval. The Chairman may direct the Contractor to assign the Contractor's right, title, and interest under terminated orders or subcontracts to the Department. The Contractor must still complete the work not terminated by the notice of termination and may incur obligations as necessary to do so.
- 7.28.3 **RIGHT TO CONSTRUCTION AND GOODS.** The Chairman may require the Contractor to transfer title and delivery to the Department in the manner and to the extent directed by the Chairman, the following:
- 7.28.3.1 Any completed work; and
- 7.28.3.2 Any partially completed construction, goods, materials, parts, tools, dies, jigs, fixtures, drawings, information, and contract rights (hereinafter called "construction material") that the Contractor has specifically produced or specially acquired for the performance of the terminated part of this contract.
- 7.28.3.3 The Contractor shall protect and preserve all property in the possession of the Contractor in which the Department has an interest. If the Chairman does not elect to retain any such property, the Contractor shall use its best efforts to sell such property and construction material for the Department's account in accordance with the standards of Section 490:2-706, HRS.
- 7.28.4 **COMPENSATION**
- 7.28.4.1 Contractor shall submit a termination claim specifying the amounts due because of the termination for convenience together with cost or pricing data, submitted to the extent required by subchapter 15, chapter 3-122, HAR. If the Contractor fails to file a termination claim within one (1) year from the effective date of termination, the Chairman may pay the Contractor, if at all, an amount set in accordance with Subsection 7.28.4.3.

- 7.28.4.2 The Chairman and the Contractor may agree to a settlement provided the Contractor has filed a termination claim supported by cost or pricing data submitted as required and that the settlement does not exceed the total contract price plus settlement costs reduced by payments previously made by the Department, the proceeds of any sales of construction, supplies, and construction materials under Subsection 7.28.3.3 of this Section, and the contract price of the work not terminated.
- 7.28.4.3 Absent complete agreement, the Chairman shall pay the Contractor the following amounts, less any payments previously made under the Contract.
- (a) The cost of all contract work performed prior to the effective date of the notice of termination work plus a five percent (5%) markup on the actual direct costs, including amounts paid to subcontractor(s), less amounts previously paid or to be paid for completed portions of such work; provided, however, that if it appears that the Contractor would have sustained a loss if the entire contract would have been completed, no markup shall be allowed or included and the amount of compensation shall be reduced to reflect the anticipated rate of loss. No anticipated profit or consequential damage will be due or paid.
  - (b) Subcontractors shall be paid a markup of ten percent (10%) on their direct job costs incurred to the date of termination. No anticipated profit or consequential damage will be due or paid to any subcontractor. These costs must not include payments made to the Contractor for subcontract work during the contract period.
  - (c) In any case, the total sum to be paid the Contractor shall not exceed the total contract price reduced by the amount of any sales of construction supplies, and construction materials.
- 7.28.4.4 Costs claimed, agreed to, or established by the Department shall be in accordance with chapter 3-123, HAR.
- 7.29 **CORRECTING DEFECTS.** If the Contractor fails to commence to correct any defects of any nature, within ten (10) working days after the correction thereof has been requested in writing by the Department, and thereafter to expeditiously complete the correction of said defects, the Project Manager may without further notice to the Contractor or surety and without termination of contract, correct the defects and deduct the cost thereof from the contract price.
- 7.30 **FINAL CLEANING.** Before final inspection of the work, the Contractor shall clean all ground occupied by the Contractor in connection with the work of all rubbish, excess materials, temporary structures and equipment, and all parts of the work must be left in a neat and presentable condition to the satisfaction of the Project Manager. However, the Contractor shall not remove any warning and directional signs prior to the formal acceptance by the Project Manager. Full compensation for final cleaning will be included in the prices paid for the various items of work or lump sum bid, as the case may be, and no separate payment will be made therefor.
- 7.31 **SUBSTANTIAL COMPLETION AND FINAL INSPECTION.** Before the Department accepts the project as being completed, unless otherwise stipulated by the Project Manager the following procedure shall be followed:
- 7.31.1 **SUBSTANTIAL COMPLETION**
- 7.31.1.1 The Contractor and its subcontractors shall inspect the project to confirm whether the Project is Substantially Complete. This inspection effort shall include the testing of all equipment and providing a Punchlist that identifies deficiencies which must be corrected. Contractor shall make the corrections and if required repeat the procedure. Also, the Contractor shall schedule final Building, Plumbing, Electrical, Elevator, Fire and other required inspections and obtain final approvals.

- (a) When in compliance with the above requirements, the Contractor shall notify the Project Manager in writing that project is Substantially Complete and ready for a Final Inspection. Along with the Substantial Completion notification, the Contractor shall provide its Punchlist(s) with the status of the deficiencies and dates when the deficiencies were corrected. The Project Inspector and / or the Project Manager shall make a preliminary determination whether project is Substantially Complete.
- (b) If the Project is not Substantially Complete, the Project Manager shall inform the Contractor. The Contractor shall identify deficiencies which must be corrected, update its Punchlist, make the necessary corrections and repeat the previous step. After completing the necessary work, the Contractor shall notify the Project Manager in writing that Punchlist deficiencies have been corrected and the project is ready for a Final Inspection.
- (c) If the Project is Substantially Complete, the Project Manager shall schedule a Final Inspection within fifteen (15) days of the Contractor's notification letter or as otherwise determined by the Project Manager.

7.31.1.2 In addition, and to facilitate closing of the project, the Contractor shall also proceed to obtain the following closing documents (where applicable) prior to the Final Inspection:

- (a) Field-Posted As-Built Drawings;
- (b) Maintenance Service Contract and two (2) copies of a list of all equipment;
- (c) Five (5) sets of operating and maintenance manuals;
- (d) Air conditioning test and balance reports; and
- (e) Any other final submittal required by the Contract.

7.31.2 FINAL INSPECTION. If at the Final Inspection the Project Manager determines that all work is completed, the Project Manager shall notify the Contractor in accordance with Section 7.32, PROJECT ACCEPTANCE DATE. Should there be remaining deficiencies which must be corrected the Contractor shall provide an updated Punchlist to the Project Manager, within five (5) days from the Final Inspection Date. The Contractor shall make the necessary corrections.

7.31.2.1 The Project Manager shall confirm the list of deficiencies noted by the Contractor's punchlist(s) and will notify the Contractor of any other deficiencies that must be corrected before final settlement.

7.31.3 The Project Manager may add to or otherwise modify the Punchlist from time to time. The Contractor shall take immediate action to correct the deficiencies.

7.31.4 REVOKING SUBSTANTIAL COMPLETION. At any time before final Project Acceptance is issued the Project Manager may revoke the determination of Substantial Completion if the Project Manager finds it was not warranted. The Project Manager shall notify the Contractor in writing with the reasons and outstanding deficiencies negating the declaration. Once notified, the Contractor shall make the necessary corrections and repeat the required steps noted in Subsections 7.31.1 and 7.31.2.

## 7.32 PROJECT ACCEPTANCE DATE

7.32.1 If upon Final Inspection, the Project Manager finds that the project has been satisfactorily completed in compliance with the contract, the Project Manager shall declare the project completed and accepted and will notify the Contractor in writing of the acceptance by way of the Project Acceptance Notice.

7.32.2 PROTECTION AND MAINTENANCE. After the Project Acceptance Date, the Contractor shall be relieved of maintaining and protecting the work except that this does not hold true for those portions of the work which have not been accepted, including Punchlist deficiencies. The Department shall be responsible for the protection and maintenance of the accepted facility.

- 7.32.3 The date of Project Acceptance shall determine:
- 7.32.3.1 End of Contract Time;
  - 7.32.3.2 Commencement of all guaranty periods except as noted in Section 7.34, CONTRACTOR'S RESPONSIBILITY FOR WORK: RISK OF LOSS; and
  - 7.32.3.3 Commencement of all maintenance services except as noted in Section 7.34, CONTRACTOR'S RESPONSIBILITY FOR WORK: RISK OF LOSS.
- 7.32.4 PUNCHLIST REQUIREMENTS. If a Punchlist is required under Section 7.31, SUBSTANTIAL COMPLETION AND FINAL INSPECTION, the Project Acceptance Notice will include the Project Manager's Punchlist and the date when correction of the deficiencies must be completed.
- 7.32.5 Upon receiving the Punchlist, the Contractor shall promptly devote the required time, labor, equipment, materials and incidentals necessary to correct the deficiencies expeditiously.
- 7.32.6 For those items of work that cannot be completed by the established date, the Contractor shall submit a schedule in writing to the Project Manager for approval along with documentation to justify the time required, no later than five (5) working days before the date stipulated for completion of the Punchlist work. A Proposed schedule submitted after the five (5) day period will not be considered.
- 7.32.7 FAILURE TO CORRECT DEFICIENCIES. After the Contract Completion Date, or any extension thereof, if the Contractor fails to correct the deficiencies within the established date or agreed to Punchlist completion date, the Project Manager shall assess liquidated damages as required by Section 7.26, FAILURE TO COMPLETE THE WORK ON TIME.
- 7.32.8 If the Contractor fails to correct the deficiencies and complete the work by the established or agreed to date, the Department also reserves the right to correct the deficiencies by whatever method it deems necessary and deduct the cost from the final payment due the Contractor.
- 7.32.9 The Contractor may further be prohibited from bidding in accordance with Section 2.12, DISQUALIFICATION OF BIDDERS. In addition, assessment of damages shall not prevent action under Section 7.27, TERMINATION OF CONTRACT FOR CAUSE.
- 7.33 FINAL SETTLEMENT OF CONTRACT
- 7.33.1 The contract will be considered settled after the project acceptance date and when the following items have been satisfactorily submitted, where applicable:
    - 7.33.1.1 Necessary Submissions in addition to the items noted under Subsection 7.31.1.2.
    - 7.33.1.2 All written guarantees required by the contract.
    - 7.33.1.3 Complete and certified weekly payrolls for the Contractor and its Subcontractor(s).
    - 7.33.1.4 Certificate of Plumbing and Electrical Inspection.
    - 7.33.1.5 Certificate of Building Occupancy.

- 7.33.1.6 Certificate for Soil Treatment and Wood Treatment.
- 7.33.1.7 Certificate of Water System Chlorination.
- 7.33.1.8 Certificate of Elevator Inspection, Boiler and Pressure Pipe installation.
- 7.33.1.9 Certification of compliance with §103B-3 HRS, Employment of State Residents.
- 7.33.1.10 All other documents required by the Contract.
- 7.33.2 FAILURE TO SUBMIT CLOSING DOCUMENTS. The Contractor shall submit the final Payment Application and the above applicable closing documents within sixty (60) days from the date of Project Acceptance or the agreed to Punchlist completion date. Should the Contractor fail to comply with these requirements, the Chairman may terminate the Contract for cause. The pertinent provisions of Section 7.27, TERMINATION OF CONTRACT FOR CAUSE shall be applicable.
- 7.33.3 In addition, should the Contractor fail to furnish final closing documents within the required time period, the Project Manager shall assess liquidated damages as required by Section 7.26, FAILURE TO COMPLETE THE WORK ON TIME.
- 7.34 CONTRACTOR'S RESPONSIBILITY FOR WORK; RISK OF LOSS
  - 7.34.1 Until the establishment of the Project Acceptance Date or Beneficial Occupancy, whichever is sooner, the Contractor shall take every necessary precaution against injury or damage to any part of the work caused by the perils insured by an All Risk policy, whether arising from the execution or from the non-execution of the work. The Contractor shall rebuild, repair, restore and make good all injuries or damage to any portion of the work occasioned by the perils insured by an All Risk policy before the date of final acceptance and shall bear the risk and expense thereof.
  - 7.34.2 After the Project Acceptance Date or Beneficial Occupancy, whichever is sooner, the Contractor shall be relieved of maintaining and protecting the work except for those portions of the work which have not been accepted including Punchlist deficiencies.
  - 7.34.3 The risk of damage to the work from any hazard or occurrence that may be covered by a required Property Insurance policy is that of the Contractor, unless such risk of loss is placed elsewhere by express language in the Contract Documents. No claims for any loss or damage shall be recognized by the Department, nor will any such loss or damage excuse the complete and satisfactory performance of the Contract by the Contractor.
- 7.35 GUARANTEE OF WORK
  - 7.35.1 In addition to any required manufacturers warranties, all work and equipment shall be guaranteed by the Contractor against defects in materials, equipment or workmanship for one year from the Project Acceptance Date or as otherwise specified in the Contract Documents.
  - 7.35.2 REPAIR OF WORK. If, within any guarantee period, repairs or changes are required in connection with the guaranteed work, which in the opinion of the Project Manager is necessary due to materials, equipment or workmanship which are inferior, defective or not in accordance with the terms of the Contract, the Contractor shall within five (5) working days and without expense to the Department commence to:

- 7.35.2.1 Place in satisfactory condition in every instance all such guaranteed work and correct all defects therein; and
- 7.35.2.2 Make good and repair or replace to new or pre-existing condition all damages to the building, facility, work or equipment or contents thereof, resulting from such defective materials, equipment or installation thereof.
- 7.35.3 MANUFACTURER'S AND INSTALLER'S GUARANTEE. Whenever a manufacturer's or installer's guarantee on any product specified in the respective Specification sections, exceeds one year, this guarantee shall become part of this contract in addition to the Contractor's guarantee. Contractor shall complete the guarantee forms in the name of the Department and submit such forms to the manufacturer within such time required to validate the guarantee. Contractor shall submit to the Department a photocopy of the completed guarantee form for the Department's record as evidence that such guarantee form was executed by the manufacturer.
- 7.35.4 If a defect is discovered during a guarantee period, all repairs and corrections to the defective items when corrected shall again be guaranteed for the original full guarantee period. The guarantee period shall be tolled and suspended for all work affected by the defect. The guarantee period for work affected by the defect shall restart for its remaining duration upon confirmation by the Project Manager that the deficiencies have been repaired or remedied.
- 7.36 WORK OF AND CHARGES BY UTILITIES
- 7.36.1 The Contractor shall be responsible for scheduling and coordinating the work with the utility companies and applicable governmental agencies for permanent service installation and connections or modifications to existing utilities. The Contractor shall make available all portions of the work necessary for the utility companies to do their work. The Department shall not bear the risk of any damage to the contract work caused by any utility company, and work of repairing such damage and delay costs must be resolved between the Contractor, the utility company, and their insurers.
- 7.36.2 Unless stated as an allowance item to be paid by the Contractor, the Department will pay the utility companies and applicable governmental agencies directly for necessary modifications and connections. Contractor charges for overhead, supervision, coordination, profit, insurance and any other incidental expenses shall be included in the Contractor's Bid whether the utility is paid directly by the Department or by an allowance item in the Contract.
- 7.37 RIGHT TO AUDIT RECORDS
- 7.37.1 The STATE may, at reasonable times and places, audit the books and records of the CONTRACTOR, prospective contractor, subcontractor or prospective subcontractor which are related to the cost or pricing data, and a State contract, including subcontracts, other than a firm fixed-price contract. The Contractor and subcontractor(s) shall maintain the books and records for a period of four (4) years from the date of final payment under the Contract.
- 7.37.2 The Contractor shall ensure that its subcontractors comply with this requirement and shall bear all costs (including attorney's fees) of enforcement in the event of its subcontractor's failure or refusal to fully cooperate.
- 7.37.3 Additionally, Sections 231-7, 235-108, 237-39 and other HRS chapters through reference, authorize the Department of Taxation to audit all taxpayers conducting business within the State. Contractors

must make available to the Department of Taxation all books and records necessary to verify compliance with the tax laws.

7.38 RECORDS MAINTENANCE, RETENTION AND ACCESS

7.38.1 The Contractor and any subcontractor whose contract for services is valued at \$25,000 (twenty five thousand) or more shall, in accordance with generally acceptable accounting practices, maintain fiscal records and supporting documents and related files, papers, and reports that adequately reflect all direct and indirect expenditures and management and fiscal practices related to the Contractor and subcontractor's performance of services under this Contract.

7.38.2 The representative of the Department, the Chairman, the Attorney General, (the Federal granting agency, the Comptroller General of the United States, and any of their authorized representatives when federal funds are utilized), and the Legislative Auditor of the State of Hawaii shall have the right of access to any book, document, paper, file, or other record of the Contractor and any subcontractor that is related to the performance of services under this Contract in order to conduct an audit or other examination and /or to make copies, excerpts and transcripts for the purposes of monitoring and evaluating the Contractor and subcontractor's performance of services and the Contractor and subcontractor's program, management, and fiscal practices to assure the proper and effective expenditure of funds and to verify all costs associated with any claims made under this Contract.

7.38.3 The right of access shall not be limited to the required retention period but shall last as long as the records are retained. The Contractor and subcontractor shall maintain and retain all books and records related to the Contractor and subcontractor's performance of services under this Contract, including any cost or pricing data for three (3) years from the date of final payment, except that if any litigation, claim, negotiation, investigation, audit or other action involving the books and records has been started before the expiration of the three (3) year period, the Contractor and subcontractors shall retain the books and records until completion of the action and resolution of all issues that arise from it, or until the end of the three (3) year retention period, whichever occurs later. Furthermore, it shall be the Contractor's responsibility to enforce compliance with this provision by any subcontractor.

7.39 COST OR PRICING DATA. Cost or pricing data must be submitted to the Agency purchasing officer and timely certified as accurate for contracts over \$100,000 unless the contract is for a multiple-term or as otherwise specified by the procurement officer. Unless otherwise required by the Agency procurement officer, cost or pricing data submission is not required for Contracts awarded pursuant to competitive sealed bid procedures. If certified cost or pricing data are subsequently found to have been inaccurate, incomplete, or noncurrent as of the date stated in the certificate, the STATE is entitled to an adjustment of the contract price, including profit or fee, to exclude any significant sum by which the price, including profit or fee, was increased because of the defective data. It is presumed that overstated cost or pricing data increased the contract price in the amount of the defect plus related overhead and profit or fee. Therefore, unless there is a clear indication that the defective data was not used or relied upon, the price will be reduced in such amount.

7.39.1 AUDIT OF COST OR PRICING DATA. When cost or pricing principles are applicable, the STATE may require an audit of cost or pricing data.

7.40 CONFIDENTIALITY OF MATERIAL

7.40.1 All material given to or made available to the CONTRACTOR by virtue of this Contract, which is identified as proprietary or confidential information, will be safeguarded by the CONTRACTOR and

shall not be disclosed to any individual or organization without the prior written approval of the STATE.

- 7.40.2 All information, data, or other material provided by the CONTRACTOR to the STATE shall be subject to the Uniform Information Practices Act, chapter 92F, HRS.
- 7.41 PUBLICITY. The CONTRACTOR shall not refer to the STATE, or any office, agency, or officer thereof, or any State employee, including the head of the purchasing agency, the Chief Procurement Officer, the Director, the Agency procurement officer, or to the services or goods, or both, provided under this Contract, in any of the CONTRACTOR's brochures, advertisements, or other publicity of the CONTRACTOR. All media contacts with the CONTRACTOR about the subject matter of this Contract shall be referred to the Agency procurement officer.
- 7.42 OWNERSHIP RIGHTS AND COPYRIGHT. The STATE shall have complete ownership of all material, both finished and unfinished which is developed, prepared, assembled, or conceived by the CONTRACTOR pursuant to this Contract, and all such material shall be considered "works made for hire." All such material shall be delivered to the STATE upon expiration or termination of this Contract. The STATE, in its sole discretion, shall have the exclusive right to copyright any product, concept, or material developed, prepared, assembled, or conceived by the CONTRACTOR pursuant to this Contract.
- 7.43 GOVERNING LAW. The validity of this Contract and any of its terms or provisions, as well as the rights and duties of the parties to this Contract, shall be governed by the laws of the State of Hawaii. Any action at law or in equity to enforce or interpret the provisions of this Contract shall be brought in a state court of competent jurisdiction in Honolulu, Hawaii.
- 7.44 SEVERABILITY. In the event that a court declares any provision of this Contract invalid or unenforceable, such invalidity or unenforceability shall not affect the validity or enforceability of the remaining terms of this Contract.
- 7.45 WAIVER. The failure of the STATE to insist upon the strict compliance with any term, provision, or condition of this Contract, shall not constitute or be deemed to constitute a waiver or relinquishment of the STATE's right to enforce the same in accordance with this Contract. The fact that the STATE specifically refers to one provision of the Procurement Rules or one section of the Hawaii Revised Statutes, and does not include other provisions or statutory sections in this Contract shall not constitute a waiver or relinquishment of the STATE's rights or the CONTRACTOR's obligations under the Procurement Rules or statutes.
- 7.46 UTILITIES AND SERVICES
- 7.46.1 Where its operations are next to or near properties of utility companies or other property, the CONTRACTOR shall not start work until the CONTRACTOR makes arrangements necessary for the protection of said property.
- 7.46.2 The CONTRACTOR shall cooperate, coordinate and schedule its work to suit the owners of underground or overhead utility lines or other property in removing or altering such lines or providing new services in order for the work to progress according to the contract. Cooperation includes rearranging the CONTRACTOR's operations and normal work schedules and realignment of work as approved by the Department in order to accommodate the operations and work of the utilities and/or other property in and around the work site at no additional cost to the Department.

- 7.46.3 The CONTRACTOR shall contact all the various utility companies before the start of the work to ascertain any existing utilities and to develop a full understanding of the utility requirements with respect to this project. The CONTRACTOR shall furnish the Project Manager with evidence that the CONTRACTOR has contacted the utility companies.
- 7.46.4 If the CONTRACTOR discovers that the existence and location of utilities in the contract plans are not correct, the CONTRACTOR shall not disturb the utilities and immediately notify the Project Manager. The Project Manager will advise the CONTRACTOR regarding actions to take.
- 7.46.5 The CONTRACTOR shall ascertain the exact location and depth of utilities within the project area. The CONTRACTOR shall mark such locations to warn workers or equipment operators of their existence and location. The CONTRACTOR shall be responsible to acquaint personnel working near utilities with the type, size, location and depth of the utilities and the consequences that might result from disturbances. The CONTRACTOR shall not start trenching or start similar operations until the CONTRACTOR has taken reasonable and appropriate precautions to protect the utilities.
- 7.46.6 Any utilities or other property that the CONTRACTOR encounters during the progress of the work, such as telephone ducts, electric ducts, water lines, sewer lines, electric lines and drainage pipes, whether shown or not on the contract plans, shall not be disturbed or damaged unless otherwise instructed in the plans and specifications.
- 7.46.7 In the event the utilities or other property are damaged or disturbed by the CONTRACTOR, the CONTRACTOR shall be liable for all such damage where the utilities or other property are:
- (a) Shown on the plan in its actual or approximate location; or
  - (b) Exposed on the job as it progresses; or
  - (c) Pointed out to the CONTRACTOR in the field.
- 7.46.8 Such utilities or other property as described above shall be “known utilities or other property.” If the CONTRACTOR encounters an unknown utility or other property, it shall not proceed until it has notified the Project Manager and receives instructions. If the Project Manager directs additional work, it shall be paid for under Section 4.2, CHANGES.
- 7.46.9 The CONTRACTOR shall repair and restore to pre-damaged condition any utilities or any other property it may damage, and it shall be liable for any and all resulting damage at no cost to the Department, the work or utility owner or property owner. Any damage claim due to the disruption of service caused by the utilities being damaged shall be paid by the CONTRACTOR who shall defend, indemnify and hold harmless the Department from all suits, actions or claims of any character brought on account of such damages, whether or not the Department may have been partially at fault. Public liability and property damage insurance to be obtained by the CONTRACTOR pursuant to Section 7.3 INSURANCE REQUIREMENTS shall cover such risk of damage.
- 7.46.10 In the event the CONTRACTOR simultaneously with the discovery of an unknown utility or other property damages that utility or other property, the CONTRACTOR shall not be held liable beyond the extent of the CONTRACTOR’s liability insurance but shall immediately notify the Project Manager. Upon instruction from the Project Manager, the CONTRACTOR shall repair all damages and execute a plan for dealing with the damaged utility or other property. This repair work shall be considered additional work as covered in Section 4.2, CHANGES.

*~END OF ARTICLE 7~*

## **ARTICLE 8: MEASUREMENT AND PAYMENT**

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### **8.1 MEASUREMENT OF QUANTITIES**

8.1.1 All work completed under the Contract shall be measured by the Project Manager according to United States standard measures, or as stated in this Contract. The method of measurement and computations to be used in determination of quantities of material furnished and of work performed under the contract shall conform to good Managing practice. These measurements shall be considered correct and final unless the Contractor has protested same to the Project Manager and has demonstrated the existence of an error by actual physical measurement before the work has progressed in a manner, which would prohibit a proper check.

8.1.2 All measurements of the area of the various surfaces, pavement and base courses will be made in the horizontal projection of the actual surface and no deductions will be made for fixtures or structures having an area of nine (9) square feet or less. All measurements of headers, curbs, fences and any other type of construction which is to be paid for by its length will be made in the horizontal projection of the actual driven length from toe to top of cutoff, and for piles, which will be by actual length. All materials which are specified for measurement by the cubic yard "Loose Measurement" or "Measured in the Vehicle" shall be hauled in approved vehicles and measured therein at the point of delivery. Approved vehicles for this purpose may be of any type or size satisfactory to the Project Manager, provided that the body is of such type that the actual contents may be readily and accurately determined. Unless all approved vehicles on a job are of a uniform capacity each approved vehicle must bear a plainly legible identification mark indicating the specific approved capacity. The Inspector may reject all loads not hauled in such approved vehicles.

8.2 **NO WAIVER OF LEGAL RIGHTS.** The Project Manager shall not be precluded or estopped by any measurements, estimate or certificate made either before or after the completion and acceptance of the work and payment therefor, from showing the true amount and character of the work performed and materials furnished by the Contractor, or from showing that any such measurement estimate or certificate is untrue or incorrectly made, or rejecting the work or materials that do not conform in fact to the contract. The Project Manager shall not be precluded or estopped, notwithstanding any such measurement, estimate, or certificate and payment in accordance therewith, from recovering from the Contractor and its sureties such damages as the Department may sustain by reason of the Contractor's failure to comply with the terms of the Contract. Neither the acceptance by the Project Manager or any representative of the Project Manager, nor any payment for or acceptance of the whole or any part of the work, nor any extension of time, or any possession taken by the Project Manager, shall operate as a waiver of any portion of the contract, or of any power herein reserved, or any right to damage herein provided. A waiver of any notice requirement or breach of the contract shall not be held to be a waiver of any other notice requirement or subsequent breach.

### **8.3 PAYMENT FOR ADDITIONAL WORK**

8.3.1 Additional work as defined in Section 4.2, **CHANGES**, when ordered, shall be paid for as defined in Section 4.4, **PRICE ADJUSTMENT** by a duly issued change order in accordance with the terms provided therein.

8.3.2 On credit proposals and proposals covering both increases and decreases, the application of overhead and profit shall be on the net change in direct costs for the performance of the work.

8.3.3 When payment is to be made for additional work directed by a Field Order, the total price adjustment as specified in the Field Order or if not specified therein for the work contained in the related change

order shall be considered full compensation for all materials, labor, insurance, taxes, equipment use or rental and overheads, both field and home office including extended home and branch office overhead and other related delay impact costs.

8.3.4 FORCE ACCOUNT METHOD. When, for the convenience of the Department, payment is to be made by the Force Account method, all work performed or labor and materials and equipment furnished shall be paid for as described below. Payment by the Force Account method will not alter any rights, duties and obligations under the contract.

8.3.4.1 LABOR. For all hourly workers, the Contractor will receive the rate of wage including fringe benefits when such amounts are required by collective bargaining agreement or other employment contract generally applicable to the classes of labor employed on the work, which shall be agreed upon in writing before beginning work for each and every hour that said labor is actually engaged in said work.

- (a) All markups for overhead and profit shall be added subject to limitations established in Section 4.5, ALLOWANCES FOR OVERHEAD AND PROFIT.
- (b) No allowance for overtime compensation will be given without the written approval of the Project Manager prior to performance of such work.

8.3.4.2 INSURANCE AND TAXES. The Contractor and subcontractor(s) will also receive the actual additional costs paid for property damage, liability, worker's compensation insurance premiums, State unemployment contributions, Federal unemployment taxes, social security and Medicare taxes.

8.3.4.3 MATERIALS. For materials accepted by the Project Manager and used, the Contractor and subcontractor(s) shall receive the actual cost of such materials delivered and incorporated into work, plus a markup allowed under Section 4.5, ALLOWANCES FOR OVERHEAD AND PROFIT.

8.3.4.4 SUBCONTRACTORS. Subcontractor costs shall be the actual costs of the subcontractor marked up as defined in this Section 8.3, PAYMENT FOR ADDITIONAL WORK plus a markup allowed under Section 4.5, ALLOWANCES FOR OVERHEAD AND PROFIT.

8.3.4.5 EQUIPMENT

- (a) For machinery or special equipment (other than small tools as herein defined in Subsection 8.3.4.5.(h) owned or leased by the Contractor or a related entity, the use of which has been authorized by the Project Manager:
  - (1) The Contractor will be paid at the per-hour rental rates based on the monthly rate established for said machinery or equipment in the then-current edition of the Rental Rate Blue Book for Construction Equipment including the estimated operating cost per hour and regional correction provided therein.
  - (2) If no rate is listed for a particular kind, type or size of machinery or equipment, then the monthly, hourly rates shall be as agreed upon in writing by the Contractor and the Project Manager prior to the use of said machinery or equipment. If there is no agreement, the Project Manager will set a rate. The Contractor may contest the rate pursuant to Section 7.25, DISPUTES AND CLAIMS.
  - (3) Rental rates which are higher than those specified in the aforesaid Rental Rate Blue Book publication may be allowed where such higher rates can be justified by job conditions such as work in water and work on lava, etc. Request for such higher rates shall be submitted in writing to the Project Manager for approval prior to the use of the machinery or equipment in question.

- (b) For machinery or special equipment [other than small tools as herein defined in clause 8.3.4.5 (h)] rented by the Contractor or a related entity specifically for the Force Account work, the use of which has been authorized by the Project Manager, the Contractor will be paid the actual rental cost for the machinery or equipment, including mobilization and demobilization costs. A receipt from the equipment supplier shall be submitted to the Project Manager.
- (c) For machinery or special equipment [other than small tools as herein defined in clause 8.3.4.5 (h)] rented by the Contractor or a related entity for use in the project, but which will also be used for the Force Account work, the use of which has been authorized by the Project Manager, the Contractor will be paid the actual rental cost for the machinery or equipment. No additional mobilization and demobilization costs will be paid. A receipt from the equipment supplier shall be submitted to the Project Manager.
- (d) The rental rate for trucks not owned by the Contractor shall be those as established under the Hawaii State Public Utilities Commission, which will be paid for as an equipment item pursuant to Subsection 8.3.4.5, EQUIPMENT. Rental rates for Contractor owned trucks not listed in the Rental Rate Blue Book shall be agreed upon in writing by the Contractor and Project Manager prior to the use of said trucks. If there is no agreement, the Project Manager shall set the rate. The Contractor may contest the rate pursuant to Section 7.25, DISPUTES AND CLAIMS.
- (e) The rental period shall begin at the time equipment reaches the site of work, shall include each day that the machinery or equipment is at the site of the work and shall terminate at the end of the day on which the equipment is no longer needed. In the event the equipment must standby due to work being delayed or halted by reason of design, traffic, or other related problems uncontrollable by the Contractor, excluding Saturdays, Sundays and Legal Holidays, unless the equipment is used to perform work on such days, the rental shall be two (2) hours per day until the equipment is no longer needed.
  - (1) The rental time to be paid will be for the time actually used. The Project Manager prior to the performance of such work must approve any hours or operation in excess of eight (8) hours in any one (1) day.
  - (2) Rental time will not be allowed or credited for any day on which machinery or equipment is inoperative due to its breakdown. On such days, the Contractor will be paid only for the actual hours, if any, that the machinery or equipment was in operation.
  - (3) In the event the Force Account work is completed in less than eight (8) hours, equipment rental shall nevertheless be paid for a minimum eight (8) hours.
  - (4) For the purpose of determining the rental period the continuous and consecutive days shall be the normal eight (8) hour shift work day, Monday through Friday excluding legal holidays. Any work day to be paid less than eight (8) hours shall not be considered as continuous, except for equipment removed from rental for fuel and lubrication.
  - (5) No additional premium beyond the normal rates used will be paid for equipment over eight (8) hours per day or forty (40) hours per week.
- (f) All rental rates for machinery and equipment shall include the cost of fuel, oil, lubricants, supplies, small tools, necessary attachments, repairs, maintenance, tire wear, depreciation, storage, and all other incidentals.

- (g) All machinery and equipment shall be in good working condition and suitable for the purpose for which the machinery and equipment is to be used.
- (h) Individual pieces of equipment or tools having a replacement value of \$2,000 (two thousand dollars) or less, whether or not consumed by use, shall be considered to be small tools and included in the allowed markup for overhead and profit and no separate payment will be made therefor.
- (i) The total of all Force Account rental charges accrued over the duration of the contract for a specific item of equipment shall not exceed the replacement cost of that equipment.
  - (1) The Contractor shall provide the cost of replacement to the Project Manager prior to using the equipment. If the Project Manager does not agree with the replacement cost, the Project Manager shall set the replacement cost. The Contractor may contest the replacement cost pursuant to Section 7.25, DISPUTES AND CLAIMS.
- (j) Should the item of equipment be rented from an unrelated entity, the rental cost will be treated as equipment cost under Subsection 8.3.4.5, EQUIPMENT.
- (k) Transportation and/or Mobilization: The following provisions shall govern in determining the compensation to be paid to the Contractor for use of equipment or machinery on the Force Account method:
  - (1) The Project Manager shall approve the location from which the equipment is to be moved or transported.
  - (2) Where the equipment must be transported to the site of the Force Account work, the Department will pay the reasonable cost of mobilizing and transporting the equipment, including its loading and unloading, from its original location to the site of Force Account work. Upon completion of the work the Department will pay the reasonable cost of mobilizing and transporting the equipment back to its original location or to another location, whichever cost is less.
  - (3) The cost of transporting the equipment shall not exceed the rates established by the Hawaii State Public Utilities Commission. If such rates are nonexistent, then the rates will be determined by the Project Manager based upon the prevailing rates charged by established haulers within the locale.
  - (4) Where the equipment is self-propelled, the Department will pay the cost of moving the equipment by its own power from its original location to the site of the Force Account work. Upon completion of the work the Department will pay the reasonable cost of moving of the Equipment back to its original or another location, whichever cost is less.
  - (5) At the discretion of the Project Manager, when the Contractor desires to use such equipment for other than Force Account work, the costs of mobilization and transportation shall be prorated between the Force Account and non- Force Account work.
- (l) Pickup trucks, vans, storage trailers, unless specifically rented for the Force Account work, shall be considered incidental to the Force Account work and the costs therefor are included in the markup allowed under Section 4.5, ALLOWANCES FOR OVERHEAD AND PROFIT.

- 8.3.4.6 STATE EXCISE (GROSS INCOME) TAX AND BOND. A sum equal to the current percentage rate for the State excise (Gross Income) tax on the total sum determined in Subsections 8.3.4.1, 8.3.4.2, 8.3.4.3 and 8.3.4.4 above, and the bond premium shall be added as compensation to the Contractor. The actual bond premium not to exceed one percent (1%) shall be added to items covered by Subsections 8.3.4.1, 8.3.4.2, 8.3.4.3 and 8.3.4.4 when applicable.
- (a) The compensation as determined in Subsections 8.3.4.1, 8.3.4.2, 8.3.4.3, 8.3.4.4 and 8.3.4.5 above shall be deemed to be payment in full for work paid on a Force Account basis.
- 8.3.4.7 RECORDS. The Contractor and the Project Manager shall compare records of the labor, materials and equipment rentals paid by the Force Account basis at the end of each day. These daily records, if signed by both parties, shall thereafter be the basis for the quantities to be paid for by the Force Account method. The Contractor shall not be entitled to payment for Force Account records not signed by the Project Manager.
- 8.3.4.8 STATEMENTS. No payment will be made for work on a Force Account basis until the Contractor has submitted to the Project Manager, duplicate itemized statements of the cost of such Force Account work detailed as follows:
- (a) Laborers. Name, classification, date, daily hours, total hours, rate, and extension for each laborer and foreman and also the amount of fringe benefits payable if any.
- (b) Equipment. Designation, dates, daily hours, total hours, rental rate, and extension for each unit of machinery and equipment.
- (c) Materials:
- (1) Quantities of materials, prices and extensions.
- (2) Costs of transporting materials, if such cost is not reflected in the prices of the materials.
- (3) Statements shall be accompanied and supported by receipted invoices for all materials used and transportation charges. However, if materials used on the Force Account work are not specifically purchased for such work but are taken from the Contractor's stock, then in lieu of the invoices the Contractors shall submit an affidavit certifying that such materials were taken from stock and that the amount claimed represents the actual cost to the Contractor.
- (d) Insurance. Cost of property damage, liability and worker's compensation insurance premiums, unemployment insurance contributions, and social security tax.

#### 8.4 PROGRESS AND/OR PARTIAL PAYMENTS

- 8.4.1 PROGRESS PAYMENTS. The Contractor will be allowed progress payments on a monthly basis upon preparing the Monthly Payment Application forms and submitting the originals to the Project Manager. The monthly payment shall be based on the items of work satisfactorily completed and the value thereof at unit prices and/or lump sum prices set forth in the contract as determined by the Project Manager and will be subject to compliance with Section 7.9, PAYROLLS AND PAYROLL RECORDS.
- 8.4.1.1 ORIGINAL INVOICES REQUIRED. All payments under this Contract shall be made only upon submission by the CONTRACTOR of original invoices specifying the amount due and certifying that services requested under the Contract have been performed by the CONTRACTOR according to the Contract.
- 8.4.1.2 SUBJECT TO AVAILABLE FUNDS. Such payments are subject to availability of funds and allotment by the Director of Finance in accordance with chapter 37, HRS. Further, all payments shall be made in accordance with and subject to chapter 40, HRS.

- 8.4.2 In the event the Contractor or any Subcontractor fails to submit certified copies of payrolls in accordance with the requirements of Section 7.9, PAYROLLS AND PAYROLL RECORDS, the Project Manager may retain the amount due for items of work for which payroll affidavits have not been submitted on a timely basis notwithstanding satisfactory completion of the work until such records have been duly submitted. The Contractor shall not be due any interest payment for any amount thus withheld.
- 8.4.3 PARTIAL PAYMENT FOR MATERIALS. The Contractor will also be allowed partial payments to the extent of ninety percent (90%) of the manufacturer's, supplier's, distributor's or fabricator's invoice cost of accepted materials to be incorporated in the work on the following conditions:
- 8.4.3.1 The materials are delivered and properly stored at the site of the work; or
- 8.4.3.2 For special items of materials accepted by the Project Manager, the materials are delivered to the Contractor or subcontractor(s) and properly stored in an acceptable location within a reasonable distance to the site of the work.
- 8.4.4 Partial payments shall be made only if the Project Manager finds that:
- 8.4.4.1 The Contractor has submitted bills of sale for the materials or otherwise demonstrates clear title to such materials.
- 8.4.4.2 The materials are insured for their full replacement value to the benefit of the Department against theft, fire, damages incurred in transportation to the site, and other hazards.
- 8.4.4.3 The materials are not subject to deterioration.
- 8.4.4.4 In case of materials stored off the project site, the materials are not commingled with other materials not to be incorporated into the project.
- 8.4.5 FEDERAL FUNDS. If this Contract is payable in whole or in part from federal funds, Contractor agrees that, as to the portion of the compensation under this Contract to be payable from federal funds, the Contractor shall be paid only from such funds received from the federal government, and shall not be paid from any other funds.
- 8.4.6 Final Payment Requirements (§3-122-112, HAR). Upon receipt of the Contractor's invoice for final payment, the Department shall verify compliance with Section 103D-328 HRS via Hawaii Compliance Express (HCE).
- 8.5 PROMPT PAYMENT (§3-125-23 HAR)
- 8.5.1 Any money, other than retainage, paid to the CONTRACTOR shall be dispersed to subcontractors within ten days after receipt of the money in accordance with the terms of the subcontract; provided that the subcontractor has met all the terms and conditions of the subcontract and there are no bona fide disputes; and
- 8.5.2 BONA FIDE DISPUTES. The existence of a bona fide dispute with a subcontractor or material supplier shall not release the Contractor of its prompt payment obligations as to all sums due that are not directly affected by such dispute.

- 8.5.3 FILING NON-PAYMENT COMPLAINT. Subcontractors and material suppliers may file in writing a complaint with the Chairman regarding non-payment by the Contractor. Such complaint shall include:
- 8.5.3.1 The amount past due for work performed and already paid for by the Department;
  - 8.5.3.2 That all the terms, conditions or requirements of its subcontract have been met; and
  - 8.5.3.3 That no bona fide dispute over its performance exists. The Department will investigate the validity of the complaint.
- 8.5.4 The Department may withhold from future progress payments amounts to cover any sums paid to the Contractor for work performed by a subcontractor if the Department finds that the subcontractor complaint regarding non-payment by the Contractor has merit.
- 8.5.5 If the Project Manager determines that the Contractor failed to make prompt payment required to a subcontractor or material supplier with whom it has no bona fide dispute, the Project Manager shall inform the Contractor of the findings and request the Contractor make payment accordingly. If the Contractor does not act promptly, the Project Manager shall take appropriate action as allowed under this Contract and/or refer the matter to the Contractor Licensing Board for appropriate action under Section 444-17, Hawaii Revised Statutes regarding the Revocation, Suspension and Renewal of (Contractor) Licenses and/or initiate a petition for debarment of the Contractor from bidding on other Department jobs.
- 8.6 RETAINAGE
- 8.6.1 The Department will retain five percent (5%) of the total amount of progress and / or partial payments until after completion of the entire Contract in an acceptable manner at which time this balance, less any previous payments, will be certified and paid to the Contractor. After fifty percent (50%) of the work is completed and progress is satisfactory, no additional sum will be withheld. If progress is not satisfactory, the Department may continue to withhold retainage sums not exceeding five percent (5%) of the amount due the Contractor.
- 8.6.1.1 Contractor may withhold from amounts due its subcontractors, only the same percentage of retainage as that of the Contractor, and only if its subcontractors have provided valid performance and payments bonds or other bond or collateral acceptable to the Contractor.
  - 8.6.1.2 Contractor or Subcontractor may negotiate with, and retain from its respective subcontractors, a different retainage percentage which cannot exceed ten percent (10%).
- 8.6.2 The retainage shall not include sums deducted as liquidated damages from monies due or that may become due the Contractor under the Contract.
- 8.7 WARRANTY OF CLEAR TITLE. The Contractor warrants and guarantees that all work and materials covered by progress or partial payments made thereon shall be free and clear of all liens, claims, security interests or encumbrances, and shall become the sole property of the Department. This provision shall not, however, be construed as an acceptance of the work nor shall it be construed as relieving the Contractor from the sole responsibility for all materials and work upon which payments have been made or the restoration of any damaged work, or as waiving the right of the Department to require the fulfillment of all the items of the Contract.

- 8.7.1 LIENS AND WARRANTIES. Goods provided under this Contract shall be provided free of all liens and provided together with all applicable warranties, or with the warranties described in the Contract documents, whichever are greater.
- 8.8 FINAL PAYMENT
- 8.8.1 Upon final payment to the CONTRACTOR, full payment to the subcontractor, including retainage, shall be made within ten days after receipt of the money; provided that there are no bona fine disputes over the subcontractor's performance under the subcontract.
- 8.8.2 Sums necessary to meet any claims of any kind by the Department may be retained from the sums due the Contractor until said claims have been fully and completely discharged or otherwise satisfied.
- 8.9 STATE'S RIGHT TO OFFSET. The STATE may offset against any monies or other obligations the STATE owes to the CONTRACTOR under this Contract, any amounts owed to the State of Hawaii by the CONTRACTOR under this Contract or any other Contracts or pursuant to any law or other obligation owed to the State of Hawaii by the CONTRACTOR, including, without limitation, the payment of any taxes or levies of any kind or nature. The STATE will notify the CONTRACTOR in writing of any offset and the nature of such offset. For purposes of this Subsection, amounts owed to the State of Hawaii shall not include debts or obligations which have been liquidated, agreed to by the CONTRACTOR, and are covered by an installment payment or other settlement plan approved by the State of Hawaii, provided, however, that the CONTRACTOR shall be entitled to such exclusion only to the extent that the CONTRACTOR is current with, and not delinquent on, any payments or obligations owed to the State of Hawaii under such payment or other settlement plan.

*~END OF ARTICLE 8~*



**STATE OF HAWAII**  
**CONTRACT FOR GOODS OR SERVICES**  
**BASED UPON**  
**COMPETITIVE SEALED BIDS**

This Contract, executed on the respective dates indicated below, is effective as of

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ Department of Hawaiian Home Lands  
(Insert name of state department, agency, board or commission)

State of Hawaii ("STATE"), by its \_\_\_\_\_ Chairman, Hawaiian Homes Commission  
(Insert title of person signing for State)

(hereafter also referred to as the HEAD OF THE PURCHASING AGENCY or designee ("HOPA")),  
 whose address is 91-5420 Kapolei Parkway, Kapolei, Hawaii 96707

\_\_\_\_\_ and \_\_\_\_\_  
 ("CONTRACTOR"), a \_\_\_\_\_  
(Insert corporation, partnership, joint venture, sole proprietorship, or other legal form of the Contractor)

under the laws of the State of \_\_\_\_\_ Hawaii \_\_\_\_\_, whose business address and federal  
 and state taxpayer identification numbers are as follows: \_\_\_\_\_

**RECITALS**

A. The STATE desires to retain and engage the CONTRACTOR to provide the goods or services, or both, described in this Contract and its attachments, and the CONTRACTOR is agreeable to providing said goods or services, or both.

B. The STATE has issued an invitation for competitive sealed bids, and has received and reviewed bids submitted in response to the invitation.

C. The solicitation for bids and the selection of the CONTRACTOR were made in accordance with section 103D-302, Hawaii Revised Statutes ("HRS"), Hawaii Administrative Rules, Title 3, Department of Accounting and General Services, Subtitle 11 ("HAR"), Chapter 122, Subchapter 5, and applicable procedures established by the appropriate Chief Procurement Officer ("CPO").

D. The CONTRACTOR has been identified as the lowest responsible and responsive bidder whose bid meets the requirements and criteria set forth in the invitation.

E. Pursuant to \_\_\_\_\_ HHCA of 1920 \_\_\_\_\_, the STATE  
(Legal authority to enter into this Contract)  
 is authorized to enter into this Contract.

F. Money is available to fund this Contract pursuant to:

(1) \_\_\_\_\_  
(Identify state sources)

or (2) NAHASDA  
(Identify federal sources)

or both, in the following amounts: State \$ \_\_\_\_\_  
 Federal \$ \_\_\_\_\_

NOW, THEREFORE, in consideration of the promises contained in this Contract, the STATE and the CONTRACTOR agree as follows:

1. Scope of Services. The CONTRACTOR shall, in a proper and satisfactory manner as determined by the STATE, provide all the goods or services, or both, set forth in the Invitation for Bids number IFB-16-HHL-006 ("IFB") and the CONTRACTOR'S accepted bid ("Bid"), both of which, even if not physically attached to this Contract, are made a part of this Contract.

2. Compensation. The CONTRACTOR shall be compensated for goods supplied or services performed, or both, under this Contract in a total amount not to exceed

\_\_\_\_\_ DOLLARS

( \$ \_\_\_\_\_ ), including approved costs incurred and taxes, at the time and in the manner set forth in the IFB and CONTRACTOR'S Bid.

3. Time of Performance. The services or goods required of the CONTRACTOR under this Contract shall be performed and completed in accordance with the Time of Performance set forth in Attachment-S3, which is made a part of this Contract.

4. Bonds. The CONTRACTOR  is required to provide or  is not required to provide:  a performance bond,  a payment bond,  a performance and payment bond in the amount of \_\_\_\_\_ DOLLARS ( \$ \_\_\_\_\_ ).

5. Standards of Conduct Declaration. The Standards of Conduct Declaration of the CONTRACTOR is attached to and made a part of this Contract.

6. Other Terms and Conditions. The General Conditions and any Special Conditions are attached to and made a part of this Contract. In the event of a conflict between the General Conditions and the Special Conditions, the Special Conditions shall control. In the event of a conflict among the documents, the order of precedence shall be as follows: (1) this Contract, including all attachments and addenda; (2) the IFB, including all attachments and addenda; and (3) the CONTRACTOR'S Bid.

7. Liquidated Damages. Liquidated damages shall be assessed in the amount of \_\_\_\_\_ DOLLARS  
To be Determined  
(\$ \_\_\_\_\_ TBD ) per day, in accordance with the terms of paragraph 9 of the General Conditions.

8. Notices. Any written notice required to be given by a party to this Contract shall be (a) delivered personally, or (b) sent by United States first class mail, postage prepaid. Notice to the STATE shall be sent to the HOPA'S address indicated in the Contract. Notice to the CONTRACTOR shall be sent to the CONTRACTOR'S address indicated in the Contract. A notice shall be deemed to have been received three (3) days after mailing or at the time of actual receipt, whichever is earlier. The CONTRACTOR is responsible for notifying the STATE in writing of any change of address.

IN VIEW OF THE ABOVE, the parties execute this Contract by their signatures, on the dates below, to be effective as of the date first above written.

**STATE**

\_\_\_\_\_  
(Signature)  
Jobie M. K. Masagatani  
\_\_\_\_\_  
(Print Name)  
Chairman, Hawaiian Homes Commission  
\_\_\_\_\_  
(Print Title)  
\_\_\_\_\_  
(Date)

**CONTRACTOR**

\_\_\_\_\_  
(Name of Contractor)  
\_\_\_\_\_  
(Signature)  
\_\_\_\_\_  
(Print Name)  
\_\_\_\_\_  
(Print Title)  
\_\_\_\_\_  
(Date)

**CORPORATE SEAL**  
(If available)

**APPROVED AS TO FORM:**

\_\_\_\_\_  
Deputy Attorney General

\*Evidence of authority of the CONTRACTOR'S representative to sign this Contract for the CONTRACTOR must be attached.



STATE OF HAWAII

CONTRACTOR'S ACKNOWLEDGMENT

STATE OF \_\_\_\_\_ )
) SS.
\_\_\_\_\_ COUNTY OF \_\_\_\_\_ )

On this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_ before me appeared
\_\_\_\_\_ and \_\_\_\_\_, to me
known, to be the person(s) described in and, who, being by me duly sworn, did say that he/she/they is/are
\_\_\_\_\_ and \_\_\_\_\_ of
\_\_\_\_\_, the
CONTRACTOR named in the foregoing instrument, and that he/she/they is/are authorized to sign said
instrument on behalf of the CONTRACTOR, and acknowledges that he/she/they executed said
instrument as the free act and deed of the CONTRACTOR.

(Notary Stamp or Seal)

(Signature)

(Print Name)

Notary Public, State of \_\_\_\_\_
My commission expires: \_\_\_\_\_

Doc. Date: \_\_\_\_\_ # Pages: \_\_\_\_\_

Notary Name: \_\_\_\_\_ Circuit \_\_\_\_\_

Doc. Description: Contract for Goods or Services Based Upon
Competitive Sealed Bids

(Notary Stamp or Seal)

Notary Signature \_\_\_\_\_ Date \_\_\_\_\_

NOTARY CERTIFICATION



**STATE OF HAWAII**  
**CONTRACTOR'S**  
**STANDARDS OF CONDUCT DECLARATION**

For the purposes of this declaration:

"Agency" means and includes the State, the legislature and its committees, all executive departments, boards, commissions, committees, bureaus, offices; and all independent commissions and other establishments of the state government but excluding the courts.

"Controlling interest" means an interest in a business or other undertaking which is sufficient in fact to control, whether the interest is greater or less than fifty per cent (50%).

"Employee" means any nominated, appointed, or elected officer or employee of the State, including members of boards, commissions, and committees, and employees under contract to the State or of the constitutional convention, but excluding legislators, delegates to the constitutional convention, justices, and judges. (Section 84-3, HRS).

On behalf of \_\_\_\_\_, CONTRACTOR, the undersigned does declare as follows:

1. CONTRACTOR  is\*  is not a legislator or an employee or a business in which a legislator or an employee has a controlling interest. (Section 84-15(a), HRS).
2. CONTRACTOR has not been represented or assisted personally in the matter by an individual who has been an employee of the agency awarding this Contract within the preceding two years and who participated while so employed in the matter with which the Contract is directly concerned. (Section 84-15(b), HRS).
3. CONTRACTOR has not been assisted or represented by a legislator or employee for a fee or other compensation to obtain this Contract and will not be assisted or represented by a legislator or employee for a fee or other compensation in the performance of this Contract, if the legislator or employee had been involved in the development or award of the Contract. (Section 84-14 (d), HRS).
4. CONTRACTOR has not been represented on matters related to this Contract, for a fee or other consideration by an individual who, within the past twelve (12) months, has been an agency employee, or in the case of the Legislature, a legislator, and participated while an employee or legislator on matters related to this Contract. (Sections 84-18(b) and (c), HRS).

CONTRACTOR understands that the Contract to which this document is attached is voidable on behalf of the STATE if this Contract was entered into in violation of any provision of chapter 84, Hawaii Revised Statutes, commonly referred to as the Code of Ethics, including the provisions which are the source of the declarations above. Additionally, any fee, compensation, gift, or profit received by any person as a result of a violation of the Code of Ethics may be recovered by the STATE.

\* **Reminder to Agency:** If the "is" block is checked and if the Contract involves goods or services of a value in excess of \$10,000, the Contract must be awarded by competitive sealed bidding under section 103D-302, HRS, or a competitive sealed proposal under section 103D-303, HRS. Otherwise, the Agency may not award the Contract unless it posts a notice of its intent to award it and files a copy of the notice with the State Ethics Commission. (Section 84-15(a), HRS).

**CONTRACTOR**

By \_\_\_\_\_  
(Signature)

Print Name \_\_\_\_\_

Print Title \_\_\_\_\_

Name of Contractor \_\_\_\_\_

Date \_\_\_\_\_



STATE OF HAWAII  
SCOPE OF SERVICES

**Project:** Consolidation/Re-Subdivision Keokea-Waiohuli Subdivision Phase 1A  
**Location:** Keokea, Island of Maui  
**Contractor:** TBD

Pursuant to 103D, Hawaii Revised Statutes, the CONTRACTOR shall perform and provide the Scope of Services listed below and detailed in Invitation for Bids IFB-16-HHL-006 and in CONTRACTOR's proposal submitted \_\_\_\_\_, 2015, in a proper and satisfactory manner as determined by the STATE and in accordance with all Federal, State and local laws, both of which are incorporated by reference.

The prices herein for the following items shall include all materials, labor, tools, equipment, machinery and all incidentals necessary, including excavation and backfill, to install or to construct these items in place complete and in accordance with the plans and specifications.

- I. Site Work (Items 1 to 3, inclusive)
- II. Swale Construction (Items 4 to 15, inclusive)
- III. Road Construction (Items 16 to 17, inclusive)
- IV. Detention Basin Construction (Item 18, inclusive)
- V. Water Meter (Item 19, Inclusive)
- VI. Miscellaneous (Items 20-22, inclusive)



STATE OF HAWAII

**TIME OF PERFORMANCE**

**Project:** Consolidation/Re-Subdivision Keokea-Waiohuli Subdivision Phase 1A  
**Location:** Kula and Leialii, Island of Maui  
**Contractor:** TBD

1. The Time of Performance for this Contract shall be 365 Calendar Days from the effective date specified in the Notice to Proceed, unless extended by delays excused by the STATE as documented in writing. The Notice to Proceed shall be issued by the STATE separately to the CONTRACTOR.
2. This Contract shall expire on the date on which the later of the following occurs: (a) the State makes final payment to the CONTRACTOR in accordance with (1) paragraph 17(d) of the General Conditions (AG-008 103D General Conditions) and (2) no dispute between the parties hereto as to the Work or other obligations of the CONTRACTOR hereunder is outstanding or (b) the STATE issues a Final Acceptance letter to the CONTRACTOR.
3. The Contract expiration date is for administrative purposes only and not to be confused with the Time of Performance which refers to the time in which the CONTRACTOR is required to complete the work, or with any continuing obligations on the part of the CONTRACTOR.

SAMPLE



STATE OF HAWAII

CERTIFICATE OF EXEMPTION FROM CIVIL SERVICE

1. By Heads of Departments Delegated by the Director of the Department of Human Resources Development (“DHRD”).\*

Pursuant to a delegation of the authority by the Director of DHRD, I certify that the services to be provided under this Contract, and the person(s) providing the services under this Contract are exempt from the civil service, pursuant to § 76-16, Hawaii Revised Statutes (HRS).

(Signature)
Jobie M. K. Masagatani
(Print Name)
Chairman, Hawaiian Homes Commission
(Print Title)

(Date)

\* This part of the form may be used by all department heads and the heads of attached agencies to whom the Director of DHRD expressly has delegated authority to certify § 76-16, HRS, civil service exemptions. The specific paragraph(s) of § 76-16, HRS, upon which an exemption is based should be noted in the contract file. If an exemption is based on § 76-16(b)(15), the contract must meet the following conditions:

- (1) It involves the delivery of completed work or product by or during a specific time;
(2) There is no employee-employer relationship; and
(3) The authorized funding for the service is from other than the "A" or personal services cost element.

NOTE: Not all attached agencies have received a delegation under § 76-16(b)(15). If in doubt, attached agencies should check with the Director of DHRD prior to certifying an exemption under § 76-16(b)(15). Authority to certify exemptions under §§76-16(b)(2), and 76-16(b)(12), HRS, has not been delegated; only the Director of DHRD may certify §§ 76-16(b)(2), and 76-16(b)(12) exemptions.

2. By the Director of DHRD, State of Hawaii.

I certify that the services to be provided under this Contract, and the person(s) providing the services under this Contract are exempt from the civil service, pursuant to §76-16, HRS.

(Signature)
(Print Name)
(Print Title, if designee of the Director of DHRD)

(Date)

**CORPORATE RESOLUTION**  
**(Name of Corporation - Use Letterhead)**

I, \_\_\_\_\_, Secretary of \_\_\_\_\_  
Corporation, a \_\_\_\_\_ 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 located at  
\_\_\_\_\_  
(address)

on the \_\_\_\_\_ 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 of  
President or Vice President, 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 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 Hawaii or the City and County of Honolulu, or any County or  
Municipal Government of said State, or any department or subdivision of  
any of them."

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the corporate seal of  
said \_\_\_\_\_ Corporation this \_\_\_\_\_ day of  
\_\_\_\_\_, 20\_\_\_\_\_.

\_\_\_\_\_  
Secretary

(Names and Addresses of:)  
President  
Vice President  
Secretary

EXHIBIT A

**SURETY [BID] [PROPOSAL] BOND**  
(11/17/98)

Bond No. \_\_\_\_\_

**KNOW TO ALL BY THESE PRESENTS:**

That we, \_\_\_\_\_,  
*(Full Name or Legal Title of Offeror)*

as Offeror, hereinafter called Principal, and \_\_\_\_\_,  
*(Name of Bonding Company)*

as Surety, hereinafter called Surety, a corporation authorized to transact business as a Surety  
in the State of Hawaii, are held and firmly bound unto \_\_\_\_\_,  
*(State/County Entity)*

as Owner, hereinafter called Owner, in the penal sum of \_\_\_\_\_

\_\_\_\_\_  
*(Required Amount of Bid Security)*

Dollars (\$ \_\_\_\_\_), lawful money of the United States of America, for the payment of  
which sum well and truly to be made, the said Principal and the said Surety bind ourselves, our  
heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these  
presents.

**WHEREAS:**

The Principal has submitted an offer for \_\_\_\_\_

\_\_\_\_\_  
*(Project by Number and Brief Description)*

**NOW, THEREFORE:**

The condition of this obligation is such that if the Owner shall reject said offer, or in the  
alternate, accept the offer of the Principal and the Principal shall enter into a Contract with the  
Owner in accordance with the terms of such offer, and give such bond or bonds as may be  
specified in the solicitation or Contract Documents with good and sufficient surety for the faithful  
performance of such Contract and for the prompt payment of labor and material furnished in the  
prosecution thereof as specified in the solicitation then this obligation shall be null and void,  
otherwise to remain in full force and effect.

Signed this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

(Seal)

\_\_\_\_\_  
Name of Principal (Offeror)

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

(Seal)

\_\_\_\_\_  
Name of Surety

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

EXHIBIT B

PERFORMANCE BOND (SURETY)

(6/21/07)

KNOW TO ALL BY THESE PRESENTS:

That \_\_\_\_\_,  
(Full Legal Name and Street Address of Contractor)

as Contractor, hereinafter called Principal, and \_\_\_\_\_  
\_\_\_\_\_  
(Name and Street Address of Bonding Company)

as Surety, hereinafter called Surety, a corporation(s) authorized to transact business as a  
surety in the State of Hawaii, are held and firmly bound unto the \_\_\_\_\_,  
(State/County Entity)

its successors and assigns, hereinafter called Oblige, in the amount of \_\_\_\_\_

\_\_\_\_\_ DOLLARS (\$\_\_\_\_\_), to which payment Principal and Surety bind themselves,  
their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by  
these presents.

**WHEREAS**, the above-bound Principal has signed a Contract with Oblige on  
\_\_\_\_\_, for the following project: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

hereinafter called Contract, which Contract is incorporated herein by reference and made a part  
hereof.

**NOW THEREFORE**, the condition of this obligation is such that:

If the Principal shall promptly and faithfully perform, and fully complete the Contract in  
strict accordance with the terms of the Contract as said Contract may be modified or amended  
from time to time; then this obligation shall be void; otherwise to remain in full force and effect.

Surety to this Bond hereby stipulates and agrees that no changes, extensions of time, alterations, or additions to the terms of the Contract, including the work to be performed thereunder, and the specifications or drawings accompanying same, shall in any way affect its obligation on this bond, and it does hereby waive notice of any such changes, extensions of time, alterations, or additions, and agrees that they shall become part of the Contract.

In the event of Default by the Principal, of the obligations under the Contract, then after written Notice of Default from the Obligee to the Surety and the Principal and subject to the limitation of the penal sum of this bond, Surety shall remedy the Default, or take over the work to be performed under the Contract and complete such work, or pay moneys to the Obligee in satisfaction of the surety's performance obligation on this bond.

Signed this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

(Seal)

\_\_\_\_\_  
Name of Principal (Contractor)

\*

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

(Seal)

\_\_\_\_\_  
Name of Surety

\*

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

**\*ALL SIGNATURES MUST BE ACKNOWLEDGED  
BY A NOTARY PUBLIC**

EXHIBIT C  
**PERFORMANCE BOND**  
(11/17/98)

**KNOW TO ALL BY THESE PRESENTS:**

That we, \_\_\_\_\_,  
*(Full Legal Name and Street Address of Contractor)*

as Contractor, hereinafter called Contractor, is held and firmly bound unto the

\_\_\_\_\_, its successors and assigns, as Obligee, hereinafter called  
*(State/County Entity)*  
Obligee, in the amount of \_\_\_\_\_

\_\_\_\_\_  
*(Dollar Amount of Contract)*

DOLLARS (\$ \_\_\_\_\_), lawful money of the United States of America, for the payment of which to the said Obligee, well and truly to be made, Contractor binds itself, its heirs, executors, administrators, successors and assigns, firmly by these presents. Said amount is evidenced by:

- Legal tender;
- Share Certificate unconditionally assigned to or made payable at sight to  
Description \_\_\_\_\_;  
\_\_\_\_\_;
- Certificate of Deposit, No. \_\_\_\_\_, dated \_\_\_\_\_, issued by  
\_\_\_\_\_ drawn on \_\_\_\_\_,  
a bank, savings institution or credit union insured by the Federal Deposit  
Insurance Corporation or the National Credit Union Administration, payable at  
sight or unconditionally assigned to \_\_\_\_\_;  
\_\_\_\_\_;
- Cashier's Check No. \_\_\_\_\_, dated \_\_\_\_\_, issued  
by \_\_\_\_\_,  
drawn on \_\_\_\_\_,  
a bank, savings institution or credit union insured by the Federal Deposit  
Insurance Corporation or the National Credit Union Administration, payable at  
sight or unconditionally assigned to \_\_\_\_\_;  
\_\_\_\_\_;

- Teller's Check No. \_\_\_\_\_, dated \_\_\_\_\_, issued by \_\_\_\_\_, drawn on \_\_\_\_\_, a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to \_\_\_\_\_;
- Treasurer's Check No. \_\_\_\_\_, dated \_\_\_\_\_, issued by \_\_\_\_\_, drawn on \_\_\_\_\_, a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to \_\_\_\_\_;
- Official Check No. \_\_\_\_\_, dated \_\_\_\_\_, issued by \_\_\_\_\_, drawn on \_\_\_\_\_, a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to \_\_\_\_\_;
- Certified Check No. \_\_\_\_\_, dated \_\_\_\_\_, accepted by a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned \_\_\_\_\_;

**WHEREAS:**

The Contractor has by written agreement dated \_\_\_\_\_ entered into a contract with Oblige for the following Project: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 hereinafter called Contract, which Contract is incorporated herein by reference and made a part hereof.

**NOW, THEREFORE,**

The condition of this obligation is such that, if Contractor shall promptly and faithfully perform the Contract in accordance with, in all respects, the stipulations, agreements, covenants and conditions of the Contract as it now exists or may be modified according to its terms, and shall deliver the Project to the Oblige, or to its successors or assigns, fully completed as in the Contract specified and free from all liens and claims and without further cost, expense or charge to the Oblige, its officers, agents, successors or assigns, free and harmless from all suits or actions of every nature and kind which may be brought for or on account of any injury or damage, direct or indirect, arising or growing out of the doing of said work or the repair or maintenance thereof or the manner of doing the same or the neglect of the Contractor or its agents or servants or the improper performance of the Contract by the Contractor or its agents or servants or from any other cause, then this obligation shall be void; otherwise it shall be and remain in full force and effect.

**AND IT IS HEREBY STIPULATED AND AGREED** that suit on this bond may be brought before a court of competent jurisdiction without a jury, and that the sum or sums specified in the said Contract as liquidated damages, if any, shall be forfeited to the Oblige, its successors or assigns, in the event of a breach of any, or all, or any part of, the covenants, agreements, conditions, or stipulations contained in the Contract or in this bond in accordance with the terms thereof.

The amount of this bond may be reduced by and to the extent of any payment or payments made in good faith hereunder.

Signed this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

(Seal)

\_\_\_\_\_  
Name of Contractor

\* \_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

**\*ALL SIGNATURES MUST BE ACKNOWLEDGED  
BY A NOTARY PUBLIC**

EXHIBIT D

**LABOR AND MATERIAL PAYMENT BOND (SURETY)**  
(6/21/07)

**KNOW TO ALL BY THESE PRESENTS:**

That \_\_\_\_\_,  
*(Full Legal Name and Street Address of Contractor)*

as Contractor, hereinafter called Principal, and \_\_\_\_\_,  
*(Name and Street Address of Bonding Company)*

as Surety, hereinafter called Surety, a corporation(s) authorized to transact business as a surety in the State of Hawaii, are held and firmly bound unto the \_\_\_\_\_,  
*(State/County Entity)*

its successors and assigns, hereinafter called Obligee, in the amount of \_\_\_\_\_

\_\_\_\_\_ Dollars (\$\_\_\_\_\_), to which payment Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

**WHEREAS**, the above-bound Principal has signed Contract with the Obligee on \_\_\_\_\_ for the following project: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

hereinafter called Contract, which Contract is incorporated herein by reference and made a part hereof.

**NOW THEREFORE**, the condition of this obligation is such that if the Principal shall promptly make payment to any Claimant, as hereinafter defined, for all labor and materials supplied to the Principal for use in the performance of the Contract, then this obligation shall be void; otherwise to remain in full force and effect.

1. Surety to this Bond hereby stipulates and agrees that no changes, extensions of time, alterations, or additions to the terms of the Contract, including the work to be performed thereunder, and the specifications or drawings accompanying same, shall in any way affect its obligation on this bond, and it does hereby waive notice of any such changes, extensions of time, alterations, or additions, and agrees that they shall become part of the Contract.

2. A "Claimant" shall be defined herein as any person who has furnished labor or materials to the Principal for the work provided in the Contract.

Every Claimant who has not been paid amounts due for labor and materials furnished for work provided in the Contract may institute an action against the Principal and its Surety on this bond at the time and in the manner prescribed in Section 103D-324, Hawaii Revised Statutes, and have the rights and claims adjudicated in the action, and judgment rendered thereon; subject to the Obligee's priority on this bond. If the full amount of the liability of the Surety on this bond is insufficient to pay the full amount of the claims, then after paying the full amount due the Obligee, the remainder shall be distributed pro rata among the claimants.

Signed this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

(Seal)

\_\_\_\_\_  
Name of Principal (Contractor)

\* \_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

(Seal)

\_\_\_\_\_  
Name of Surety

\* \_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

**\*ALL SIGNATURES MUST BE ACKNOWLEDGED  
BY A NOTARY PUBLIC**

EXHIBIT E

**LABOR AND MATERIAL PAYMENT BOND**  
(11/17/98)

**KNOW TO ALL BY THESE PRESENTS:**

That we, \_\_\_\_\_,  
*(Full Legal Name and Street Address of Contractor)*

as Contractor, hereinafter called Contractor, is held and firmly bound unto the

\_\_\_\_\_, its successors and assigns, as Obligee, hereinafter called  
*(State/County Entity)*

Obligee, in the amount of \_\_\_\_\_

\_\_\_\_\_  
*(Dollar Amount of Contract)*

DOLLARS (\$ \_\_\_\_\_), lawful money of the United States of America, for the payment of which to the said Obligee, well and truly to be made, Contractor binds itself, its heirs, executors, administrators, successors and assigns, firmly by these presents. Said amount is evidenced by:

- Legal tender;
- Share Certificate unconditionally assigned to or made payable at sight to  
Description \_\_\_\_\_;  
\_\_\_\_\_;
- Certificate of Deposit, No. \_\_\_\_\_, dated \_\_\_\_\_, issued by  
\_\_\_\_\_ drawn on \_\_\_\_\_,  
a bank, savings institution or credit union insured by the Federal Deposit  
Insurance Corporation or the National Credit Union Administration, payable at  
sight or unconditionally assigned to \_\_\_\_\_;  
\_\_\_\_\_;
- Cashier's Check No. \_\_\_\_\_, dated \_\_\_\_\_, issued by  
\_\_\_\_\_ drawn on \_\_\_\_\_,  
a bank, savings institution or credit union insured by the Federal Deposit  
Insurance Corporation or the National Credit Union Administration, payable at  
sight or unconditionally assigned to \_\_\_\_\_;  
\_\_\_\_\_;
- Teller's Check No. \_\_\_\_\_, dated \_\_\_\_\_, issued by  
\_\_\_\_\_ drawn on \_\_\_\_\_;

a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to \_\_\_\_\_;

Treasurer's Check No. \_\_\_\_\_, dated \_\_\_\_\_, issued by \_\_\_\_\_, drawn on \_\_\_\_\_, a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to \_\_\_\_\_;

Official Check No. \_\_\_\_\_, dated \_\_\_\_\_, issued by \_\_\_\_\_, drawn on \_\_\_\_\_, a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to \_\_\_\_\_;

Certified Check No. \_\_\_\_\_, dated \_\_\_\_\_, accepted by a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to \_\_\_\_\_;

**WHEREAS:**

The Contractor has by written agreement dated \_\_\_\_\_ entered into a contract with Oblige for the following Project: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

hereinafter called Contract, which Contract is incorporated herein by reference and made a part hereof.

**NOW, THEREFORE,**

The condition of this obligation is such that, if Contractor shall promptly and faithfully perform the Contract in accordance with, in all respects, the stipulations, agreements, covenants and conditions of the Contract as it now exists or may be modified according to its terms, free from all liens and claims and without further cost, expense or charge to the Oblige, its officers, agents, successors or assigns, free and harmless from all suits or actions of every

nature and kind which may be brought for or on account of any injury or damage, direct or indirect, arising or growing out of the doing of said work or the repair or maintenance thereof or the manner of doing the same or the neglect of the Contractor or its agents or servants or the improper performance of the Contract by the Contractor or its agents or servants or from any other cause, and shall promptly pay all persons supplying labor and materials for the performance of the Contract, then this obligation shall be void; otherwise it shall be and remain in full force and effect.

**AND IT IS HEREBY STIPULATED AND AGREED** that suit on this bond may be brought before a court of competent jurisdiction without a jury, and that the sum or sums specified in the said Contract as liquidated damages, if any, shall be forfeited to the Obligee, its successors or assigns, in the event of a breach of any, or all, or any part of, the covenants, agreements, conditions, or stipulations contained in the Contract or in this bond in accordance with the terms thereof.

**AND IT IS HEREBY STIPULATED AND AGREED** that this bond shall inure to the benefit of any and all persons entitled to file claims for labor performed or materials furnished in said work so as to give any and all such persons a right of action as contemplated by Sections 103D-324(d) and 103D-324(e), Hawaii Revised Statutes.

The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payment of mechanics' liens which may be filed of record against the Project, whether or not claim for the amount of such lien be presented under and against this bond.

Signed this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

(Seal)

\_\_\_\_\_  
Name of Contractor

\* \_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

**\*ALL SIGNATURES MUST BE ACKNOWLEDGED  
BY A NOTARY PUBLIC**

EXHIBIT G

**PERFORMANCE BOND (SURETY)  
FOR SUPPLEMENTAL AGREEMENT  
FOR GOODS AND SERVICES  
(11/17/98)**

**KNOW TO ALL BY THESE PRESENTS:**

That \_\_\_\_\_,  
*(Full Legal Name and Street Address of Contractor)*

as Contractor, hereinafter called Principal, and \_\_\_\_\_,  
*(Name and Street Address of Bonding Company)*

as Surety, hereinafter called Surety, a corporation(s) authorized to transact business as a surety in the State of Hawaii, are held and firmly bound unto the \_\_\_\_\_,  
*(State/County Entity)*  
its successors and assigns, hereinafter called Obligee, in the amount of

\_\_\_\_\_ DOLLARS (\$ \_\_\_\_\_), to which payment Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

**WHEREAS**, the above-bound Principal has entered into a Contract with Obligee dated \_\_\_\_\_ for \_\_\_\_\_;  
\_\_\_\_\_;  
\_\_\_\_\_;  
and entered into Supplemental Agreement No. \_\_\_\_\_, dated \_\_\_\_\_ for the period \_\_\_\_\_;  
hereinafter collectively called Contract, which Contract is incorporated herein by reference and made a part hereof.

**NOW THEREFORE**, the condition of this obligation is such that:

If the Principal shall promptly and faithfully perform, and fully complete the Contract in strict accordance with the terms of the Contract as said Contract may be modified or amended from time to time; then this obligation shall be void; otherwise to remain in full force and effect.

Surety to this Bond hereby stipulates and agrees that no changes, extensions of time, alterations, or additions to the terms of the Contract, including the work to be performed thereunder, and the specifications or drawings accompanying same, shall in any way affect its

obligation on this bond, and it does hereby waive notice of any such changes, extensions of time, alterations, or additions, and agrees that they shall become part of the Contract.

In the event of Default by the Principal, of the obligations under the Contract, then after written Notice of Default from the Obligee to the Surety and the Principal, Surety shall either remedy the Default, or take over the work to be performed under the Contract and complete such work, subject, however, to the limitation of the penal sum of this bond.

Signed this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

(Seal)

\_\_\_\_\_  
Name of Principal (Contractor)

\*

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

(Seal)

\_\_\_\_\_  
Name of Surety

\*

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

**\*ALL SIGNATURES MUST BE ACKNOWLEDGED  
BY A NOTARY PUBLIC**

EXHIBIT H

**PERFORMANCE BOND  
FOR SUPPLEMENTAL AGREEMENT  
FOR GOODS AND SERVICES  
(11/17/98)**

**KNOW TO ALL BY THESE PRESENTS:**

That we, \_\_\_\_\_,  
*(Full Legal Name and Street Address of Contractor)*  
as Contractor, hereinafter called Contractor, is held and firmly bound unto the

\_\_\_\_\_, its successors and assigns, as Obligee, hereinafter called Obligee,  
*(State/County Entity)*  
in the amount of \_\_\_\_\_

*(Dollar Amount of Contract)*  
DOLLARS (\$ \_\_\_\_\_), lawful money of the United States of America, for the  
payment of which to the said Obligee, well and truly to be made, Contractor binds itself, its  
heirs, executors, administrators, successors and assigns, firmly by these presents. Said  
amount is evidenced by:

- Legal tender;
- Share Certificate unconditionally assigned to or made payable at sight to  
\_\_\_\_\_  
Description \_\_\_\_\_;
- Certificate of Deposit, No. \_\_\_\_\_, dated \_\_\_\_\_ issued  
by \_\_\_\_\_,  
drawn on \_\_\_\_\_,  
a bank, savings institution or credit union insured by the Federal Deposit  
Insurance Corporation or the National Credit Union Administration, payable at  
sight or unconditionally assigned to \_\_\_\_\_;
- Cashier's Check No. \_\_\_\_\_, dated \_\_\_\_\_, drawn  
on \_\_\_\_\_,  
a bank, savings institution or credit union insured by the Federal Deposit  
Insurance Corporation or the National Credit Union Administration, payable at  
sight or unconditionally assigned to \_\_\_\_\_;
- Teller's Check No. \_\_\_\_\_, dated \_\_\_\_\_, drawn  
on \_\_\_\_\_,  
a bank, savings institution or credit union insured by the Federal Deposit  
Insurance Corporation or the National Credit Union Administration, payable at  
sight or unconditionally assigned to \_\_\_\_\_;

- Treasurer's Check No. \_\_\_\_\_, dated \_\_\_\_\_, drawn on \_\_\_\_\_, a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to \_\_\_\_\_;
- Official Check No. \_\_\_\_\_, dated \_\_\_\_\_, drawn on \_\_\_\_\_, a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to \_\_\_\_\_;
- Certified Check No. \_\_\_\_\_, dated \_\_\_\_\_, accepted by a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to \_\_\_\_\_;

**WHEREAS:**

The Contractor has by written agreement dated \_\_\_\_\_ entered into a contract with Obligeo for the following Project: \_\_\_\_\_

and entered into Supplemental Agreement No. \_\_\_\_\_, dated \_\_\_\_\_ for the period \_\_\_\_\_; hereinafter collectively called Contract, which Contract is incorporated herein by reference and made a part hereof.

**NOW, THEREFORE,**

The condition of this obligation is such that, if Contractor shall promptly and faithfully perform the Contract in accordance with, in all respects, the stipulations, agreements, covenants and conditions of the Contract as it now exists or may be modified according to its terms, and shall deliver the Project to the Obligeo, or to its successors or assigns, fully completed as in the Contract specified and free from all liens and claims and without further cost, expense or charge to the Obligeo, its officers, agents, successors or assigns, free and harmless from all suits or actions of every nature and kind which may be brought for or on account of any injury or damage, direct or indirect, arising or growing out of the doing of said work or the repair or maintenance thereof or the manner of doing the same or the neglect of the Contractor or its agents or servants or the improper performance of the Contract by the Contractor or its agents or servants or from any other cause, then this obligation shall be void; otherwise it shall be and remain in full force and effect.

**AND IT IS HEREBY STIPULATED AND AGREED** that suit on this bond may be brought before a court of competent jurisdiction without a jury, and that the sum or sums specified in the said Contract as liquidated damages, if any, shall be forfeited to the Obligeo, its successors or assigns, in the event of a breach of any, or all, or any part of, the covenants, agreements, conditions, or stipulations contained in the Contract or in this bond in accordance with the terms thereof.

The amount of this bond may be reduced by and to the extent of any payment or payments made in good faith hereunder.

Signed this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

(Seal)

\_\_\_\_\_  
Name of Contractor

\*

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

**\*ALL SIGNATURES MUST BE ACKNOWLEDGED  
BY A NOTARY PUBLIC**







**STATE OF HAWAII  
STATE PROCUREMENT OFFICE**

**CERTIFICATION FOR HAWAII PRODUCT PREFERENCE**

1. Legal Name of the company whose product is mined, excavated, produced, manufactured, raised or grown in the state of Hawaii

Requester: \_\_\_\_\_

2. dba: \_\_\_\_\_

3. Hawaii General Excise Tax Number: \_\_\_\_\_

4. Address

5. Email Address

6. Contact Person

7. Phone

Submit one (1) form for each product.

8. Specify and provide details of the product for which preference is claimed (ie: Milk, white, 2% low fat, 1 gallon, four (4) to a case etc.):

9. Quality Standards met by product (ie. California Milk Standards, ASTM/AHSTO, USDA, etc. ) :

10. Product available on:  Oahu  Maui  Hawaii  Lanai  Kauai  Molokai

11. Product is certified an agricultural, aquacultural, horticultural, silvicultural, floricultural, or livestock product raised, grown, or harvested in the state of Hawaii.

Yes or  No

12	Definition: "Hawaii Input" is the part of the product cost attributable to production, manufacturing, or other expenses arising within the state of Hawaii. Fill in every line in column s A, B, & C	A Hawaii Input	B Non- Hawaii Input	C Total A + B
a	Cost to mine, excavate, produce, manufacture, raise, or grow the materials in the state of Hawaii.	\$_____ per unit	\$_____ per unit	\$_____ per unit
b	The added value of that portion of the cost of imported materials incurred after landing in the state of Hawaii, including but not limited to other articles, materials, and supplies, added to the imported materials.	\$_____ per unit	\$_____ per unit	\$_____ per unit
c	Cost of labor, variable overhead, utilities, and services, incurred in the production and manufacturing of materials or products in the state of Hawaii	\$_____ per unit	\$_____ per unit	\$_____ per unit
d	Fixed overhead cost and amortization or depreciation cost, if any, for buildings, tools, and equipment situated and located in the state of Hawaii used in the production or manufacturing of a product.	\$_____ per unit	\$_____ per unit	\$_____ per unit
e	<b>Totals</b>	\$_____ per unit (Add Column A)	\$_____ per unit (Add Column B)	\$_____ per unit (Add Column C)

13. Percent of Hawaii Input \_\_\_\_\_ % ( 12e. Column A Total ÷ Column C Total)

14. Failure to adequately verify, deliver, or supply Hawaii products. A procurement officer who has awarded a contract finds the contractor has failed to comply with HRS §103D-1002, Hawaii products, the contract shall be cancelled and the findings shall be referred for debarment or suspension proceedings under HRS §103D-702. Any purchase made or any contract awarded or executed in violation of this section shall be void and no payment shall be made by any purchasing agency. If debarred, the person or company shall be prohibited from bidding on any state or county government solicitations for up to three (3) years.

Should the procurement officer receiving a protest challenging the validity of the classification of a Hawaii product request an audit of the information of the proper classification of the product as defined under HRS §103D-1002, the cost of the audit shall be paid for by the requester.

In the event of any change that materially alters the offeror's ability to supply the certified Hawaii products, the offeror shall notify in writing the procurement officer within five (5) working days of knowing of the change and the parties shall enter into discussions for the purposes of revising the contract or terminating the contract for convenience.

Information submitted is CONFIDENTIAL or PROPRIETARY DATA, and the procurement officer shall not disclose this form, pursuant to HRS §92F-13(3) on government records; exception's to general rule.

**I certify, under penalties set forth in HRS §103D-1002, on Hawaii products, that the information provided herein has been examined by me and to the best of my knowledge and belief is true, correct, complete, and made in good faith pursuant to HRS §103D-101.**

Signature of Authorized Representative: \_\_\_\_\_

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

Print Name of Authorized Representative: \_\_\_\_\_

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

**GOVERNMENT USE ONLY**

APPROVED  DISAPPROVED  
SPO-038 (Rev. 11/12/10)

Procurement Officer Signature

Government Agency

# FORM 1

## CERTIFICATION OF BIDDER'S PARTICIPATION IN APPROVED APPRENTICESHIP PROGRAM UNDER ACT 17

<b>I. Bidder's Identifying Information</b>			
A. Legal Business Name: _____			
B. Project Bid Title & Reference No.: _____			
C. Contact Person's Name: _____			
1. Phone No.: _____		2. E-Mail: _____	
<b>II. Apprenticable Trades To Be Employed*</b>			
<b>A. (List)</b>		<b>B. Apprenticeship Sponsor* (One Sponsor Per Form)</b>	<b>C. No. Enrolled</b> (# of apprentices currently enrolled as of bidder's request date)
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
6. _____			
<b>III. Bidder's Certification</b>			
I certify that the above information is accurate to the best of my knowledge. I understand that my willful misstatement of facts may cause forfeiture of the preference under Act 17 and may result in criminal action. I give permission for outside sources to be contacted and for them to disclose any information necessary to verify the bidder's preference.			
A. Name (Type) _____		B. Title _____	
C. Signature (original signature required) _____		D. Date _____	
<b>IV. Apprenticeship Sponsor's Contact Information</b>			
A. Training Coordinator's Name: _____			
B. Address: _____			
C. Phone No.: _____		D. E-Mail: _____	
E. Fax No: _____			
<b>V. Apprenticeship Program Sponsor's Certification</b>			
I certify that the above information is accurate to the best of my knowledge. I understand that my willful misstatement of facts may cause forfeiture of the bidder's preference and may result in criminal action. I give permission for outside sources to be contacted and for them to disclose any information necessary to verify the bidder's preference under Act 17.			
A. Name of Authorized Official _____		B. Title _____	
C. Signature (original signature required) _____		D. Date _____	

\* Name of Apprenticable Trade and Apprenticeship Sponsor must be the **same** as recorded in the List of Construction Trades in Registered Apprenticeship Programs that is posted on the State Department of Labor and Industrial Relations website.

# FORM 2

## MONTHLY REPORT OF CONTRACTOR'S PARTICIPATION IN APPROVED APPRENTICESHIP PROGRAM UNDER ACT 17

<b>I. Contractor's Identifying Information</b>		<b>II. Reporting Period</b>	
A. Legal Business Name:		A. Month:	B. Year:
B. Project Contract Title & Reference No.:			
C. Contact Person's Name:			
1. Phone No.:		2. E-Mail:	
<b>III. Apprenticeship Program (Complete a separate form for each apprenticeship program in which workers are employed on the project.)</b>			
A. Contractor was a party to an apprenticeship program or programs with the following sponsor: (Give sponsor's name.)*		B. Was the contractor a party to the program during the <i>entire</i> report month?	
		1. Yes <input type="checkbox"/>	
		2. No <input type="checkbox"/>	If NO, state applicable period and why (may be subject to sanctions.)
<b>IV. Contractor's Certification</b>			
I certify that the above information is accurate to the best of my knowledge. I understand that my willful misstatement of facts may cause forfeiture of the preference under Act 17 and may result in criminal action. I give permission for outside sources to be contacted and for them to disclose any information necessary to verify the bidder's preference.			
A. Name (Type)		B. Title	
C. Signature (original signature required)		D. Date	
<b>V. Apprenticeship Sponsor's Contact Information</b>			
A. Training Coordinator's Name:		E. Fax No:	
B. Address:			
C. Phone No.:		D. E-Mail:	
<b>VI. Apprenticeship Program Sponsor's Certification</b>			
I certify that the above information is accurate to the best of my knowledge. I understand that my willful misstatement of facts may cause forfeiture of the bidder's preference and may result in criminal action. I give permission for outside sources to be contacted and for them to disclose any information necessary to verify the bidder's preference under Act 17.			
A. Name of Authorized Official		B. Title	
C. Signature (original signature required)		D. Date	

\* Name of Apprenticeship Sponsor must be the **same** as recorded in the List of Construction Trades in Registered Apprenticeship Programs that is posted on the State Department of Labor and Industrial Relations website.

**CERTIFICATION OF COMPLIANCE  
FOR  
EMPLOYMENT OF STATE RESIDENTS  
HRS CHAPTER 103B, AS AMENDED BY ACT 192, SLH 2011**

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

Agency Project No: \_\_\_\_\_

Contract No.: \_\_\_\_\_

As required by Hawai'i Revised Statutes Chapter 103B, as amended by Act 192, Session Laws of Hawaii 2011--Employment of State Residents on Construction Procurement Contracts, I hereby certify under oath, that I am an officer of \_\_\_\_\_ and  
(Name of Contractor or Subcontractor Company)  
for the Project Contract indicated above, \_\_\_\_\_ was in  
(Name of Contractor or Subcontractor Company)  
compliance with HRS Chapter 103B, as amended by Act 192, SLH 2011, by employing a workforce of which not less than eighty percent are Hawai'i residents, as calculated according to the formula in the solicitation, to perform this Contract.

I am an officer of the **Contractor** for this contract.

I am an officer of a **Subcontractor** for this contract.

*CORPORATE SEAL*

\_\_\_\_\_  
(Name of Company)

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Print Name)

\_\_\_\_\_  
(Print Title)

Subscribed and sworn to me before this  
\_\_\_\_ day of \_\_\_\_\_, 2011.

Doc. Date: \_\_\_\_\_ # of Pages \_\_\_\_\_ 1<sup>st</sup> Circuit

Notary Name: \_\_\_\_\_

Doc. Description: \_\_\_\_\_

\_\_\_\_\_  
Notary Public, 1<sup>st</sup> Circuit, State of Hawai'i  
My commission expires: \_\_\_\_\_

\_\_\_\_\_  
Notary Signature \_\_\_\_\_ Date

NOTARY CERTIFICATION

**EXHIBIT 2**

**PRELIMINARY GEOTECHNICAL EXPLORATION REPORT  
KEOKEA-WAIOHULI DEVELOPMENT PROJECT  
KULA, KEOKEA, MAUI, HAWAII**

For

Community Planning and Engineering, Inc.  
1100 Alakea Street, 6<sup>th</sup> Floor  
Honolulu, Hawaii 96813

By:



***Geotechnical & Environmental Consultants  
Construction Management & Testing Services***

*94-547 Ukee Street, Suite 210  
Waipahu, Hawaii 96797*

***Tel: (808) 676-6677 • Fax: (808) 676-7733***

March, 2005

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PSC Job No. 24304.10

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**PRELIMINARY GEOTECHNICAL EXPLORATION REPORT  
KEOKEA-WAIOHULI DEVELOPMENT PROJECT  
KULA, KEOKEA, MAUI, HAWAII**

March 31, 2005

PSC Job No. 24304.10

**SUMMARY OF FINDINGS AND RECOMMENDATIONS**

The project site is located on the western slopes of Mount Haleakala. It is underlain mainly by volcanic flows of basaltic andesite, andesitic basalt, and picritic basalt geologically termed as the Kula volcanic series. Sections of the road passing over the Kula Volcanic series will encounter volcanic ash generally intermixed with vitric tuffaceous gravels, cobbles and boulders of varying proportions (vitric) on top of the andesitic basalts. The surface soils range in thickness from 0 to more than 8 feet in one location. The Kula volcanic ash by itself is not suitable for engineered fills due to its low density and strength, high natural moisture content, and characteristically difficult to compact. The surface soils are generally classified as silt (MH) based on the Unified Soil Classification System. This soil acts like silt when dry and is prone to wind and water erosion. Some of these surface soil materials can be replaced or capped with borrow fill to provide adequate support for the proposed road network development. Laboratory tests show that the near surface, silt/volcanic ash derived soils generally have relatively low dry densities and high insitu moisture contents. Special attention should therefore be given to the preparation of subgrade and design of pavement for this road network project.

To achieve a relatively uniform support under the proposed roadway pavement structure, it is recommended that the soft or loose ash soil be removed down to at least 2 feet below the design/finish sub grade or until stiff to very stiff silt or gravelly materials are exposed, up to 2 feet below the design/finish subgrade. It should then be replaced with non-expansive, select borrow fill material (or an approved mixture of the insitu silts/volcanic ash with at least 60 percent of crusher-run basaltic aggregates), which may be obtained from the proposed project/borrow sites or other sources. Where fresh to slightly weathered basalt rocks are encountered, the basaltic base course may be placed directly over this after grading. If the grading works for the road involve extensive cutting through fresh or slightly weathered basalt, the use of embankment fill may be considered. For the Keokea site, volcanic ash materials generally range in thickness from 3/4 feet to 7.5 feet, except where the rocks are exposed at the surface. We recommend the removal of the near-surface soft volcanic ash materials in this area until stiff to very stiff soils are exposed and replacing them with select borrow material, except in the area bounded by TP-6 to TP-10 in Road A, TP-11 to TP-13 in future road and TP-14 in Road C. For the Waiohuli site, volcanic ash covered most of the road network, (except in the area bound by TP-24 through TP-27, in Road J, TP-29 through TP-30 in Road H, TP-31 through TP-32 in Road F, TP-36 in Road M, and TP-35 in Road A.) In this area, volcanic ash materials range from about 2.5 feet to 7.5 feet. We recommend the removal of the soft or loose near-surface ash materials encountered in this area, as described, and replacing them with select borrow material (or a mixture of ash and crusher-run basaltic aggregates).



Basaltic rock formations were observed at the proposed bridge and reservoir sites. It is our opinion, from a geotechnical standpoint, that it is feasible to build these structures at these selected sites.

Community Planning and Engineering, Inc. (CP&E) proposes to source borrow material from a parcel at the lower northwestern end of the proposed subdivision (Plate No. 2-A). Based on our field exploration in this area, the borrow site will have adequate borrow material consisting of basaltic/andesitic gravels, as shown in Boring Nos. B-1 to B-10. Some of the topsoils found in the borrow area, particularly in the vicinity of boring B-3, which consists of sandy, clayey silt, may be used as subbase fill material. Preliminary laboratory tests indicate that reconstituting the native volcanic ash silts with crusher run basaltic gravels also found at the site, with properly mixed portions, would considerably improve the soil strength characteristics.

We believe that a grading scheme to strip about 2 feet of the soft or loose volcanic ash soils (or until stiff to very stiff or dense materials are encountered), where these are encountered below the design/finish subgrade elevation along the road right-of-way, and replacing with select borrow material will provide long-term stability. The text of this report should be referred to for detailed and special design recommendations.

## INTRODUCTION

This report presents the results of our preliminary geotechnical exploration for the proposed road network of the Keokea-Waiohuli Agricultural Lots project located at Keokea and Waiohuli, Maui, Hawaii. The study also includes the proposed water reservoir and bridge crossing on the Waiohuli side of the subdivision per our proposal of March 2005. The general location and vicinity of the project site is shown on the Project Location Map, Plate No. 1.

Our work on the project was performed generally in accordance with our proposal dated March 2, 2004, except where modified by CP&E and PSC as to the exploration method based on actual site conditions for the borrow and other site areas. This report summarizes our findings and recommendations.

## PROJECT CONSIDERATIONS

The proposed Keokea-Waiohuli Agricultural Lots subdivision is located along the western slopes of Mount Haleakala west of Kula Highway Route 37 opposite Keokea Park. The terrain is steep to moderate and rough with boulders, cinder flows and rock outcrops. The majority of the study area, particularly the southern half of the site, is covered with vegetation consisting of groves of trees, Giant Cacti, and grass. The northern half contains less of the trees found at the southern



portion. The site generally slopes downward in a westerly direction from Kula Highway. The proposed subdivision road network will provide access to the proposed 400-Lot Keokea-Waiohuli Subdivision of the Department of Hawaiian Homelands (DHHL). The proposed alignment of the road network, bridge and reservoir sites, are shown in the Site Plan, Plate No. 2.

Geotechnical studies and field explorations were also conducted in the general area of the project site in 1995 by Ernest Hirata & Associates and by Dames & Moore in 1998. The studies revealed that the surface soil in the areas studied consisted of light brown to brown clayey silt with gravel and cobbles. Both studies also revealed that the surface soils are derived from volcanic ash. It was also found that this particular type of soil has high insitu moisture content and low dry density. In the dry and uncompacted state the soil exhibits little or no cohesion and becomes highly susceptible to erosion from both wind and water. Similarly, the dense and weathered basalt formation was reportedly encountered under the surface soils.

The volcanic ash derived soil in its pure form, is not recommended for structural fill, or for road embankment unless it is reconstituted with granular material. Based on these, a proposed grading scheme will consist of removing 2 feet of the soft or loose surface (volcanic ash) soil material below the design subgrade where these are encountered (or until stiff to very stiff or dense materials are encountered) and replacing these with borrow fill of non-expansive granular capping material which will support the pavement structure of the proposed subdivision road network project.

To define the extent of the fill and to obtain samples for index property tests, 50 test pits were excavated at approximately 500-foot intervals along the proposed road system by PSC Consultants, LLC, for this current study.

A borrow area is proposed at the northwestern lower end of the property (Plate No. 2-A). It is being contemplated as a source of fill material and may also serve as disposal area for the unsuitable soils and other debris that will be removed from the roadway construction site. Ten (10) borings (Boring Nos. B-1 through B-10) were excavated, with a Hoeram, by PSC from 10 to 20 feet deep at the proposed borrow area (Plate 2-B) to delineate the depths of the topsoil and to determine the engineering properties of the underlying soil/rock formation intended for borrow material.

We anticipate that asphaltic concrete pavements and or concrete pavements will be required for the roadways in the subdivision and while specific traffic loading has not been specified, we anticipate a medium vehicle loading for the project consisting primarily of passenger vehicles and delivery trucks.



The structural information for the reservoir and bridge sites were provided by Tanimura and Associates, Inc., Consulting Structural Engineers.

## PURPOSE AND SCOPE

The purpose of our geotechnical exploration is to gather information on the nature, distribution, and characteristics of the subsurface earth materials encountered on the proposed project site and borrow area, and to provide specific recommendations pertinent to the proposed road network development. The scope of our exploration consisted of the following tasks and work efforts:

1. Review of the existing available data from published and unpublished sources pertaining to the geology and soil conditions at the site and its vicinity and conducting a reconnaissance survey of the project site;
2. Scheduling the field exploration and coordinating with CP&E and Land Surveyors for the test pit/boring locations and site access;
3. Scheduling the field walkover survey and coordinating with CP&E and Site Archeologist for the reservoir and bridge site locations in the Waiohuli area and site access;
4. Mobilization and demobilization of drilling/excavating equipment and operators;
5. Coordination of the field exploration, and logging of the borings and test pits by a field engineer from our firm;
6. Excavating 50 test pits, 1 to 8 feet deep, each, with the use of a Backhoe or Hoe Ram equipment, approximately 500 feet apart along the pre-surveyed road network alignment, and collecting surface bulk samples for classification and CBR testing for pavement design. The depth of the underlying rock limited the depths of the test pits.
7. Excavating 10 borings to depths of about 15 to 20 feet below the existing ground surface at the proposed borrow area;
8. Laboratory testing of selected soil samples obtained from the field exploration to classify the materials encountered and to evaluate their engineering properties relative to their intended use. In addition, mixed design of ash and granular materials and CBR tests were performed to determine their suitability for pavement support.
9. Analyzing the field and laboratory data for the formulation of preliminary geotechnical engineering recommendations pertinent to the road and pavement design, the reservoir, and the bridge at the Wiaohuli site, including but not limited to foundations, engineered fills, and site grading for the proposed subdivision road development;



10. Coordinating with and providing preliminary geotechnical recommendations to the structural designers for the reservoir and bridge sites at Waiohuli area; and
11. Preparation of this report summarizing our work on the project and presenting our findings and recommendations.

Detailed descriptions of our field exploration and laboratory testing are presented in the plates of this report.

## **SITE DESCRIPTION**

The project site is located in the western slopes of Mount Haleakala, along the Kula Highway Route 37 opposite Keokea Park in Keokea, on the island of Maui, Hawaii. The terrain in the general area of the project site slopes downward to the west with grades ranging from moderate to steep. Occasional basaltic rock outcrops and boulders were also observed. Vegetation consisting of grass, groves of trees, and giant Cacti abounds at the site, particularly on the southern half of the property.

The proposed subdivision road network will have an estimated total length of approximately 36,000 feet or about 6.82 miles, providing access to some 400 agricultural lots. At the writing of this report, only the road profiles and cross sections for Roads A, B, D, and Bridge Abutments and a topographic map of the proposed subdivision and Reservoir site are available. The proposed road profiles and sections of the other roads of the subdivision road network were not provided.

## **SUBSURFACE CONDITIONS**

### **Project Site Geology**

The project site is underlain mainly by volcanic flows of basaltic andesite, andesitic basalt and picritic basalt, geologically termed as the Kula volcanic series as shown in the Geologic Map of the Project Site and Vicinity (Plate No. 1-A). These volcanic flows are covered with a surface layer of volcanic ash derived silt sometimes intermixed with tuffaceous gravels, cobbles, and boulders (weathered tuff) in the majority of the study area. These surface soils range in thickness from about 1 foot to more than 8 feet in one location. The ash material is generally not suitable for pavement and foundation support or embankment fill.



## **Subsurface Exploration**

### Road Network

Subsurface conditions along the proposed subdivision road network were explored by excavating and sampling 50 test pits spaced at approximately 500 feet on centers. The depth of excavation ranged between 4 to 8 feet except in places where the basaltic/andesitic volcanic rock occur very close to the ground surface. The approximate locations of the test pits are shown on Site Plan, Plate No. 2.

### Borrow Area

The proposed borrow area was explored by digging with a hoe ram and sampling 10 borings to depths ranging between 15 to 18 feet below the existing ground surface. The approximate locations of the borings and test pits are shown in the Site Plan of the Proposed Borrow Area, Plate No. 2B.

## **Subdivision Road Alignment**

The proposed road network will generally traverse over volcanic ash derived silt materials (silt), with varying amounts of gravels, cobbles, and boulders. The thickness of the surface soil layer ranges in the order of 1 foot to about 8 feet.

### Road "A"

This proposed road alignment runs along the middle central portion of the subdivision from the southern most lots to its northern limits. Eighteen (18) test pits were excavated along this road alignment as shown in the Site Plan, Plate No. 2. The depth to the basaltic rock from the surface ranges from 2 feet in Test Pit TP-6 to about 7.5 feet in Test Pit TP-46. Silt materials were encountered in Test Pits, TP-4, TP-5, TP-34, TP-45, and TP-46. The silt materials encountered in the rest of the test pits contained varying amounts of tuffaceous gravels, cobbles and boulders.

### Road "B"

Proposed Road "B", approximately 1,500 feet in length, is the main access road to the subdivision connecting Kula Highway to Road "A". Test Pits TP-1 through TP-4 are located along this proposed road alignment. The thickness of the overburden soils range from 4-feet in Test Pit TP-4 to about 8 feet in Test Pit TP-3. With the exception of Test Pit TP-4 (at the Road "A" and Road "B" junction), where the materials encountered are predominantly silt, the soils encountered in Test Pits TP-1 to TP-3 are either silty gravels or gravelly silts with tuffaceous cobbles and boulders.



### Road "C"

Road "C" is a road extension that will run perpendicular to Road "B" (Plate No.2). It is about 1500 feet in length and is aligned in a west-southwest direction. Test Pit TP-14 was excavated approximately near the central portion of this road, which revealed overburden soils consisting of about 4 feet thick of silty gravel underlain with Basaltic rocks. Additional exploration should be performed in other portions of the road alignment to confirm the subsurface soil information.

### Road "D"

Road "D" is a lateral road in the mid-western section of the subdivision connecting to Roads "F" and J. Three (3) test pits (TP-21 to TP-23) were excavated along this road. The depth to volcanic rock from the surface is about 5 feet in Test Pit TP-21 to about 1-foot in Test Pit TP-23, near its intersection with Road "J". The overburden soils encountered in Test Pits TP-21 are predominantly silt (MH). The same types of soils are also present in Test Pit TP-22 but contains considerable amount of gravel. A thin layer (about 1-foot) of stones and boulders in a silt matrix were encountered in Test Pit TP-23.

### Road "G"

Proposed Road "G" makes a loop originating from and terminating in Road A at the northwestern side of the subdivision. It has an approximate length of about 3,225 feet. Auxilliary roads, G1 and G2 parallel to each other traverse the area bounded by the loop formed by Road G in a north-northeast orientation. Five (5) test pits, namely; TP-40 to TP-44, are located in the vicinity of Road G. The thickness of the overburden soils range from about 4-feet in Test Pits TP-42 and 43 to about 8 feet in Test Pit TP-44. The overburden materials encountered in these Test Pits are predominantly silts and gravelly silts. Additional test pits may be made to confirm the subsurface soil information in other parts of Road G.

### Road "H"

Road "H" is a lateral road in the mid-western section of the subdivision connecting Roads F and E. Three test pits TP-28 through TP-30, were excavated along this road. The depth to volcanic rock from the surface is about 1 foot in Test Pit TP-30 to about 4.5 feet in Test Pit TP-28. The overburden soils encountered are predominantly silty gravels and gravelly silts.

### Road "K"

Road "K" is a service road that runs perpendicular to both Roads A and E at the northeastern section of the subdivision. It is about 3,225 feet long. Test pits TP-39, 48, 49, and 50 were excavated in the general vicinity of this road. The overburden soil in this road alignment consists of silty gravels and gravelly silts ranging in thickness from 3 to 4.5 feet.



### Road "F"

Road "F" is aligned parallel to Road "A" to the west of Road "A". It stretches about 2,400 feet from Road "D" in its southern end and connects with Road E to the north. Test Pits TP-31 through TP-33 were excavated along the general vicinity of this road. The depth to volcanic rock from the surface ranges from about 5 feet in Test Pit TP-32 to about 1.5 and 2.5 feet in Test Pits TP-31 and TP-33, respectively. A thin layer (about 1 foot) of cobbles and boulders in a silt matrix were encountered in Test Pit TP-31. Overburden materials encountered in Test Pit, TP-32 and TP-33 consisted of silty gravel (GM-GW).

### Road "M"

Road "M" connects with Road "A" at its southern end and terminates to the north at its intersection with Road "E". It runs parallel to the east side of Road "A" and is about 1,900 feet in length. Test Pits TP-36 and TP-37 are located within this road alignment. The near-surface soils consisted of silt (MH) occurring to a depth of about 4 feet and 2 feet in Test Pits TP-36 and TP-37, respectively. Silty gravel (GM) was also encountered under the surface silt layer in TP-37, occurring down to about 7.5 feet, where it interfaces with the underlying basalt rock.

### Roads "L and L-1"

Roads "L and L-1" provide access to the lots bounded by Roads A and K on the northeast side of the subdivision. Road L is approximately 1,125 feet and Road L-1, which branches perpendicular to Road L is about 375 feet. Test Pit TP-47 was excavated in the vicinity of this road. The depth to rock from the surface is about 6 feet in Test Pit TP-47. The overburden materials encountered in this test pit consisted of gravelly silt. Additional test pits can be made in the areas which are more than 500 feet apart, to confirm the subsurface soil conditions.

### Road "E"

Road "E" is a header road that traverses across the northern half of the subdivision from east to west with a length of about 2,900 feet. It connects the northern ends of Roads "J", "H", "F", "A", "M" and the southern end of Road "K". Test Pits TP-26, TP-29, TP-33, TP-35, and TP-39 are approximately aligned within the path of this road. The depth to volcanic rock from the surface ranges from 1 foot in the westernmost end at Test Pit TP-26 and appear to thicken to 5 feet toward the other end at Test Pit TP-39. The overburden materials encountered along this road alignment, at the test pit locations, consisted of silty gravel. These near surface soils are generally underlain with basaltic rock of the Kula Volcanic Series.

Additional field exploration may be performed in the eastern end of Road "E" to confirm the subsurface soil information.



### **Proposed Borrow Site**

The designated borrow site is located in a property adjacent to the northwestern side of the subdivision (Plate No. 2-A). Ten (10) borings (B-1 to B-10) were excavated, using a Hoeram, within the proposed borrow area (Plate No. 2-B), to explore the type of materials available at this site and to determine their relevant engineering properties. The borings encountered a surface soil of predominantly silt materials ranging in thickness from 0 (Boring B-5) to about 5.5 feet in Boring B-1. The surface soils are underlain with volcanic flows of basaltic/andesitic rocks with intermediate layers/lenses of tuffaceous gravels (clinker), cobbles, and boulders. A void of about 4.5 feet in vertical dimension, probably originating from a lava tube, was encountered in Boring B-2 between depths of 8 to 12.5 feet. Groundwater was not encountered in any of the borings during the time of our exploration. All borings/test pits were properly backfilled after completion of our field exploration work.

### **DISCUSSION AND RECOMMENDATIONS**

Our field exploration indicated that volcanic ash derived silt soil with varying amounts of gravel, cobbles and boulders generally cover the project site with occasional basaltic rock outcrops. The thickness of the surface soil ranges from about 1 foot to more than 8 feet (Test Pit TP-44). These silt soils contain relatively high amounts of moisture. In the dry state it loses cohesive strength and becomes prone to wind and water erosion. Our field exploration also showed that a large part of the soil overburden within the study area contained considerable amounts of coarse materials such as tuffaceous/basaltic gravels, cobbles and boulders. In some areas the coarse materials exceeded that of the fines, as reflected in the logs of borings. These overburden materials are underlain with fresh to moderately weathered andesitic, basaltic flows also known as the Kula volcanic series.

### **Keokea Site**

The field exploration along Roads A, B, and D, within the Keokea side of the subdivision, indicated overburden soils generally comprising of silty gravels and gravelly silts with varying amounts of cobbles and boulders. Embankment fills may be laid directly over these materials (after clearing, grubbing and scarifying) without over-excavation. Undercutting below subgrade will not be necessary when these gravelly silt and silty gravels with cobbles and boulders are encountered. In this area, volcanic ash materials generally range in thickness from 3/4 feet to 7.5 feet, except where the rocks are exposed at the surface. If road grading encounters loose volcanic ash below finish subgrade level, we recommend the removal of the upper 2 feet, or more if necessary, until stiff to very stiff or dense materials are encountered or until gravelly silt material is exposed, except in the area bounded by TP-6 to TP-10 in Road A, TP-11 to TP-13 in future road and TP-14 in Road C. We further recommend replacing these with select borrow compacted to 95 percent of relative compaction, to improve the stability of the proposed subdivision road. The removed surface silt/volcanic ash soils may be buried in the borrow pits and covered with 1 foot of the excavated borrow material to limit erosion potential, particularly if future developments are planned.



It should be noted that actual ground conditions or materials within the approximately 500-foot spacing between test pits may vary and should be verified during actual grading operations. In Road A, for instance, a berm-like natural feature rising to about 8 feet from the proposed road cut stands between TP-5 and TP-6, particularly between stations 80+00 through 82+00 in profile of Road A, Plate No. 86 (Sheet 3 of 5 of the provided road profiles). This may be rock, soil, or a combination thereof and therefore the grading method in between the test pits will be dictated, in part, by what is actually encountered in the unexplored portions of the road development.

### **Waiohuli Site**

In this area, volcanic ash materials generally range in thickness from 2.5 feet to 7.5 feet, except where the rocks are exposed at the surface, such as at the proposed bridge crossing. We also recommend the removal of the near-surface soft volcanic ash materials in this area until stiff to very stiff soils are exposed and replacing them with select borrow material, except in the area bounded by TP-24 through TP-27, in Road J, TP-29 and TP-30 in Road H, TP-31 and TP-32 in Road F, TP-36 in Road M and TP-35 in Road A.

At the proposed borrow area, the thickness of the overburden soil is on the order of 2 to 17 feet. The overburden materials encountered in this area are mostly gravelly silts and silty gravels with cobbles and buried boulders. Detailed descriptions of the materials encountered in this site can be referred to the Logs of Borings (Plate No. 53 through 62), Boring Nos. B-1 to B-10.

### Bridge Site at Waiohuli

#### Site Description

The approximate location of the bridge, site contains gray, basaltic rock outcrops on both the left and right abutments. The rock surfaces at the central part of the dry stream channel appear smoother, as compared to the rocks exposed higher up the banks, indicating an intermittent stream flow. Pools of water trapped in small depressions in the rock were also observed along the central portion of the channel. At the approximate location of the bridge site, the upstream channel (eastern portion of the site) is relatively shallower than the western section, where a sudden drop occurs to an estimated depth of about 10 feet, forming a narrow channel at the downstream side of the crossing about 5 wide. Visibility range at the site is limited due to the dense growth of secondary forest cover consisting of native trees and brush. Access to the site is also hampered by the abundance of dead tree debris.

The approximate site of the abutments generally consists of hard, strong, slightly weathered, fractured, basaltic rock exposures.



From our preliminary survey of the project site, it is our opinion that the project is feasible for construction from a geotechnical engineering standpoint, with the following design parameters:

### Foundation Design

The proposed single span, 60-foot long bridge abutments may be supported on spread footing foundations initially designed for an allowable bearing pressure of 6000 psf (287 kPa). This allowable bearing capacity may be increased or decreased depending on the geotechnical conditions at the exact bridge locations, which will be determined from an additional field exploration prior to final design. Other geotechnical design parameters are as follows:

#### Seismic Data

- Shear wave velocity 2,500 fps
- Peak Rock Acceleration 0.2 g (From UBC)

#### Lateral Soil Forces

Seismic Soil Pressure	33 percent increase over active and passive cases
Active Case: Design Value	36 pcf equivalent fluid pressure for pre-approved backfill material
At Rest Case: Design Value	55 pcf equivalent fluid pressure for pre-approved backfill material
Passive Resistance: Design Value	400 pcf equivalent fluid pressure for pre-approved backfill material. Maximum value 4000 psf.

The above foundation recommendations and design parameters are based on surface site observations only for use in the preliminary design of the structure. These design parameters will be subject to change if the engineering properties of the underlying materials are different from what we have anticipated and should be verified by actual field exploration.

### Reservoir Site

#### Site Description

The general location of the proposed reservoir is undulating ground containing low-lying ridges and valleys. The proposed water storage structure will be set on the ridge about 300 feet northwest of the intersection of Roads K and E. The



ridge area is generally covered with grass and contains gray, basaltic rock outcrops. The exposed rocks were observed to be hard, strong, and massive. The rock surfaces are sharp and rough.

From our preliminary survey of the project site, it is our opinion that the project is feasible for construction from a geotechnical engineering standpoint. The following recommendations may be used for preliminary design of the reservoir

Based on our preliminary field observations, the proposed reservoir tank may bear on the underlying hard basaltic rock formation or properly compacted pre-approved fill material, with the following design parameters:

### Foundation Design

For preliminary design purposes, an allowable bearing pressure of 3000 psf (145 kPa) may be used for the onsite materials or on properly compacted, pre-approved select borrow. The minimum footing embedment depth shall be 18 inches (1.5 feet) below the lowest adjacent finished grade. An allowable bearing pressure of 6,000 (287kPa) may be used, tentatively, for footings bearing on the basaltic rock. These allowable bearing capacities may be increased or decreased depending on the actual geotechnical conditions at the exact reservoir locations which will be determined from future exploration data.

The bearing values are for dead plus live loads and may be increased by 1/3 for transient loads due to wind or seismic forces.

For footings adjacent to slopes, the footing must be deepened such that there is a minimum distance of 6 feet from the edge of the footing to the slope face.

Conditions where the footing will rest partially on rock and partially on fill should be avoided. Foundation fills over cut rock should be more or less uniform in thickness to limit differential settlement. Other geotechnical design parameters are as follows.

### Lateral Resistance

For resistance of lateral loads, such as wind or seismic forces, an allowable passive earth resistance equivalent to that exerted by fluid weighing 300 pcf may be used for footings, provided that the vertical surface is in direct contact with undisturbed soil, or properly compacted fill.



Frictional resistance between footings or slabs and the underlying soil may be assumed as 0.3 times the dead load for properly compacted, pre-approved structural fill or 0.5 times the dead load for footings resting on basaltic rock.

### **Slab on Grade**

For the preliminary design of concrete slab on grade, a modulus of subgrade reaction of 300 pci maybe used for the structural fill of select granular borrow materials.

### **Slopes**

Permanent fill or cut slopes of soil type materials shall not exceed 2H:1V (horizontal to vertical). Exposed soil slopes must be covered immediately after construction to limit erosion. Cut slopes into the basaltic rock formation may be made at 1H:1V.

The above recommendations and design parameters are based on surface site observations only for use in the preliminary design of the structure. These design parameters will be subject to change if the engineering properties of the underlying materials are different from what we have anticipated and should be verified by actual field exploration.

### Earthwork and Grading

The following sections present guidelines for the design and construction of the earthwork and grading for the subject subdivision road development and appurtenant structures.

Our field exploration indicates that under the silt (volcanic ash) surface soils, the site is generally underlain with competent basaltic/andesitic rocks and deposits of tuffaceous gravels (clinker), cobbles, and boulders. These underlying materials have good strength characteristics and, if excavated and properly processed, could meet the requirements for select borrow for subbase course, as stipulated in Section 16 of the Standard Specifications for Public Works Construction.



Therefore, the recommended grading concept would involve utilization of the suitable overburden soils and the weathered basaltic/andesitic gravels and rocks in the designated borrow site as replacement fill and select material. These materials could be quarried, processed, and classified according to aggregate sizes and stockpiled for use as capping, subbase, basecourse, and paving material. After sufficient quantities of borrow material is excavated, processed, and stockpiled, the soft or loose unsuitable silt (volcanic ash) soils that are encountered within the subdivision road right-of-way will be stripped to a depth of at least 2 feet below the finish subgrade where applicable, or until stiff to very stiff or gravelly materials are encountered. The unsuitable materials should be disposed of, properly, off-site or in the borrow area excavation and capped with 1-foot of the excavated borrow granular material to limit erosion and downhill siltation. Where the design subgrade encounters silty gravel, gravelly silt with cobbles, and boulders or weathered basalt, over excavation and replacement with borrow or embankment fill will not be necessary. After grading, scarification, and proof rolling, the subbase course may be placed directly on top of these gravelly insitu materials. Where fresh basalt rocks are encountered, the basaltic base course may be placed directly over this, after grading. If the grading works for the road involve extensive cutting through slightly weathered to fresh basalt, the use of embankment fill may be considered. In this case, benching is required for slopes that are steeper than 5H:1V, where daylight sections are encountered. Additional recommendations should be provided for areas where ash and granular/basaltic materials are involved. This usually involves the over-excavation of up to 2 feet for an area of several feet to create the same material within the daylight section for uniform support.

#### Borrow Pit Operation

To generate sufficient select fill materials for the required road grading, a borrow pit operation may be considered as a supplementary or main source of fill and paving materials. Based on field observations, it is our opinion that the weathered subsurface basaltic/andesitic rock formations at the borrow site can be quarried using controlled blasting, if permitted. After blasting, these may be further reduced with rock-breakers (Hoe Ram), and excavated with bucket type excavators. The resulting excavation area could be utilized as a disposal site to contain the stripped unsuitable silt/volcanic ash soils to limit downstream siltation. Any silt soils placed in the borrow pits should be laid in controlled lifts and properly compacted and capped with non-expansive material, if future developments are planned.



As discussed above, the basaltic andesite from the borrow site may be considered comparable to select fill material when properly processed and are suitable for road embankment and capping fill within the upper 1.5 feet below the proposed finished subgrade of the subdivision road.

### Site Grading

Currently, numerous boulders and rock outcrops and groves of trees are present at the site and along the proposed road right-of-way and bridge site. The boulders encountered may be processed for aggregates or select fill material, if they can meet the grading specifications and requirements contained in this report. Otherwise, these can be stockpiled for future use such as rip rapping, landscaping, and other purposes, or disposed of in the borrow pits. This can be determined during the construction and grading operations.

Fill embankments and cuts are anticipated in the subdivision road network development. Therefore, proper site preparation and compaction of the new fills and bonding of the new fills to the existing ground surface will be required to provide a stable fill mass. As discussed above, 2 feet of the soft or loose surface silt (volcanic ash derived soils) should be stripped below the design subgrade of the road development where these are encountered. These ash soils should be disposed of off-site or be placed in the borrow pits. However, if the insitu soils contain considerable amounts of gravels, boulders, and cobbles, as encountered in many of the test pits, stripping and replacement of the soft or loose ash soils with select borrow will not be necessary, provided that the volcanic ash soils are properly blended with granular/oversize materials to form a uniform matrix. The basaltic/andesitic materials such as those found at the proposed borrow area, if properly processed, are considered suitable as replacement fill for the stripped ash soils and for road embankment fill.

We recommend that the road grading operations be observed by a representative of PSC Consultants, LLC. It is important that a representative from our office observe the road grading to evaluate whether any undesirable materials are encountered during the excavation and scarification process and whether the exposed soil/rock conditions are similar to those anticipated in our engineering analysis.



### Site Preparation

At the onset of earthwork, the area within the contract grading limits of the road right-of-way should be cleared of trees, vegetation, debris, rubbish, boulders, and other deleterious materials. These materials should be removed and properly disposed of off-site.

In areas to receive fill, such as the silt layers that are over excavated down to 2 feet or the insitu silty gravels and gravelly silts, should be scarified to a depth of 6 inches, moisture-conditioned to at least 2 percent above the optimum moisture content, and compacted to a minimum of 90 percent relative compaction. Relative compaction refers to the in-place dry density of soil expressed as percentage of the maximum dry density of the same soil established in accordance with ASTM Test designation D 1557-91. The optimum moisture content is the moisture content corresponding to the maximum compacted dry density. Soft or yielding areas encountered during site preparation should be over-excavated to expose firm soil surface and stabilized by backfilling with select material placed in 8-inch thick, loose, lifts and compacted to 90 percent relative compaction or 95 percent for fills 2 feet below the proposed road subgrade.

### Over-Excavation

Some of the existing upper clayey silt (volcanic ash) that do not contain or have very little percentage of coarse material may not be suitable for support of the proposed pavement. These are porous (susceptible to collapse/settlement with increased water content), have a relatively low dry density, and are prone to erosion and should be over excavated and replaced with select onsite/borrow fill. These materials are generally from 0.75 to 8 feet in depth and their limits within the project site were mentioned in the Summary Section and Discussion and Recommendation Section of this report. If these upper clayey silt (volcanic ash) materials are also encountered in areas between test pits or areas outside the aforementioned limits during the grading of the proposed road right-of-way, they should be over-excavated down to at least 2 feet or until stiff to very stiff or dense gravelly materials are encountered and replaced with select granular materials. A minimum of 2 feet of select granular materials should be provided underneath the pavement section along the road right-of-way and compacted to 95 percent relative compaction under the section headed, "Pavements". It is important that a PSC representative be present during the site grading work to determine which areas need to be over excavated or retained. A separating geotextile should be used between the remaining in-place porous volcanic ash materials and select granular fill materials. Adequate sub-drains should also be installed in the areas of deeper porous deposits to prevent surface runoff entering into the porous volcanic ash layer.



The excavated volcanic ash/silt materials can be mixed with onsite granular/basaltic materials for reuse as select/engineering fill, when properly mixed and processed. Some laboratory tests (CBR and compaction tests) were performed on trial mixtures of onsite samples to determine the engineering properties and appropriate proportions of components for possible select fill.

### Fill Materials and Placement

#### Borrow Pit Backfill and Compaction

It is anticipated that the soft or loose silt/volcanic ash soils that will be removed from the subdivision road right-of-way and placed in the borrow pits will be prone to erosion due to its relative lightness and very low to zero cohesive strength when dried. In order to reduce the erosion potential of this soil, the disposed soft or loose silt (ash) backfill material should be moisture conditioned to at least 3 percent above the optimum moisture content and compacted to 85 to 90 percent relative compaction. The final layer of backfill should be placed at a minimum of 12 inches below the finished subgrade in the borrow pits to allow the placement of at least 12 inches of capping material composed of granular select borrow.

### Onsite Fills/Backfills and Compaction

#### Road Embankment and Replacement Fills

Materials used for road embankment filling and the replacement fills placed within the top 2 feet of finished subgrade within the road right-of-way area should be non-expansive, select material, generally less than 3 inches in maximum dimension, should have a plasticity index not exceeding 15, as determined in accordance with ASTM Test Method D 4318-84, and should have a maximum of 40 percent of particles passing the No. 200 sieve. The onsite tuffaceous, basaltic/andesitic materials, if properly processed after excavation, are suitable for this purpose.

#### Trial Mix of Fill Materials

Preliminary California Bearing Ratio (CBR) tests conducted indicate that the volcanic ash when mixed with 50 percent (by volume) of the onsite basaltic gravel passing Sieve No. 4 would result in a General Rating of Fair to Good. This mixture may be suitable for subbase or base material. Similarly, on site silts mixed with approximately 50 percent (by volume) of the basaltic gravels retained



in sieve No. 4 indicated a General Rating of Fair to Good, which is likewise suitable for use as subbase or base material. Another test was conducted using a mixture of about 25 percent (by volume) of the basalt gravel passing the No. 4 sieve with approximately 75 percent of the onsite silt resulting in a general rating of Poor to Fair.

This type of mixture may only be used as subgrade. On the other hand, CBR tests conducted on purely volcanic ash silt, such as samples from Test Pits TP-4, 18, and 28, resulted in a General Classification Rating of Very Poor (CBR No.<3). The tests indicate that the soil strength characteristics can be improved with the addition of coarse gravelly materials. Based on the above tests, we recommend gravel content of at least 60 percent (by volume) or greater for the replacement and road embankment fills; that is, if a mix-design is to be adopted. Further tests should be conducted during actual construction to insure the consistency of the mix design is satisfied.

### Compaction

Fill material should be placed in level lifts with maximum loose thickness of 8 inches; moisture conditioned to least 2 percent above optimum, and properly compacted to a minimum of 90 percent relative compaction. In roadway areas, the minimum degree of compaction within the upper 2 feet of the finished pavement subgrade level should be 95 percent. Each layer should be spread uniformly and blade-mixed to attain uniformity of the material and even distribution of water content. Additional fill material should not be placed on any fill layer that has not been properly compacted.

If additional offsite borrow material is required, it should be tested by PSC Consultants, LLC to evaluate its suitability for use as select fill prior to its delivery to the project site.

### Slopes

In cases where sloping fills are required, such as at the edge of fill embankments consisting of select material, these may be designed at 2H:1V or flatter. Fill slopes should be constructed by overfilling 2 to 3 feet, then cutting back to the design slope to expose a well-compacted face.



Water should be diverted away from the slopes by diversion ditches at their tops and surface drains on slope surface and subdrains may be used to provide adequate drainage. Slope planting should be utilized to limit erosion.

### Pavements

We anticipate that asphaltic concrete pavements will be required for the roadways in the subdivision. While traffic loading has not been specified, we anticipate a medium vehicle loading for the project consisting primarily of passenger vehicles and delivery trucks. We have made our preliminary pavement design assuming the pavement subgrade soil will consist of compacted tuffaceous, basaltic/andesitic fill materials with a minimum CBR value of 25. The fill material within 2 feet below the pavement subgrade should be compacted to 95 percent relative compaction. Based on the above assumptions, we recommend the following flexible and rigid pavement sections be used for preliminary design purposes:

#### Flexible Pavement Section

2-Inches	Asphaltic Concrete
6-Inches	Aggregate Base Course
<u>6-Inches</u>	<u>Aggregate Subbase Course</u>
14-Inches	Total Pavement thickness on a minimum of 2 feet of properly compacted select borrow material or insitu basaltic/andesitic rock formation.

#### Rigid Pavement Section

6-Inches	Concrete
<u>6-Inches</u>	<u>Aggregate Subbase Course</u>
12-Inches	Total Thickness

The recommended section considers medium subdivision traffic. In areas with heavier traffic, such as at main collector roads like Road "A" and Road "B", the section should be thickened with an additional 1/2-inch asphaltic concrete to provide adequate support for the anticipated increased traffic loading.

The base course should be compacted to 95 percent of its maximum dry density, as determined in accordance with ASTM Test Method D 1557-91.



CBR and density test and/or field observations should be performed on the actual subgrade used for the road construction to confirm the adequacy of the above pavement sections. The recommended section assumes that adequate drainage will be provided.

### Road Drainage

Subdrains should be provided where there is a possibility that runoff from rainfall or irrigation could saturate the subsurface soils. Exposed surface soils should be protected from erosive runoff by providing surface drains, diversion berms, and other flood control devices. The access of water into the roadbed soil under the pavement should be minimized in order to stabilize the moisture content as by incorporating water inhibiting membrane into the design, as described in Item 1.21.1-d of the DOT Pavement Design Manual (Rev. March 2002).

### Utility Trenches

We envision that utility lines will be required for the proposed subdivision road project. A granular bedding consisting of 6 inches of No. 3B Fine gravel is recommended under the pipes. Free draining granular materials, such as No. 3B Fine gravel (ASTM C 33, No. 67 gradation), should also be used for the trench backfill, up to about 12 inches above the pipes to provide adequate support around the pipes and to reduce compaction of the backfill, thus reducing the potential for damaging the pipes.

The upper portion of the trench backfill from 1 foot above the pipes to the top of the subgrade or finished grade should consist of select granular material. The backfill should be moisture conditioned, placed in maximum 8-inch, level, loose lifts and mechanically compacted to not less than 90 percent relative compaction to reduce the potential for future ground subsidence. Where trenches are below pavement areas, the upper 2 feet of the trench backfill below the pavement subgrade should be compacted to 95 percent relative compaction.

### Design Review

Drawings and specifications for the proposed construction should be submitted to PSC Consultants, LLC, as geotechnical consultant, for review and written comments prior to construction. This review is needed to evaluate adherence of the plans to the recommendations provided herein. If this review is not made, PSC cannot assume responsibility for the interpretations made by others, or errors resulting there from.



### Construction Observation and Testing

The recommendations provided in this report are based on subsurface conditions disclosed by widely spaced exploratory borings and excavations. The geotechnical consultant should check the interpolated subsurface conditions during construction. The geotechnical consultant should attend the pre-construction meeting between the contractors and owners/designers.

During grading, the geotechnical consultant should:

- ❖ Observe excavation, placement, and compaction of engineered fill for the road pavement structures;
- ❖ Observe preparation and compaction of aggregate base for asphalt/concrete pavement and flatwork subgrade;
- ❖ Check and test any imported materials prior to their use as fill;
- ❖ Perform field tests to evaluate fill compaction;
- ❖ Observe subgrade conditions at the bottom of pipeline trenches;
- ❖ Observe fill placement and compaction around the pipes in the utility trenches;
- ❖ Observe the fine-grading and exterior drainage improvements constructed around the finished structures; and
- ❖ Perform and check the foundation excavations for the Bridge and Reservoir sites.

The recommendations provided in this report assume that PSC will be retained as the geotechnical consultant during the construction phase of the project. If another geotechnical consultant is selected, we request that the selected consultant provide a letter to the architect/designer and owner/client (with a copy to PSC and Maui County) indicating that they fully understand our recommendations and that they are in full agreement with the recommendations contained in this report and will take over as the Geotechnical Consultant of Record for this project. If deviations from soil conditions and recommendations presented in this report occur, they should provide amended recommendations as new geotechnical consultants of record for the project.



## LIMITATIONS

The analyses and recommendations submitted in this report are based, in part, upon information obtained from field borings and visual observations. Variations of subsoil conditions between the borings may occur, and the nature and extent of these variations may not become evident until construction is underway. If variations then appear evident, it will be necessary to reevaluate the recommendations provided in this report.

The test pits and boring locations in this report were selected by PSC Consultants LLC, based on the previous boring information done by others and our scope of work. The field locations for the borings and test pits were located by the client's surveyor and modified based on actual site conditions during field exploration work. The physical locations and elevations of the borings should be considered accurate only to the degree implied by the methods used.

The stratification lines shown on graphic representations of the borings depict the approximate boundaries between soil/rock types and, as such, may denote a gradual transition.

This report has been prepared for the exclusive use of Community Planning and Engineering, Inc., their client, and their consultants for specific application to the proposed Keokea-Waiohuli development in accordance with generally accepted geotechnical engineering principles and practices. No warranty is expressed or implied.

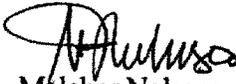
This report has been prepared solely for the purpose of assisting the architect/engineer in the design evaluation of the proposed project. Therefore, it may not contain sufficient data, or proper information to serve as the basis for preparation of construction cost estimates. A contractor wishing to bid on this project is urged to retain a competent geotechnical engineer to assist in the interpretation of this report and/or in the performance of additional site-specific exploration for bid estimating purposes.

The owner/client should be aware that unanticipated soil/rock conditions are commonly encountered. Unforeseen soil/rock conditions, such as perched ground water, soft deposits, hard layers, or cavities, may occur in localized areas and may require probing or corrections in the field (which may result in construction delays) to attain a properly constructed project. Therefore, a sufficient contingency fund is recommended to accommodate these extra costs.



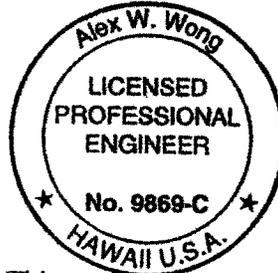
The findings in this report are valid as of the present date. However, changes in the soil conditions can occur with the passage of time, whether they be due to natural processes, or to the works of man, on this or adjacent properties. In addition, changes in applicable or appropriate standards occur, whether they result from legislation, or from the broadening of knowledge. Accordingly, the findings in this report might be invalidated, wholly or partially, by changes outside of our control. Therefore, this report is subject to review by the controlling agencies and is valid for a period of 2 years.

Respectfully submitted,  
**PSC CONSULTANTS, LLC**

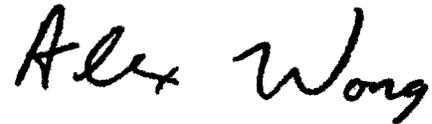
  
Melchor Nolasco  
Office Engineer

MGN/ASW/PSC:ch

- Enc.: Plate No. 1  
Plate No. 1-A  
Plate No. 2  
Plate No. 2-A  
Plate No. 2-B  
Plate No. 3 through 52  
Plate No. 53 through 62  
Plate No. 63  
Plate No. 64  
Plate No. 65 through 72  
Plate No. 73 through 78  
Plate No. 79  
Plate Nos. 80 through 82  
Plate Nos. 83 through 85  
Plate No. 86



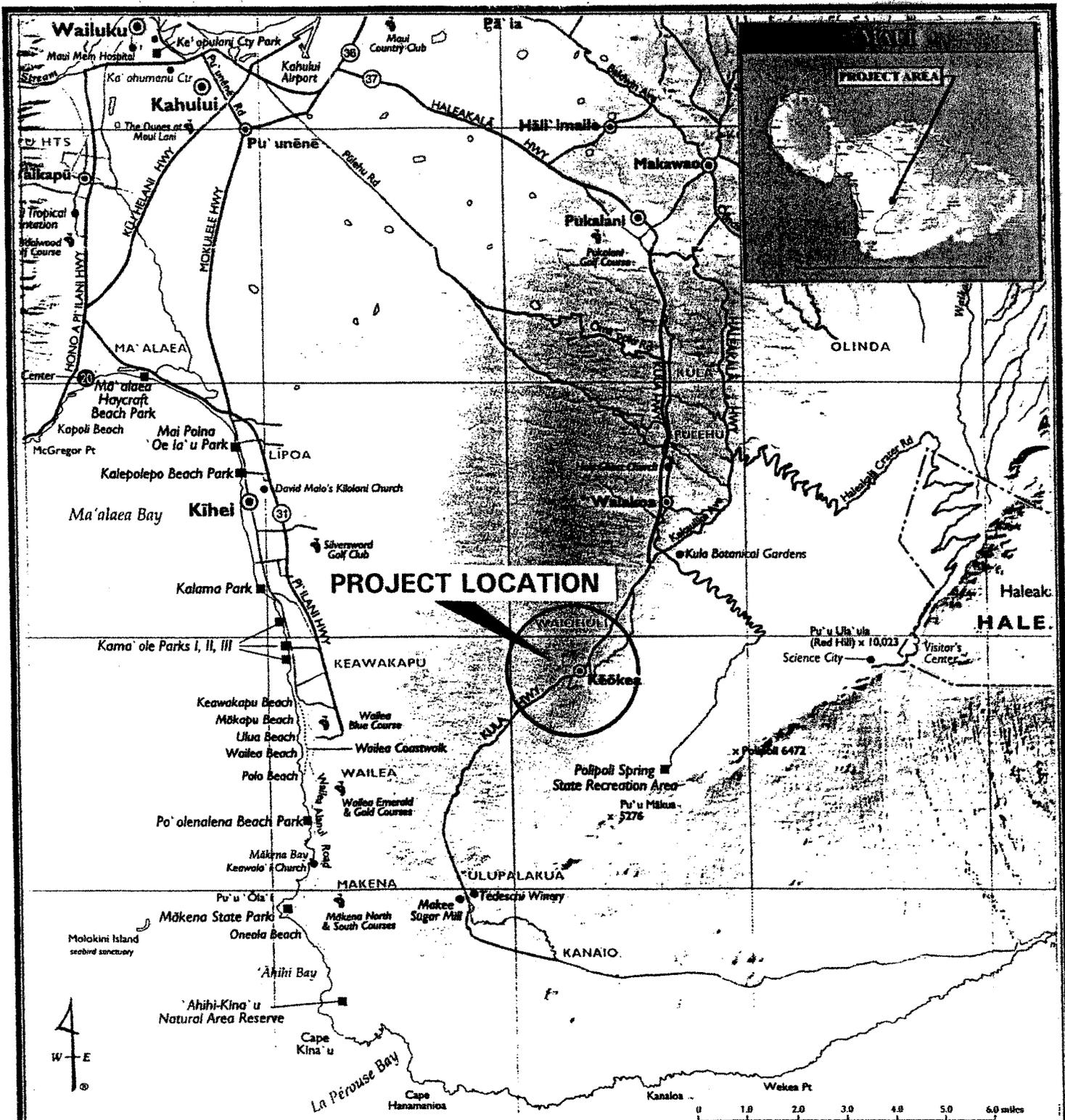
This work was prepared by  
me or under my supervision  
(License Expires April 30, 2006)



Alex W. Wong, P.E.  
Senior Engineer

- Project Location Map  
Geologic Map of Project Site  
Site Plan  
Location Map of Proposed Borrow Area  
Site Plan of Proposed Borrow Area  
Logs of Test Pits (Road Network)  
Logs of Borings/Test Pits (Borrow Area)  
Soil/Rock Classification Chart  
Rock Classification System  
Laboratory Compaction Curves (Road Network)  
California Bearing Ratio Data (Road Network)  
Atterberg Limits Test Results (Road Network)  
Laboratory Compaction Curves (Borrow Site)  
California Bearing Ratio Data (Experimental Mix)  
Segment of Road "A" Profile





Reference: Island Map of Maui, Pacific Travelogue Inc. (2000)

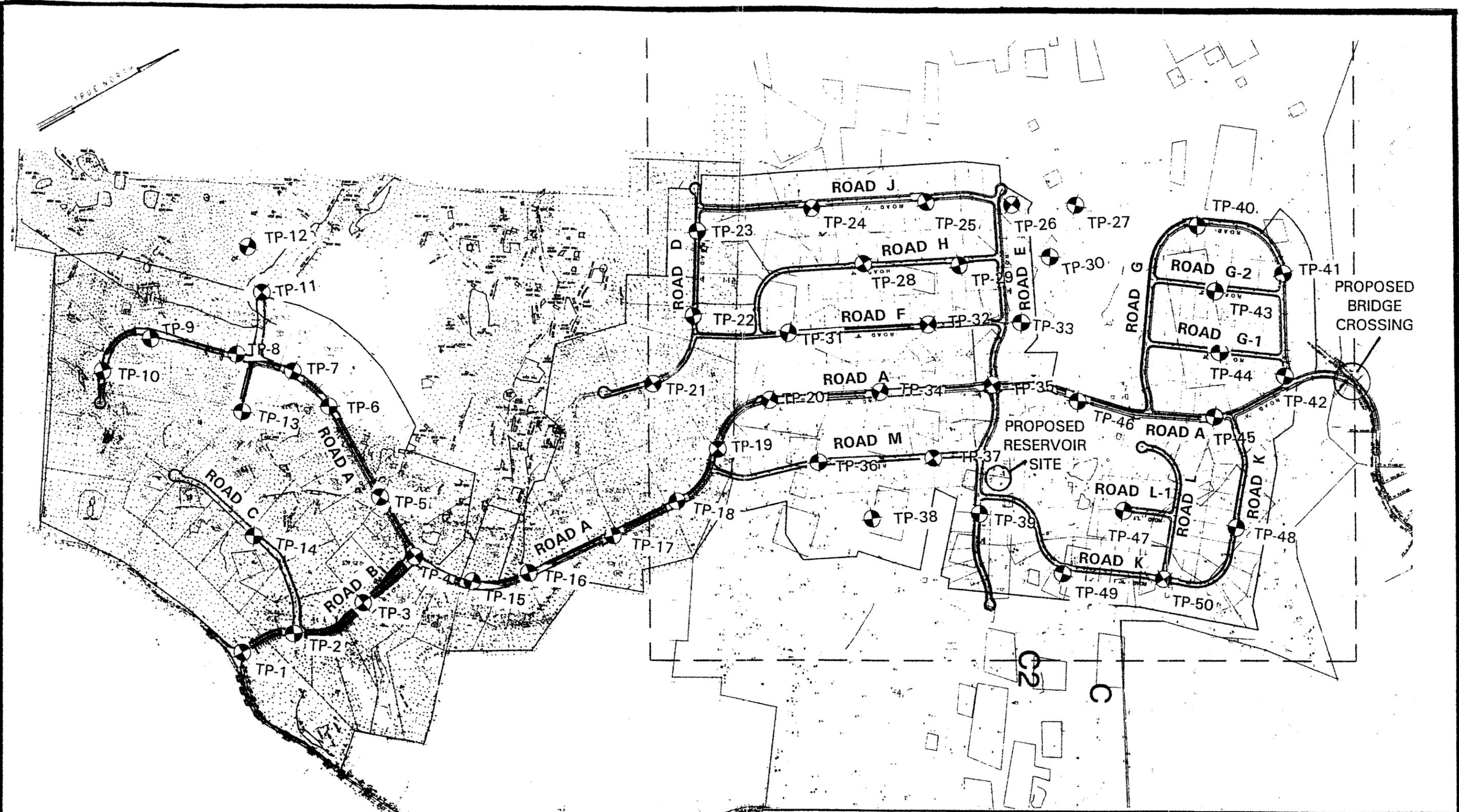
### PROJECT LOCATION MAP

**RSC** CONSULTANTS, LLC  
 SOILS, FOUNDATION, AND GEOLOGICAL ENGINEERS

Keokea-Waiohuli Development  
 Proposed DHHL Agricultural Subdivision Road System  
 Kula, Makawao, Maui, Hawaii

Date: March 2005

PROJECT NO. 24304.10



**LEGEND:**  
 ● Approximate Test Pit Location

APPROXIMATE MAP SCALE: 1" = 600'

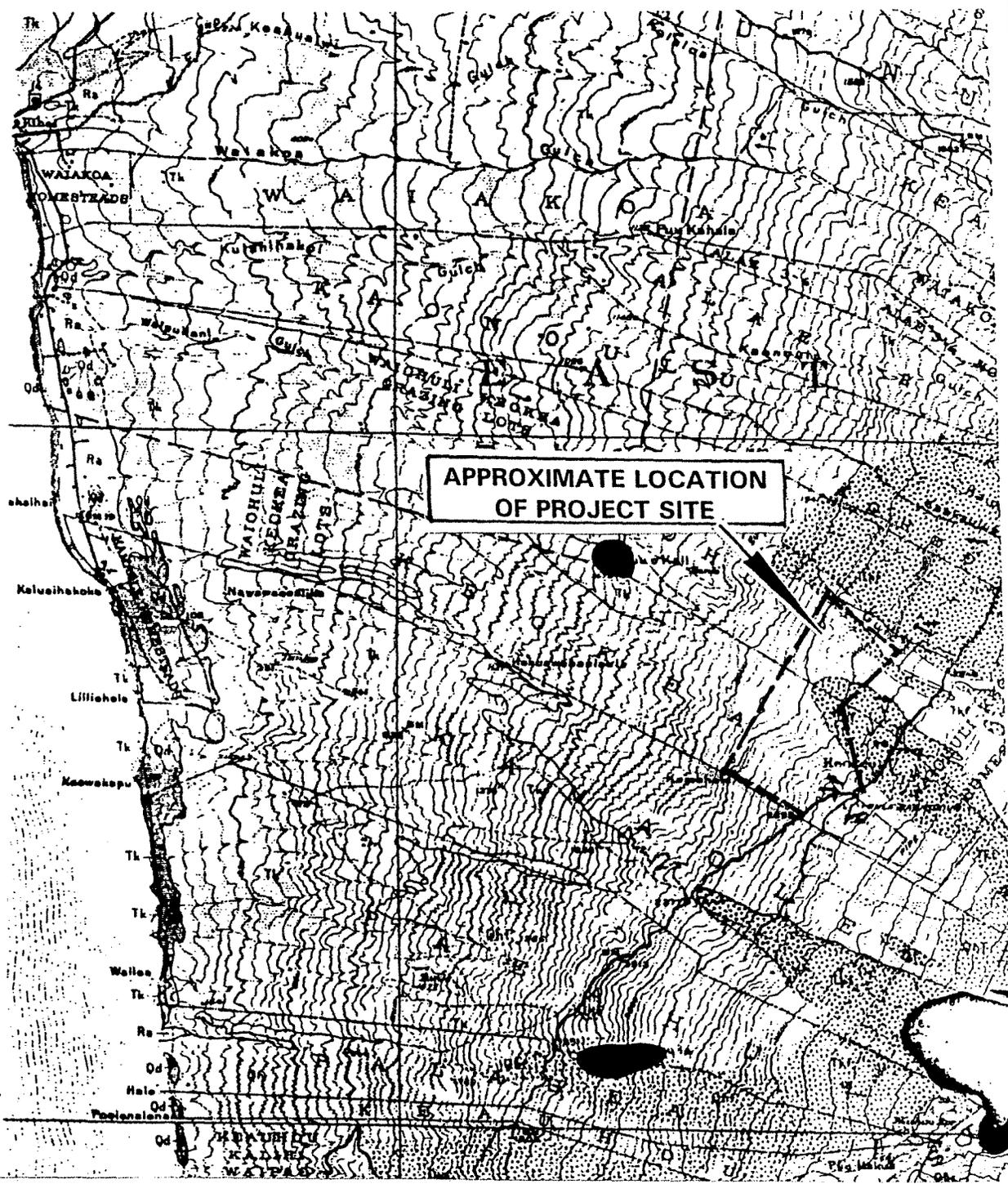
**PROJECT LOCATION MAP**

**PSC** CONSULTANTS, LLC  
 SOILS, FOUNDATION, AND GEOLOGICAL ENGINEERS

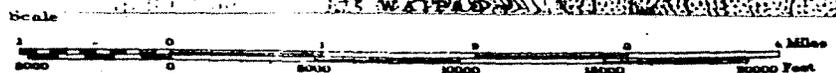
Keokea-Waiohuli Development  
 Subdivision Road Network, Bridge, and Water  
 Reservoir Project  
 Keokea, Kula, Makawao, Maui, Hawaii

DATE: March 2005

PROJECT NO. 24304.10



**APPROXIMATE LOCATION  
OF PROJECT SITE**



Reference: GEOLOGIC & TOPOGRAPHIC MAP, ISLAND OF MAUI (USGS 1942)

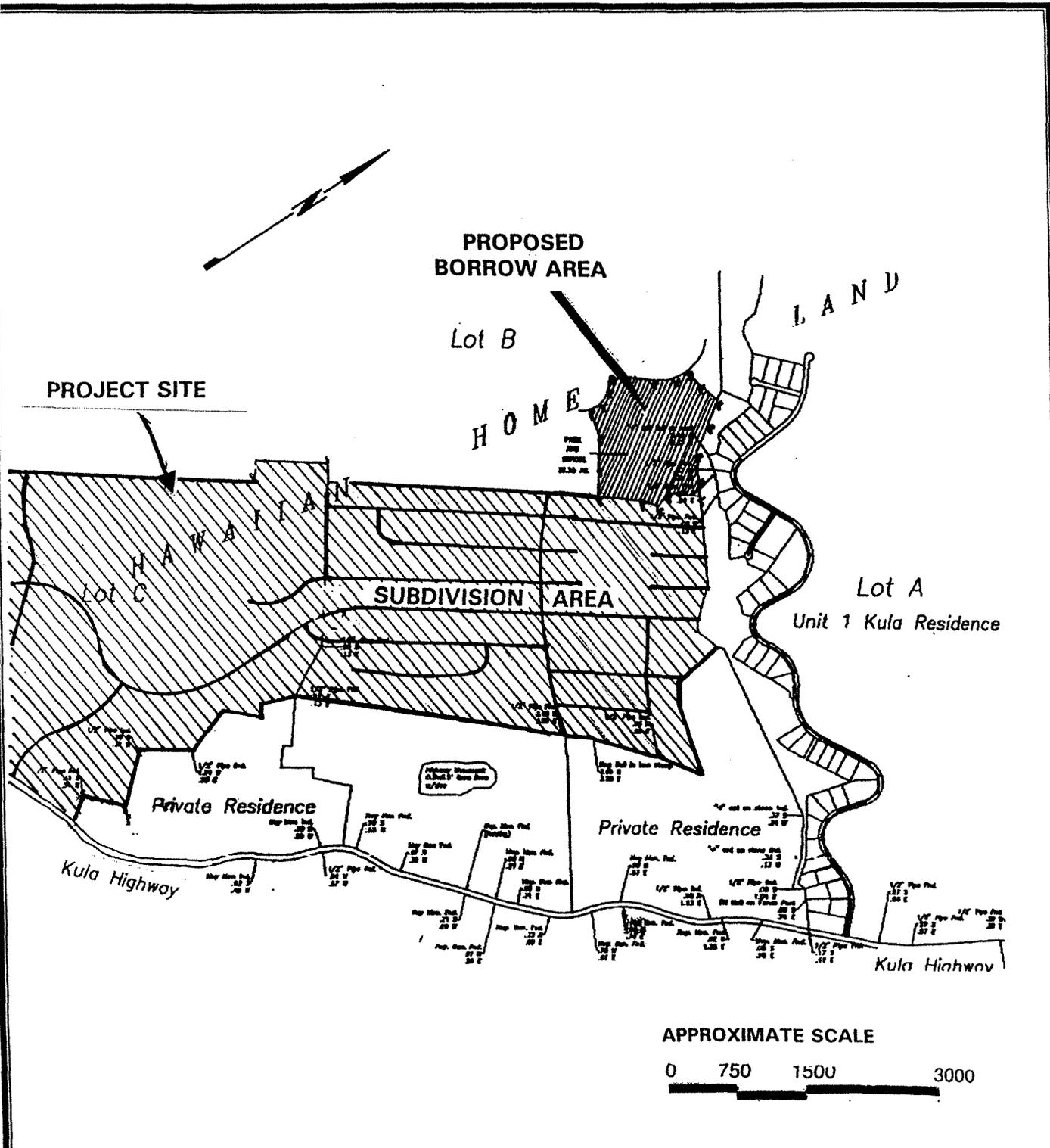
**GEOLOGIC MAP OF PROJECT SITE**

**PSC**  
**CONSULTANTS, LLC**  
 SOILS, FOUNDATION, AND GEOLOGICAL ENGINEERS

Keokea-Waiohuli Development  
 Proposed DHHL Agricultural Subdivision Road Network  
 Kula, Makawao, Maui, Hawaii

DATE: March 2005

PROJECT NO. 24304.10



Reference: Location Map of Proposed Borrow Site (ACE LAND SURVEYING. Dated 07/22/04)

### LOCATION MAP OF PROPOSED BORROW AREA

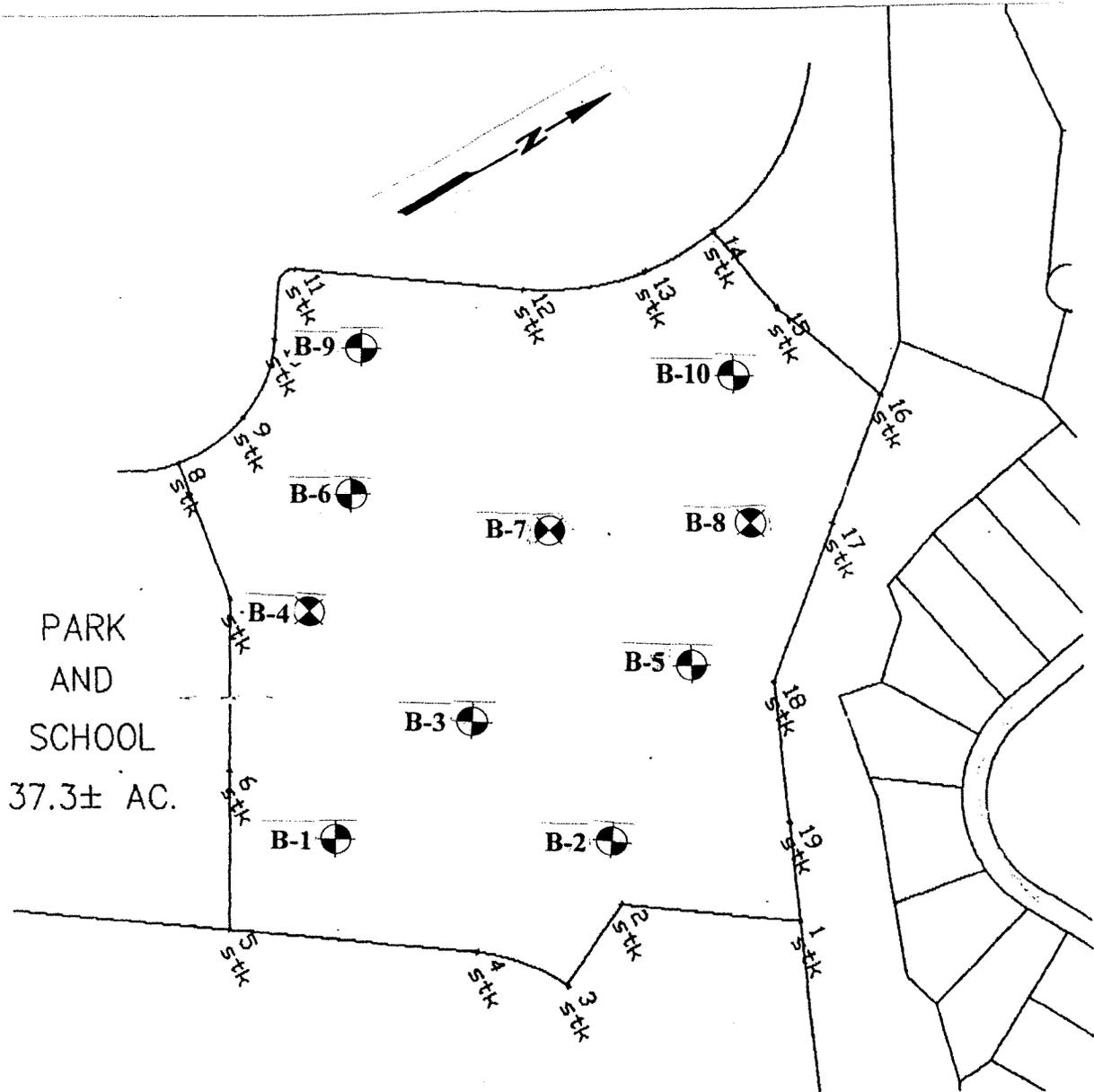


**CONSULTANTS, LLC**  
SOILS, FOUNDATION, AND GEOLOGICAL ENGINEERS

Keokea-Waiohuli Development  
Proposed DHHL Agricultural Subdivision Road Network  
Kula, Makawao, Maui, Hawaii

DATE: March 2005

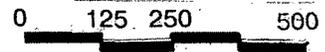
PROJECT NO. 24304.10



LEGEND:

 Approximate Boring/Test Pit Location

APPROXIMATE SCALE



Reference: Site Plan of Borrow Site (ACE LAND SURVEYING. Dated 07/28/04)

### SITE PLAN OF PROPOSED BORROW AREA



**CONSULTANTS, LLC**  
SOILS, FOUNDATION, AND GEOLOGICAL ENGINEERS

Keokea-Waiohuli Development  
Proposed DHHL Agricultural Subdivision Road Network  
Kula, Makawao, Maui, Hawaii

DATE: March 2005

PROJECT NO. 24304.10

PLATE NO. 2-B

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-1
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 6/04	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
MD=88 pcf						BS-1				Gravelly SILT/Silty GRAVEL, dark brown, medium stiff to stiff, with sub-angular tuffaceous cobbles and boulders, traces of sand, clay, and rootlets. Moist.
		19.7					1			
							2			
							3	MH GM		
							4			
							5			BASALT, dark gray, moderately weathered to fresh, strong
							6			Test pit terminated at about 5.5 ft. Groundwater was not encountered

<b>SAMPLE TYPE</b>		<b>OTHER LABORATORY TESTS</b>	
MC - Modified California SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression	
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis

## LOG OF BORING



*Geotechnical & Environmental  
Consultants  
Construction Management,  
Testing & Inspection*

**Keokea/Waiohuli Development  
Kula, Makawao, Maui, Hawaii**

DATE: March 2005

PROJECT NO.: 24304.10

BORING KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-2
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 6/04	TYPE RIG: Backhoe excavator	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						BS-2				<b>Silty GRAVEL</b> , gray tuffaceous subangular gravel, cobbles and boulders in a brown, moist, silt (volcanic ash) matrix with traces of rootlets.
							1			
							2			
							3			
							4		GM	<b>BASALT</b> , gray, moderately weathered to fresh, vesticated, strong
							5			
							6			
							7			
							8			Test pit terminated at about 8.0 ft. Groundwater was not encountered
							9			

<b>SAMPLE TYPE</b>		<b>OTHER LABORATORY TESTS</b>		
MC - Modified California	SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression	
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity	
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis	

## LOG OF BORING

<b>Geotechnical &amp; Environmental Consultants</b> Construction Management, Testing & Inspection	<b>Keokea/Waiohuli Development</b> Kula, Makawao, Maui, Hawaii	
	DATE: March 2005	PROJECT NO.: 24304.10

BORING KEOKEA.GPJ BORING.GDT 8/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-3
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 7/04	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
		43.9				BS-3	1			Gravelly SILT, with sub-angular basaltic cobbles and boulders, trace clay and rootlets, dark brown, moist
							2			
							3			
							4		MH	
							5			
							6			
							7			
							8			
							9		BASALT, dark gray, moderately weathered, strong	
							10			Test pit terminated at about 9 ft. Groundwater was not encountered

**SAMPLE TYPE**

MC - Modified California SPT - Standard Penetration  
 CB - Core Barrel SH - Shelby Tube  
 AUG - Auger Cuttings D&M - Dames & Moore

**OTHER LABORATORY TESTS**

MD - Moisture/Density UC - Unconfined Compression  
 CON - Consolidation Test SG - Specific Gravity  
 PI - Atterberg Limits SA - Sieve Analysis

**LOG OF BORING**



Geotechnical & Environmental  
 Consultants  
 Construction Management,  
 Testing & Inspection

Keokea/Waiohuli Development  
 Kula, Makawao, Maui, Hawaii

DATE: March 2005

PROJECT NO.: 24304.10

BORING: KEOKEA.GPJ BORING.GDT 11/2/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-4
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 6/04	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
PI=12						BS-4				SILT with angular basalt cobbles and boulders, dark brown, moist
CBR=0.80							1			
		35.5					2		MH	
							3			
							4			
							5			BASALT, dark gray, very hard, massive, strong
							6			Test pit terminated at about 5.5 ft. Groundwater was not encountered

<b>SAMPLE TYPE</b>		<b>OTHER LABORATORY TESTS</b>	
MC - Modified California SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression	
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis

## LOG OF BORING



*Geotechnical & Environmental  
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Testing & Inspection*

**Keokea/Waiohuli Development  
Kula, Makawao, Maui, Hawaii**

DATE: March 2005

PROJECT NO.: 24304.10

BORING KEOKEA.GPJ BORING.GDT 9/7/04



BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-6
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 7/04	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
		32.5				BS-6	1		GM MH	Gravelly SILT/Silty GRAVEL with basaltic cobbles and boulders, trace of clay and rootlets, brown, moist
							2			BASALT, gray, fresh to moderately weathered, vesticated, strong
							3			Test pit terminated at about 2.5 ft. Groundwater was not encountered

<b>SAMPLE TYPE</b>				<b>OTHER LABORATORY TESTS</b>			
MC - Modified California SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression					
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity				
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis				

**LOG OF BORING**

 <b>Geotechnical &amp; Environmental Consultants</b> Construction Management, Testing & Inspection	<b>Keokea/Waiohuli Development</b> Kula, Makawao, Maui, Hawaii	
	DATE: March 2005	PROJECT NO.: 24304.10

BORING KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-7
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 7/04	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						BS-7				Silty GRAVEL, gray subangular basaltic gravel with cobbles and boulders with silt matrix, trace rootlets, brown, moist
							1			
							2		GM	
							3			
							4			BASALT, dark gray, moderately weathered, strong
							5			
							6			Test pit terminated at about 4 ft. Groundwater was not encountered

<b>SAMPLE TYPE</b>		<b>OTHER LABORATORY TESTS</b>	
MC - Modified California SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression	
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis

## LOG OF BORING

<b>Geotechnical &amp; Environmental Consultants</b> Construction Management, Testing & Inspection	<b>Keokea/Walohuli Development</b> <b>Kula, Makawao, Maui, Hawaii</b>	
	DATE: March 2005	PROJECT NO.: 24304.10

BORING: KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-8
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 7/04	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						BS-8				Silty GRAVEL, gray, subangular basaltic gravel, cobbles, and boulders with silt matrix, trace rootlets, brown, moist
							1			
							2		GM	
							3			
							4			
							5			BASALT, gray, moderately weathered, strong
							6			Test pit terminated at about 5.5 ft. Groundwater was not encountered.

SAMPLE TYPE		OTHER LABORATORY TESTS	
MC - Modified California SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression	
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis

## LOG OF BORING



Geotechnical & Environmental  
Consultants  
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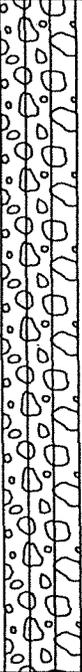
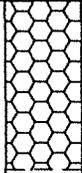
Keokea/Waiohuli Development  
Kula, Makawao, Maui, Hawaii

DATE: March 2005

PROJECT NO.: 24304.10

BORING KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	<b>BORING NO. TP-9</b>
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 7/04	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						BS-9			GM	Silty GRAVELvessicated, subangular, tuffaceous gravels, cobbles and boulders with silt matrix, trace rootlets, dark gray to black, moist
						1				
						2				
							3			BASALT, dark gray, moderately weathered, strong.
						4				Test pit terminated at about 3.75 ft. Groundwater was not encountered
							5			

**SAMPLE TYPE**

MC - Modified California SPT - Standard Penetration  
 CB - Core Barrel SH - Shelby Tube  
 AUG - Auger Cuttings D&M - Dames & Moore

**OTHER LABORATORY TESTS**

MD - Moisture/Density UC - Unconfined Compression  
 CON - Consolidation Test SG - Specific Gravity  
 PI - Atterberg Limits SA - Sieve Analysis

**LOG OF BORING**



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Keokea/Waiohuli Development  
 Kula, Makawao, Maui, Hawaii

DATE: March 2005

PROJECT NO.: 24304.10

BORING KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-10
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 7/04	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						BS-10				Silty GRAVEL, gray, tuffaceous, subangular gravels, cobbles and boulders in a brown, moist, silt matrix with trace rootlets.
		49.2					1		GM	BASALT, gray, moderately weathered to fresh, strong.
							2			
							3			Test pit terminated at about 2.5 ft. Groundwater was not encountered.
							4			

**SAMPLE TYPE**

MC - Modified California SPT - Standard Penetration  
 CB - Core Barrel SH - Shelby Tube  
 AUG - Auger Cuttings D&M - Dames & Moore

**OTHER LABORATORY TESTS**

MD - Moisture/Density UC - Unconfined Compression  
 CON - Consolidation Test SG - Specific Gravity  
 PI - Atterberg Limits SA - Sieve Analysis

**LOG OF BORING**



Geotechnical & Environmental  
 Consultants  
 Construction Management,  
 Testing & Inspection

Keokea/Waiohuli Development  
 Kula, Makawao, Maui, Hawaii

DATE: March 2005

PROJECT NO.: 24304.10

BORING KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-11
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 7/04	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						BS-11			GM	Silty GRAVEL, gray, subangular, vesticated basaltic gravels, cobbles and boulders in a brown, medium stiff, moist silt matrix with trace rootlets.
							1			BASALT, dark gray, moderately weathered, strong
							2			Test pit terminated at about 1.75 ft. Groundwater was not encountered.

**SAMPLE TYPE**

MC - Modified California SPT - Standard Penetration  
 CB - Core Barrel  
 AUG - Auger Cuttings  
 SH - Shelby Tube  
 D&M - Dames & Moore

**OTHER LABORATORY TESTS**

MD - Moisture/Density  
 CON - Consolidation Test  
 PI - Atterberg Limits  
 UC - Unconfined Compression  
 SG - Specific Gravity  
 SA - Sieve Analysis

**LOG OF BORING**



Geotechnical & Environmental  
 Consultants  
 Construction Management,  
 Testing & Inspection

Keokea/Waiohuli Development  
 Kula, Makawao, Maui, Hawaii

DATE: March 2005

PROJECT NO.: 24304.10

BORING KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-12
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 7/04	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
		30.9				BS-12			GM	Silty GRAVEL, dark gray, moderately weathered, dense, subangular, vesticated, tuffaceous gravels, cobbles and boulders, in a brown, fine grained, medium stiff, moist, silt (volcanic ash) matrix. Trace rootlets.
							1			BASALT, dark gray basaltic rock, slightly to moderately weathered, vesticated, strong.
							2			
							3			Test pit terminated at about 2.5 ft. Groundwater was not encountered

SAMPLE TYPE		OTHER LABORATORY TESTS	
MC - Modified California SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression	
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis

## LOG OF BORING



Geotechnical & Environmental  
Consultants  
Construction Management,  
Testing & Inspection

Keokea/Waiohuli Development  
Kula, Makawao, Maui, Hawaii

DATE: March 2005	PROJECT NO.: 24304.10
------------------	-----------------------

BORING KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-13
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 7/04	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						BS-13				Silty GRAVEL, gray, subangular, vessicated, medium dense to dense, basaltic gravels, cobbles and boulders in a brown, medium stiff, moist silt (volcanic ash) matrix with trace rootlets.
							1			
							2		GM	
							3			
							4			
							5			BASALT, gray, moderately weathered to fresh, strong, basaltic rock
							6			Test pit terminated at about 5.0 ft. Groundwater was not encountered.

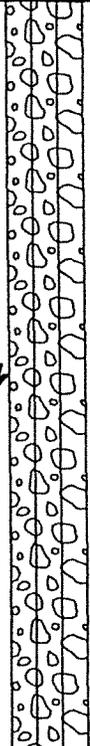
<b>SAMPLE TYPE</b> MC - Modified California SPT - Standard Penetration CB - Core Barrel AUG - Auger Cuttings		<b>OTHER LABORATORY TESTS</b> MD - Moisture/Density CON - Consolidation Test PI - Atterberg Limits		UC - Unconfined Compression SG - Specific Gravity SA - Sieve Analysis	
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## LOG OF BORING

 <b>Geotechnical &amp; Environmental Consultants</b> Construction Management, Testing & Inspection	Keokea/Waiohuli Development Kula, Makawao, Maui, Hawaii	
	DATE: March 2005	PROJECT NO.: 24304.10

BORING KEOKEA.GPJ BORING.GDT 9704

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-14
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 7/04	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
		30.5				BS-14	0			Silty GRAVEL, dark gray, subangular, vesticated, dense, basaltic gravels, cobbles and boulders in a brown to dark brown, medium stiff, fine grained, moist silt (volcanic ash) matrix with trace rootlets. T
							1			
							2		GM	BASALT dark gray basaltic rock, moderately weathered, strong
							3			
							4			
							5			Test pit terminated at about 5 ft. Groundwater was not encountered
							6			

<b>SAMPLE TYPE</b>		<b>OTHER LABORATORY TESTS</b>	
MC - Modified California	SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis

## LOG OF BORING

 <b>Geotechnical &amp; Environmental Consultants</b> Construction Management, Testing & Inspection	<b>Keokea/Waiohuli Development</b> Kula, Makawao, Maui, Hawaii	
	DATE: March 2005	PROJECT NO.: 24304.10

BORING KEOKEA.GPJ BORING.GDT 97/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-15
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 6/04	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
		44.7				BS-15				Silty GRAVEL, gray, subangular, dense, basaltic gravels, cobbles and boulders in a brown, medium stiff, moist silt matrix with trace rootlets.
							1			
							2		GM	
							3			
							4			
							5			BOULDERS, gray, subangular, lava boulders, moderately weathered, dense, strong
							6			
							7			
							8			BASALT gray, slightly to moderately weathered, strong, massive.
							9			Test pit terminated at about 8.5 ft. Groundwater was not encountered.

**SAMPLE TYPE**

MC - Modified California SPT - Standard Penetration  
 CB - Core Barrel  
 AUG - Auger Cuttings  
 SH - Shelby Tube  
 D&M - Dames & Moore

**OTHER LABORATORY TESTS**

MD - Moisture/Density  
 CON - Consolidation Test  
 PI - Atterberg Limits  
 UC - Unconfined Compression  
 SG - Specific Gravity  
 SA - Sieve Analysis

**LOG OF BORING**



Geotechnical & Environmental  
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Keokea/Waiohuli Development  
 Kula, Makawao, Maui, Hawaii

DATE: March 2005

PROJECT NO.: 24304.10

BORING KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-16
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 6/04	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						BS-16				<b>Gravelly SILT</b> , brown, medium stiff, moist, with gray, subangular, tuffaceous gravels, cobbles and boulders. With trace rootlets.
							1			
		41.5					2			
							3			
							4			
							5			<b>BASALT</b> , gray basaltic rock, moderately weathered, strong, massive
							6			Boring terminated at about 5.5 ft. Groundwater was not encountered

<b>SAMPLE TYPE</b> MC - Modified California SPT - Standard Penetration CB - Core Barrel AUG - Auger Cuttings		<b>OTHER LABORATORY TESTS</b> MD - Moisture/Density CON - Consolidation Test PI - Atterberg Limits		UC - Unconfined Compression SG - Specific Gravity SA - Sieve Analysis	
SH - Shelby Tube D&M - Dames & Moore					

## LOG OF BORING



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Keokea/Waiohuli Development  
 Kula, Makawao, Maui, Hawaii

DATE: March 2005

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BORING KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-17
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 6/04	TYPE RIG: Backhoe Excavator	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
		26.7				BS-17			MH	Gravelly SILT, brown, medium stiff, moist, with loose clinker, cobbles and boulders.
							1			
							2			
							3			
							4			BASALT, gray, moderately weathered, strong
							5			Test pit terminated at about 4.5 ft. Groundwater was not encountered
							6			

SAMPLE TYPE		OTHER LABORATORY TESTS	
MC - Modified California SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression	
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis

## LOG OF BORING



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Keokea/Waiohuli Development  
Kula, Makawao, Maui, Hawaii

DATE: March 2005

PROJECT NO.: 24304.10

BORING KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-18
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 6/04	TYPE RIG: Backhoe Excavator	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						BS-18				Gravelly SILT, dark brown, medium stiff, moist (volcanic ash), with lava cobbles and boulders, trace rootlets.
PI=7.5							1			
CBR=0.35							2			
		28.8					3			
							4			
							5			
							6		BASALT, gray, moderately weathered, strong	
							7			Test pit terminated at about 6.0 ft. Groundwater was not encountered
							8			

<b>SAMPLE TYPE</b>		<b>OTHER LABORATORY TESTS</b>	
MC - Modified California SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression	
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis

## LOG OF BORING

 <b>Geotechnical &amp; Environmental Consultants</b> Construction Management, Testing & Inspection	<b>Keokea/Waiohuli Development</b> Kula, Makawao, Maui, Hawaii	
	DATE: March 2005	PROJECT NO.: 24304.10

BORING KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-19
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 6/04	TYPE RIG:	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
		24.8				BS-19				Gravelly SILT, brown, medium stiff, with basalt cobbles, and boulders, trace clay and rootlets, moist (volcanic ash).
							1			
							2			
							3	MH		
							4			
							5			
							6			BASALT, gray, moderately weathered, strong
							7			
							8			Test pit terminated at about 7.0 ft Groundwater was not encountered

**SAMPLE TYPE**

MC - Modified California SPT - Standard Penetration  
 CB - Core Barrel SH - Shelby Tube  
 AUG - Auger Cuttings D&M - Dames & Moore

**OTHER LABORATORY TESTS**

MD - Moisture/Density UC - Unconfined Compression  
 CON - Consolidation Test SG - Specific Gravity  
 PI - Atterberg Limits SA - Sieve Analysis

**LOG OF BORING**



Geotechnical & Environmental  
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Keokea/Waiohuli Development  
 Kula, Makawao, Maui, Hawaii

DATE: March 2005

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BORING KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-20 <i>WHEELES?</i>
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 6/04	TYPE RIG: Backhoe Excavator	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
MD=83.25		0.3				BS-20				Silty GRAVEL, gray, basaltic gravels, cobbles, and boulders in a brown, medium stiff, moist silt matrix with trace rootlets.
		22.0					1			
							2		GM	
							3			
							4			
							5			BASALT, gray, moderately weathered, fractured, venticular strong.
							6			Test pit terminated at about 5.5 ft. Groundwater was not encountered.

<b>SAMPLE TYPE</b>		<b>OTHER LABORATORY TESTS</b>	
MC - Modified California SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression	
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis

## LOG OF BORING



**Geotechnical & Environmental Consultants**  
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**Keokea/Waiohuli Development**  
Kula, Makawao, Maui, Hawaii

DATE: March 2005

PROJECT NO.: 24304.10

BORING - KEOKEA, GPJ BORING, GDT 9/7/04

BORING LOCATION: See Site Plan.	DRILLER: PSC	BORING NO. TP-21
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 6/04	TYPE RIG: Backhoe Excavator	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION	
		49.7				BS-21	1			SILT, brown, medium stiff, with some gray, subangular basaltic gravels and cobbles, traces of clay and rootlets. Moist (volcanic ash).	
							2				
							3				
							4				
							5				
							6				<b>BASALT</b> , gray, fractured, slightly to moderately weathered, strong  Test pit terminated at about 5.25 ft. Groundwater was not encountered
							7				

<b>SAMPLE TYPE</b>		<b>OTHER LABORATORY TESTS</b>	
MC - Modified California SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression	
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis

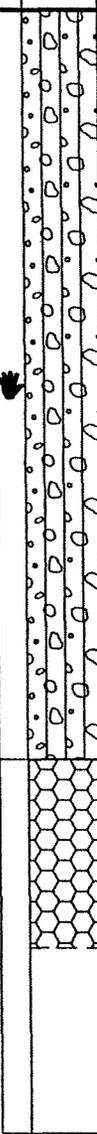
## LOG OF BORING

<b>Geotechnical &amp; Environmental Consultants</b> Construction Management, Testing & Inspection	<b>Keokea/Waiohuli Development</b> Kula, Makawao, Maui, Hawaii
	DATE: March 2005

PROJECT NO.: 24304.10

BORING KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-22
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 6/04	TYPE RIG: Backhoe Excavator	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						BS-22				Gravelly SILT, brown, medium stiff, with basalt boulders, traces of clay and rootlets, moist (volcanic ash).
							1			
							2			
							3			
							4			BASALT, moderately weathered, fractured, strong
							5			Test pit terminated at about 5 ft. Groundwater was not encountered.
							6			

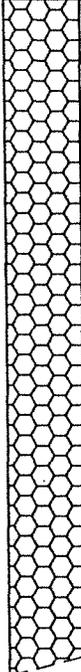
<b>SAMPLE TYPE</b>		<b>OTHER LABORATORY TESTS</b>	
MC - Modified California	SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis

**LOG OF BORING**

 <b>Geotechnical &amp; Environmental Consultants</b> Construction Management, Testing & Inspection	<b>Keokea/Walohuli Development</b> Kula, Makawao, Maui, Hawaii	
	DATE: March 2005	PROJECT NO.: 24304.10

BORING KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	<b>BORING NO. TP-23</b>
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 6/04	TYPE RIG: Backhoe Excavator	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
		39.4				BS-23	0		GW GM	<b>BASALT</b> , boulders with silt matrix, traces of clay and rootlets, brown, moist
							1			<b>BASALT</b> gray, slightly to moderately weathered, fractured with vesicles, stong
							2			
							3			Test pit terminated at about 2.75 ft. Groundwater was not encountered.

**SAMPLE TYPE**

MC - Modified California SPT - Standard Penetration  
 CB - Core Barrel      SH - Shelby Tube  
 AUG - Auger Cuttings    D&M - Dames & Moore

**OTHER LABORATORY TESTS**

MD - Moisture/Density      UC - Unconfined Compression  
 CON - Consolidation Test    SG - Specific Gravity  
 PI - Atterberg Limits      SA - Sieve Analysis

**LOG OF BORING**



Geotechnical & Environmental  
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Keokea/Waiohuli Development  
 Kula, Makawao, Maui, Hawaii

DATE: March 2005

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BORING - KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-24
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 6/04	TYPE RIG: Backhoe Excavator	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						BS-24				Silty GRAVEL basaltic gravels, cobbles, and boulders with silt matrix, trace rootlets, brown, moist
		33.1					1		GW GM	BASALT gray, slightly to moderately weathered, strong, fractured
							2			Test pit terminated at about 1.75 ft. Groundwater was not encountered.

**SAMPLE TYPE**

MC - Modified California SPT - Standard Penetration  
 CB - Core Barrel      SH - Shelby Tube  
 AUG - Auger Cuttings      D&M - Dames & Moore

**OTHER LABORATORY TESTS**

MD - Moisture/Density      UC - Unconfined Compression  
 CON - Consolidation Test      SG - Specific Gravity  
 PI - Atterberg Limits      SA - Sieve Analysis

**LOG OF BORING**



Geotechnical & Environmental  
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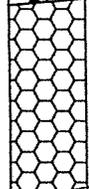
Keokea/Waiohuli Development  
 Kula, Makawao, Maui, Hawaii

DATE: March 2005

PROJECT NO.: 24304.10

BORING KEOKEA.GPJ BORING.GDT 97/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-25
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 7/04	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						BS-25			GW GM	Silty GRAVEL, gray tuffaceous gravel (clinker); cobbles and boulders with silt (volcanic ash), trace rootlets, brown, moist
							1			BASALT, dark gray, slightly to moderately weathered, strong
							2			Test pit terminated at about 1.75 ft. Groundwater was not encountered
							3			

**SAMPLE TYPE**

MC - Modified California SPT - Standard Penetration  
 CB - Core Barrel      SH - Shelby Tube  
 AUG - Auger Cuttings      D&M - Dames & Moore

**OTHER LABORATORY TESTS**

MD - Moisture/Density      UC - Unconfined Compression  
 CON - Consolidation Test      SG - Specific Gravity  
 PI - Atterberg Limits      SA - Sieve Analysis

**LOG OF BORING**



Geotechnical & Environmental  
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Keokea/Waiohuli Development  
 Kula, Makawao, Maui, Hawaii

DATE: March 2005

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BORING: KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-26
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 7/04	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
		10.4				BS-26			GM	Silty GRAVEL, gray vitric tuff/lava gravels (clinker), cobbles and boulders with silt, trace rootlets, brown, moist
							1			BASALT dark gray, moderately weathered, strong to very strong
							2			Test pit terminated at about 1.75 ft. Groundwater was not encountered.

**SAMPLE TYPE**

MC - Modified California SPT - Standard Penetration  
 CB - Core Barrel  
 AUG - Auger Cuttings  
 SH - Shelby Tube  
 D&M - Dames & Moore

**OTHER LABORATORY TESTS**

MD - Moisture/Density  
 CON - Consolidation Test  
 PI - Atterberg Limits  
 UC - Unconfined Compression  
 SG - Specific Gravity  
 SA - Sieve Analysis

**LOG OF BORING**



Geotechnical & Environmental  
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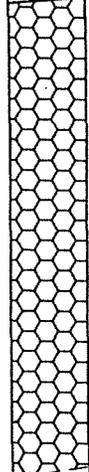
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DATE: March 2005

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BORING KEOKEA, GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-27
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 7/04	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						BS-27			GM	Silty GRAVEL, gray, sub-angular vitric tuff/lava gravels cobbles and boulders with silt matrix, with trace clay and rootlets, brown, moist
							1			BASALT, gray, moderately weathered to fresh, fractured, strong to very strong
							2			
							3			Test pit terminated at about 2.5 ft. Groundwater was not encountered.

<b>SAMPLE TYPE</b>		<b>OTHER LABORATORY TESTS</b>	
MC - Modified California SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression	
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis

## LOG OF BORING

 <b>Geotechnical &amp; Environmental Consultants</b> Construction Management, Testing & Inspection	<b>Keokea/Waiohuli Development</b> Kula, Makawao, Maui, Hawaii	
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BORING KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-28
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 6/04	TYPE RIG: Backhoe Excavator	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						BS-28				SILT, brown, medium stiff, moist with traces of gravel and rootlets.
PI=2							1		MH	
BR=1.9		27.9					2			Gravelly SILT with basaltic cobbles and boulders, traces of clay and rootlets, dark brown, moist
							3		MH	
							4			
							5			BASALT, dark gray, fresh to moderately weathered, strong, fractured
							6			Test pit terminated at about 5.25 ft. Groundwater was not encountered.

**SAMPLE TYPE**

MC - Modified California SPT - Standard Penetration  
 CB - Core Barrel SH - Shelby Tube  
 AUG - Auger Cuttings D&M - Dames & Moore

**OTHER LABORATORY TESTS**

MD - Moisture/Density UC - Unconfined Compression  
 CON - Consolidation Test SG - Specific Gravity  
 PI - Atterberg Limits SA - Sieve Analysis

**LOG OF BORING**



Geotechnical & Environmental  
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Keokea/Waiohuli Development  
 Kula, Makawao, Maui, Hawaii

DATE: March 2005

PROJECT NO.: 24304.10

BORING KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-29
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 7/04	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						BS-29				Silty GRAVEL, gray tuffaceous gravels, cobbles and boulders with a clayey silt matrix, trace rootlets, brown, moist
							1		GW GM	
							2			
							3			BASALT dark gray, slightly to moderately weathered, strong to very strong.
							4			Test pit terminated at about 3.5 ft. Groundwater was not encountered

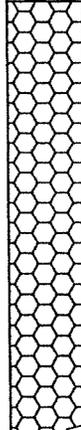
SAMPLE TYPE		OTHER LABORATORY TESTS	
MC - Modified California SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression	
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis

## LOG OF BORING

 <b>Geotechnical &amp; Environmental Consultants</b> Construction Management, Testing & Inspection	<b>Keokea/Waiohuli Development</b> Kula, Makawao, Maui, Hawaii	
	DATE: March 2005	PROJECT NO.: 24304.10

BORING: KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	<b>BORING NO. TP-30</b>
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 6/24/04	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						BS-30				Silty GRAVEL, gray sub-angular to angular tuffaceous gravels, cobbles and boulders, with clayey silt matrix with trace rootlets, brown, moist
							1		GW GM	BASALT, dark gray, moderately weathered, strong
							2			Test pit terminated at about 1.75 ft. Groundwater was not encountered.

<b>SAMPLE TYPE</b>		<b>OTHER LABORATORY TESTS</b>	
MC - Modified California SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression	
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis

## LOG OF BORING



*Geotechnical & Environmental  
Consultants  
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Testing & Inspection*

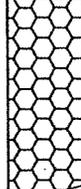
**Keokea/Walohuli Development  
Kula, Makawao, Maui, Hawaii**

DATE: March 2005

PROJECT NO.: 24304.10

BORING KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-31
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 6/04	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						BS-31				Basaltic BOULDERS, gray, moderately weathered, vesticated, with silt (volcanic ash) matrix, brown, moist
							1			BASALT, gray, moderately weathered to fresh, strong
		28.2					2			Test pit terminated at about 1.75 ft. Groundwater was not encountered.
							3			

**SAMPLE TYPE**

MC - Modified California SPT - Standard Penetration  
 CB - Core Barrel      SH - Shelby Tube  
 AUG - Auger Cuttings    D&M - Dames & Moore

**OTHER LABORATORY TESTS**

MD - Moisture/Density      UC - Unconfined Compression  
 CON - Consolidation Test      SG - Specific Gravity  
 PI - Atterberg Limits      SA - Sieve Analysis

**LOG OF BORING**



Geotechnical & Environmental  
 Consultants  
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 Testing & Inspection

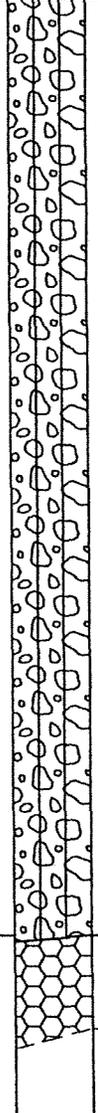
Keokea/Waiohuli Development  
 Kula, Makawao, Maui, Hawaii

DATE: March 2005

PROJECT NO.: 24304.10

BORING - KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan		DRILLER: PSC	<b>BORING NO. TP-32</b>
BORING ELEVATION:		LOGGED BY: JGN	
DATE (S) DRILLED: 6/04		TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						BS-32			GW GM	Silty GRAVEL, gray, subangular basaltic gravels, cobbles, and boulders with silt matrix, trace rootlets, brown, moist
							1			
							2			
							3			
							4			
							5			
							6			<b>BASALT</b> , dark gray, moderately weathered to fresh, strong  Test pit terminated at about 5 ft. Groundwater was not encountered.

<b>SAMPLE TYPE</b>	<b>OTHER LABORATORY TESTS</b>
MC - Modified California SPT - Standard Penetration	MD - Moisture/Density
CB - Core Barrel	UC - Unconfined Compression
AUG - Auger Cuttings	CON - Consolidation Test
SH - Shelby Tube	SG - Specific Gravity
D&M - Dames & Moore	PI - Atterberg Limits
	SA - Sieve Analysis

## LOG OF BORING

 <b>Geotechnical &amp; Environmental Consultants</b> Construction Management, Testing & Inspection	<b>Keokea/Waiohuli Development</b> Kula, Makawao, Maui, Hawaii
	DATE: March 2005

PROJECT NO.: 24304.10

BORING: KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-33
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 7/04	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						BS-33			GM GW	Silty GRAVEL, gray tuffaceous gravels, cobbles and boulders with silt (volcanic ash) matrix, trace rootlets, brown, moist
						1				
						2				
							3			BASALT, dark gray, moderately weathered to fresh, strong.
							4			Test pit terminated at about 3.0 ft. Groundwater was not encountered.

<b>SAMPLE TYPE</b>				<b>OTHER LABORATORY TESTS</b>			
MC - Modified California SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression		CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis				

**LOG OF BORING**

 Geotechnical & Environmental Consultants Construction Management, Testing & Inspection	Keokea/Waihuli Development Kula, Makawao, Maui, Hawaii
	DATE: March 2005

BORING KEOKEA.GPJ BORING.GDT 9/7/04

PROJECT NO.: 24304.10

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-34
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 7/04	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						BS-34				SILT, with basalt boulders, traces of clay and rootlets, brown, moist (volcanic ash)
							1			
							2			grades with more basaltic boulders
							3			
							4			
							5			BASALT, dark gray, moderately weathered to fresh, strong
							6			Test pit excavation terminated at about 5.0 ft. Groundwater was not encountered.

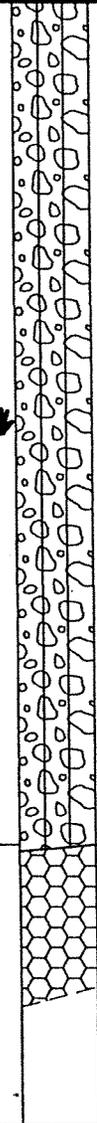
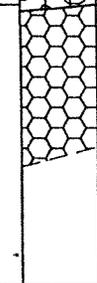
<b>SAMPLE TYPE</b>		<b>OTHER LABORATORY TESTS</b>	
MC - Modified California SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression	
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis

## LOG OF BORING

 <b>Geotechnical &amp; Environmental Consultants</b> Construction Management, Testing & Inspection	<b>Keokea/Waiohuli Development</b> Kula, Makawao, Maui, Hawaii	
	DATE: March 2005	PROJECT NO.: 24304.10

BORING\_KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-35
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 7/2/04	TYPE RIG:	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						BS-35				Silty GRAVEL, gray tuffaceous gravels, cobbles and boulders with silt matrix, trace rootlets, brown, moist
							1			
							2		GM	
							3			BASALT, dark gray, slightly to moderately weathered, strong.
							4			Test pit terminated at about 3.5 Groundwater was not encountered

<b>SAMPLE TYPE</b>		<b>OTHER LABORATORY TESTS</b>	
MC - Modified California	SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis

**LOG OF BORING**

 <b>Geotechnical &amp; Environmental Consultants</b> Construction Management, Testing & Inspection	<b>Keokea/Waiohuli Development</b> Kula, Makawao, Maui, Hawaii	
	DATE: March 2005	PROJECT NO.: 24304.10

BORING KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-36
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 7/04	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						BS-36				SILT, with some basaltic gravel and cobbles, trace of clay and rootlets, brown to dark brown, moist
		38.1					1			
							2		MH	
							3			
							4			BASALT, dark gray, with coarse sand to pea-sized vesicles, slightly to moderately weathered, strong
							5			
							6			Test pit terminated at about 5.25 ft. Groundwater was not encountered

<b>SAMPLE TYPE</b>		<b>OTHER LABORATORY TESTS</b>	
MC - Modified California SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression	
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis

**LOG OF BORING**

 <b>Geotechnical &amp; Environmental Consultants</b> Construction Management, Testing & Inspection	<b>Keokea/Walohuli Development</b> <b>Kula, Makawao, Maui, Hawaii</b>	
	DATE: March 2005	PROJECT NO.: 24304.10

BORING KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-37
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 7/04	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						BS-37				SILT with some lava cobbles and boulders, trace of clay and rootlets, brown, moist
							1		MH	
							2			
							3			Silty GRAVEL, gray lava gravels, cobbles, and boulders with silt matrix, trace rootlets, brown, moist
							4			
							5		GM	
							6			
							7			
							8			BASALT, dark gray, moderately weathered, vesticated, strong
							9			Test pit excavation terminated at about 8.0 ft. Groundwater was not encountered.
							10			

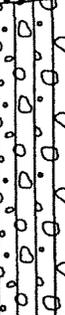
SAMPLE TYPE	OTHER LABORATORY TESTS		
MC - Modified California SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression	
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis

## LOG OF BORING

<b>Geotechnical &amp; Environmental Consultants</b> Construction Management, Testing & Inspection	<b>Keokea/Waiohuli Development</b> Kula, Makawao, Maui, Hawaii	
	DATE: March 2005	PROJECT NO.: 24304.10

BORING: KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-38
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 7/04	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						BS-38			MH	SILT with traces of gravel and rootlets, brown, moist (volcanic ash).
							1			
							2			
							3			
							4		MH	Gravelly SILT with some basaltic cobbles, brown, moist
							5			
							6			BASALT, gray to dark gray, moderately weathered, strong
							7			Test pit terminated at about 6.25 ft. Groundwater was not encountered

<b>SAMPLE TYPE</b>		<b>OTHER LABORATORY TESTS</b>	
MC - Modified California	SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis

## LOG OF BORING

 <b>Geotechnical &amp; Environmental Consultants</b> Construction Management, Testing & Inspection	<b>Keokea/Waiohuli Development</b> Kula, Makawao, Maui, Hawaii	
	DATE: March 2005.	PROJECT NO.: 24304.10

BORING KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-39
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 7/2/04	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						B9-39				Silty GRAVEL, gray lava gravels, cobbles and boulders with silt matrix, trace rootlets, brown, moist
							1			
							2			
							3		GM	
							4			
							5			BASALT, dark gray, slightly to moderately weathered, strong to very strong
							6			Test pit terminated at about 5.5 ft. Groundwater was not encountered

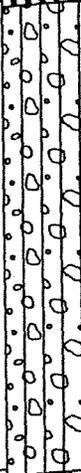
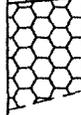
<b>SAMPLE TYPE</b>			<b>OTHER LABORATORY TESTS</b>		
MC - Modified California SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression	CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits			SA - Sieve Analysis

**LOG OF BORING**

 <b>Geotechnical &amp; Environmental Consultants</b> Construction Management, Testing & Inspection	Keokea/Waiohuli Development Kula, Makawao, Maui, Hawaii	
	DATE: March 2005	PROJECT NO.: 24304.10

BORING KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-40
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 7/04	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						BS-40			MH	SILT with some basaltic gravel and cobbles, trace of clay and rootlets, brown to dark brown moist. (volcanic ash)
							1			
							2			
							3		MH	Gravelly SILT with basaltic gravels, cobbles and boulders, brown, moist
							4			
							5			BASALT, dark gray, slightly to moderately weathered, strong, elongated pea to coarse sand-sized vesicles
							6			Test pit terminated at about 5.5 ft. Groundwater was not encountered

<b>SAMPLE TYPE</b>		<b>OTHER LABORATORY TESTS</b>	
MC - Modified California	SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis

## LOG OF BORING

 <b>Geotechnical &amp; Environmental Consultants</b> Construction Management, Testing & Inspection	<b>Keokea/Waiohuli Development</b> Kula, Makawao, Maui, Hawaii	
	DATE: March 2005	PROJECT NO.: 24304.10

BORING KEUKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-41
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 7/04	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						BS-41				SILT with vesicated basaltic boulders and cobbles, trace of clay and rootlets, brown to dark brown, moist (volcanic ash)
MD=84.5 pcf		0.3					1			
CMC=36%		30.1				2				
						3				
						4				
						5				
						6				
										BASALT, dark gray, moderately weathered, strong.
										Test pit terminated at about 5.5 ft. Groundwater was not encountered.

**SAMPLE TYPE**

MC - Modified California SPT - Standard Penetration  
 CB - Core Barrel      SH - Shelby Tube  
 AUG - Auger Cuttings      D&M - Dames & Moore

**OTHER LABORATORY TESTS**

MD - Moisture/Density      UC - Unconfined Compression  
 CON - Consolidation Test      SG - Specific Gravity  
 PI - Atterberg Limits      SA - Sieve Analysis

**LOG OF BORING**



Geotechnical & Environmental  
 Consultants  
 Construction Management,  
 Testing & Inspection

Keokea/Waiohuli Development  
 Kula, Makawao, Maui, Hawaii

DATE: March 2005

PROJECT NO.: 24304.10

BORING KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-42
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 7/04	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						BS-42				Gravelly Silt with basaltic gravels, cobbles and boulders, trace of clay and rootlets, dark brown to brown, moist (volcanic ash)
							1			
							2			
							3			
							4			
										BASALT, dark gray, slightly to moderately weathered, strong
							5			Test pit terminated at about 4.75 ft. Groundwater was not encountered.
							6			

<b>SAMPLE TYPE</b>		<b>OTHER LABORATORY TESTS</b>	
MC - Modified California SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression	
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis

**LOG OF BORING**

 <b>Geotechnical &amp; Environmental Consultants</b> Construction Management, Testing & Inspection	<b>Keokea/Waiohuli Development</b> Kula, Makawao, Maui, Hawaii	
	DATE: March 2005	PROJECT NO.: 24304.10

BORING: KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-43
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 7/04	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
		37.9				BS-43	0		MH	SILT with basaltic gravel, cobbles and boulders, brown, moist
							1			
							2			
							3			
							4			
							5			
							6			
							7			BASALT, dark gray, moderately weathered, strong
							8			
							9			Test pit terminated at about 8 ft. Groundwater was not encountered
							10			

<b>SAMPLE TYPE</b>		<b>OTHER LABORATORY TESTS</b>	
MC - Modified California	SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis

## LOG OF BORING

<b>Geotechnical &amp; Environmental Consultants</b> Construction Management, Testing & Inspection	<b>Keokea/Waiohuli Development</b> <b>Kula, Makawao, Maui, Hawaii</b>	
	DATE: March 2005	PROJECT NO.: 24304.10

BORING KEOKEA.GPJ BORING.GDT 11/2/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-44
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 7/04	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION	
		37.7				BS-44	1		MH	SILT with traces of gravel, brown to dark brown, moist (volcanic ash)	
							2				
							3				
							4				
							5				
							6				
							7				
							8				
							9			Test pit terminated at about 8 feet Groundwater was not encountered	
							10				

<b>SAMPLE TYPE</b>		<b>OTHER LABORATORY TESTS</b>	
MC - Modified California SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression	
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis

**LOG OF BORING**

 <b>Geotechnical &amp; Environmental Consultants</b> Construction Management, Testing & Inspection	<b>Keokea/Waiohuli Development</b> Kula, Makawao, Maui, Hawaii	
	DATE: March 2005	PROJECT NO.: 24304.10

BORING: KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Suite Plan	DRILLER: PSC	BORING NO. TP-45
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 7/07	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						BS-45				Clayey SILT with trace gravel, sand and rootlets, dark brown, moist
							1			
							2			
							3		MH	
							4			
							5			
							6			Gravelly SILT with angular to sub-angular basaltic boulders, trace of clay and rootlets, brown to dark brown, moist (volcanic ash)
							7		MH	
							8			BASALT, dark gray, moderately weathered, strong
							9			Test pit terminated at about 8.5 ft. Groundwater was not encountered
							10			

<b>SAMPLE TYPE</b>		<b>OTHER LABORATORY TESTS</b>	
MC - Modified California SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression	
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis

## LOG OF BORING

 <b>Geotechnical &amp; Environmental Consultants</b> Construction Management, Testing & Inspection	<b>Keokea/Walohuli Development</b> <b>Kula, Makawao, Maui, Hawaii</b>	
	DATE: March 2005	PROJECT NO.: 24304.10

BORING KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-46
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 7/07	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						BS-46				SILT with some gravels, cobbles and boulders, trace rootlets, brown, moist
							1			
							2			
							3			
							4		MH	
							5			
							6			
							7			
							8			BASALT, dark gray, moderately weathered, strong
							9			Test pit terminated at about 8.0 ft. Groundwater was not encountered.

<b>SAMPLE TYPE</b>		<b>OTHER LABORATORY TESTS</b>	
MC - Modified California SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression	
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis

### LOG OF BORING

<b>Geotechnical &amp; Environmental Consultants</b> Construction Management, Testing & Inspection	<b>Keokea/Waihohuli Development</b> Kula, Makawao, Maui, Hawaii	
	DATE: March 2005	PROJECT NO.: 24304.10

BORING KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-47
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 7/04	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
		36.7				BS-47	1		MH	SILT with sub-rounded to basaltic cobbles, trace rootlets and clay, amber brown, moist (volcanic ash)
						2				
						3				
						4				
						5				
						6				
							7			BASALT, dark gray, slightly to moderately weathered, fractured, strong.
							8			Test pit excavation terminated at about 6.5 ft. Groundwater was not encountered

<b>SAMPLE TYPE</b>		<b>OTHER LABORATORY TESTS</b>	
MC - Modified California SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression	
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis

## LOG OF BORING

<p>Geotechnical &amp; Environmental Consultants Construction Management, Testing &amp; Inspection</p>	Keokea/Waiohuli Development Kula, Makawao, Maui, Hawaii	
	DATE: March 2005	PROJECT NO.: 24304.10

BORING KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-48
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 7/04	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						BS-48				Gravelly SILT with basaltic cobbles and boulders, trace of clay and rootlets, brown, moist (volcanic ash)
							1			
							2		MH	
							3			
							4			
							5			BASALT, Dark gray, moderately weathered to fresh, strong
							6			Test pit excavation terminated at about 5.5 ft. Groundwater was not encountered

**SAMPLE TYPE**

MC - Modified California SPT - Standard Penetration  
 CB - Core Barrel  
 AUG - Auger Cuttings  
 SH - Shelby Tube  
 D&M - Dames & Moore

**OTHER LABORATORY TESTS**

MD - Moisture/Density  
 CON - Consolidation Test  
 PI - Atterberg Limits  
 UC - Unconfined Compression  
 SG - Specific Gravity  
 SA - Sieve Analysis

**LOG OF BORING**



Geotechnical & Environmental  
 Consultants  
 Construction Management,  
 Testing & Inspection

Keokea/Waiohuli Development  
 Kula, Makawao, Maui, Hawaii

DATE: March 2005

PROJECT NO.: 24304.10

BORING KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-49
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 7/04	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						BS-49			MH	Gravelly SILT with sub-angular basaltic gravel and cobbles, trace of clay and rootlets, brown to dark brown, moist (volcanic ash)
							1			
							2			
							3			
							4			
										BASALT gray, slightly to moderately weathered, strong
										Test pit excavation terminated at about 4.75 ft Groundwater was not encountered
							5			
							6			

**SAMPLE TYPE**

MC - Modified California SPT - Standard Penetration  
 CB - Core Barrel  
 AUG - Auger Cuttings  
 SH - Shelby Tube  
 D&M - Dames & Moore

**OTHER LABORATORY TESTS**

MD - Moisture/Density  
 CON - Consolidation Test  
 PI - Atterberg Limits  
 UC - Unconfined Compression  
 SG - Specific Gravity  
 SA - Sieve Analysis

**LOG OF BORING**



Geotechnical & Environmental  
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Keokea/Waiohuli Development  
 Kula, Makawao, Maui, Hawaii

DATE: March.2005

PROJECT NO.: 24304.10

BORING: KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. TP-50
BORING ELEVATION:	LOGGED BY: JGN	
DATE (S) DRILLED: 7/04	TYPE RIG: Backhoe	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						BS-50				SILT with some cobbles and boulders, trace of clay and rootlets, brown, moist (volcanic ash)
							1			
		37.4					2		MH	
							3			
										BASALT, dark gray, slightly to moderately weathered, strong
							4			Test pit excavation terminated at about 3.75 ft. Groundwater was not encountered.

<b>SAMPLE TYPE</b>		<b>OTHER LABORATORY TESTS</b>	
MC - Modified California SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression	
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis

**LOG OF BORING**

 <b>Geotechnical &amp; Environmental Consultants</b> Construction Management, Testing & Inspection	<b>Keokea/Waiohuli Development</b> Kula, Makawao, Maui, Hawaii	
	DATE: March 2005	PROJECT NO.: 24304.10

BORING KEOKEA.GPJ BORING.GDT 9/7/04

BORING LOCATION: See Site Plan	DRILLER: PSC	<b>BORING NO. B-1</b>
BORING ELEVATION:	LOGGED BY: JAGN	
DATE (S) DRILLED: 7/26	TYPE RIG: Hoe Ram	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						BS-B1	1		MH	SILT, brown, medium stiff, moist with some basaltic gravel, trace rootlets
						2				
						3				
						4				
						5				
						6		GM	BASALT, blue-black, slightly weathered, very strong, massive	
						7				
						8				
						9		GM	GRAVEL, gray vitric tuff gravels, cobbles and boulders intersticed with brown, moist, clayey silt.	
						10				
						11				
						12				
						13				
						14		GM	BASALT, gray, slightly weatered, very strong, massive	
						15				
						16				
						17				
						18			Boring terminated at about 18 feet Groundwater was not encountered	
							19			
							20			

<b>SAMPLE TYPE</b>	<b>OTHER LABORATORY TESTS</b>
MC - Modified California SPT - Standard Penetration	MD - Moisture/Density UC - Unconfined Compression
CB - Core Barrel SH - Shelby Tube	CON - Consolidation Test SG - Specific Gravity
AUG - Auger Cuttings D&M - Dames & Moore	PI - Atterberg Limits SA - Sieve Analysis

**LOG OF BORING**

<b>Geotechnical &amp; Environmental Consultants</b> Construction Management, Testing & Inspection	<b>Keokea Waiohuli Development</b> <b>Proposed Borrow Site</b> <b>Waiohuli, Maui, Hawaii</b>	
	DATE: March 2005	PROJECT NO.: 24304.11

BORING - KEOKS.GPJ BORING.GDT B/10/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. B-2
BORING ELEVATION:	LOGGED BY: JAGN	
DATE (S) DRILLED: 7/27	TYPE RIG: Hoe Ram	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
		31.2				BS-B2	1		MH	SILT, brown, medium stiff, moist with basaltic gravels, cobbles and boulders, trace rootlets
							2			Basaltic BOULDERS, bluish brown, slightly to moderately weathered, very strong
							3			
							4			
							5			
							6			
							7			
							8			
							9			Cavity, (possibly lava tube)
							10			
							11			
							12			
							13			BASALT, gray, slightly to moderately weathered, venticular, strong
							14			
							15			
							16			
							17			
							18			Boring terminated at about 16.5 feet Groundwater was not encountered

<b>SAMPLE TYPE</b>		<b>OTHER LABORATORY TESTS</b>	
MC - Modified California	SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis

## LOG OF BORING

<b>Geotechnical &amp; Environmental Consultants</b> Construction Management, Testing & Inspection	<b>Keokea Waiohuli Development</b> <b>Proposed Borrow Site</b> <b>Waiohuli, Maui, Hawaii</b>	
	DATE: March 2005	PROJECT NO.: 24304.11

BORING KEOKS.GPJ BORING.GDT 8/11/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. B-3
BORING ELEVATION:	LOGGED BY: JAGN	
DATE (S) DRILLED: 7/28	TYPE RIG: Hoe Ram	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
MDD=105 PCF	16.6					BS-B3	1		MH	Clayey SILT dark brown to gray, medium stiff to stiff with basaltic gravels, cobbles and boulders, trace sand, rootlets. Moist.
							2			Tuffaceous cobbles and boulders in a clayey silt matrix
							3			BASALT, bluish gray, slightly weathered, very strong
							4			Brown tuffaceous cobbles with clayey silt and some boulders
							5			
							6			
							7			
							8			
							9			
							10			
							11			
							12			
							13			Basalt Boulder, gray, slightly weathered, vesticated, strong
							14			
							15			Tuffaceous Cobbles and Gravels, brown, subangular basaltic, (clinker) gravel, dense to very dense
							16			
							17			Boring terminated at about 17 feet Groundwater was not encountered

<b>SAMPLE TYPE</b> MC - Modified California    SPT - Standard Penetration    MD - Moisture/Density CB - Core Barrel                SH - Shelby Tube                CON - Consolidation Test AUG - Auger Cuttings        D&M - Dames & Moore        PI - Atterberg Limits			<b>OTHER LABORATORY TESTS</b> UC - Unconfined Compression SG - Specific Gravity SA - Sieve Analysis		
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## LOG OF BORING

 <b>Geotechnical &amp; Environmental Consultants</b> Construction Management, Testing & Inspection	<b>Keokea Waiohuli Development</b> Proposed Borrow Site Waiohuli, Maui, Hawaii	
	DATE: March 2005	PROJECT NO.: 24304.11

BORING KE0BS.GPJ BORING.GDT 8/10/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. B-4
BORING ELEVATION:	LOGGED BY: JAGN	
DATE (S) DRILLED: 7/28	TYPE RIG: Hoe Ram	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						BS-B4	1		MH	SILT, brown, medium stiff, moist, with tuffaceous gravels and cobbles, trace rootlets. Moist
						2				
						3				
						4				
							5			BASALT, bluish gray, fresh, massive, very strong
						6				
						7				
						8				
							9			Tuffaceous cobbles and boulders in a brown clayey silt matrix
						10				
						11				
						12				
							13			BASALT, gray, slightly to moderately weathered, vesticated, strong
						14				
						15				
						16				
							17			Boring terminated at about 16 feet Groundwater was not encountered
							18			

<b>SAMPLE TYPE</b>		<b>OTHER LABORATORY TESTS</b>	
MC - Modified California	SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis

**LOG OF BORING**

 <b>Geotechnical &amp; Environmental Consultants</b> <b>Construction Management, Testing &amp; Inspection</b>	<b>Keokea Waiohuli Development</b> <b>Proposed Borrow Site</b> <b>Waiohuli, Maui, Hawaii</b>	
	<table border="1"> <tr> <td>DATE: March 2005</td> <td>PROJECT NO.: 24304.11</td> </tr> </table>	DATE: March 2005
DATE: March 2005	PROJECT NO.: 24304.11	

BORING KEOKS.GPJ BORING.GDT 8/11/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. B-5
BORING ELEVATION:	LOGGED BY: JAGN	
DATE (S) DRILLED: 7/29	TYPE RIG: Hoe Ram	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
						BS-B5	1			Tuffaceous boulders, gravel and cobbles, gray, vesticated, sub-angular, dense, conglomeratic rocks in a clayey silt matrix
							2			
							3			
							4			
							5			BASALT, gray, fresh to slightly weathered, very strong
							6			
							7			
							8			Boulders & Cobbles, vitric, tuffaceous rocks in a brown silty soil (volcanic ash) matrix
							9			
							10			
							11			
							12			BASALT, blue gray, fresh, very strong, massive
							13			
							14			
							15			
							16			Boring terminated at about 15.5 feet Groundwater was not encountered
							17			
							18			

<b>SAMPLE TYPE</b>		<b>OTHER LABORATORY TESTS</b>	
MC - Modified California	SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis

## LOG OF BORING

 <b>Geotechnical &amp; Environmental Consultants</b> Construction Management, Testing & Inspection	<b>Keokea Waiohuli Development</b> <b>Proposed Borrow Site</b> <b>Waiohuli, Maui, Hawaii</b>	
	DATE: March 2005	PROJECT NO.: 24304.11

BORING KE085.GPJ BORING.GDT 8/11/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. B-6
BORING ELEVATION:	LOGGED BY: JAGN	
DATE (S) DRILLED: 7/29	TYPE RIG: Hoe Ram	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION	
MDD=88.13 pcf						BS-B6	1		MH	Gravelly SILT, brown, medium stiff, moist with subangular tuffaceous gravels and boulders, trace rootlets.	
	2										
	3										
	4										
								5			BASALT, bluish gray, slightly weathered, very strong
	6										
								7			Basaltic GRAVEL (clinker), dark gray, dense to very dense, dry
	8										
								9			BASALT, gray, slightly to moderately weathered, strong
	10										
	11										
	12										
								13			Basaltic GRAVEL (clinker), dark gray, subangular, dense to very dense
	14										
								15			Boring terminated at about 16 feet Groundwater was not encountered
	16										
	17										
								18			

<b>SAMPLE TYPE</b>				<b>OTHER LABORATORY TESTS</b>			
MC - Modified California	SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression				
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity				
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis				

## LOG OF BORING

<b>Geotechnical &amp; Environmental Consultants</b> Construction Management, Testing & Inspection	<b>Keokea Waiohuli Development</b> Proposed Borrow Site Waiohuli, Maui, Hawaii	
	DATE: March 2005	PROJECT NO.: 24304.11

BORING KEOKS.GPJ BORING.GDT 8/11/04

BORING LOCATION: See Site Plan	DRILLER: PSC	<b>BORING NO. B-7</b>
BORING ELEVATION:	LOGGED BY: JAGN	
DATE (S) DRILLED: 7/30	TYPE RIG: Hoe Ram	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
							1		MH	SILT, brown, medium stiff, moist, with tuffaceous gravels, cobbles and boulders, trace rootlets
						2				
						3				
							4			Basalt BOULDERS, grayish black, slightly to moderately weathered, very strong
						5				
						6				
						7				
						8				
						9				
						10				
						11			Tuffaceous ROCKS, gray, tuffaceous cobbles and boulders in a silty, volcanic ash matrix	
						12				
						13				
						14				
							15			Basalt BOULDERS, gray, slightly weathered, very strong
						16				
						17				
						18				
										Boring terminated at about 15 feet Groundwater was not encountered

<b>SAMPLE TYPE</b>				<b>OTHER LABORATORY TESTS</b>			
MC - Modified California	SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression				
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity				
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis				

**LOG OF BORING**

<b>Geotechnical &amp; Environmental Consultants</b> Construction Management, Testing & Inspection	<b>Keokea Waiohuli Development</b> <b>Proposed Borrow Site</b> <b>Waiohuli, Maui, Hawaii</b>	
	DATE: March 2005	PROJECT NO.: 24304.11

BORING KEOKS.GPJ BORING.GDT 8/11/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. B-8
BORING ELEVATION:	LOGGED BY: JAGN	
DATE (S) DRILLED: 7/30	TYPE RIG: Hoe Ram	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
MDD=86.2 pcf	86.2	27.7				BS-B8	1		MH	Clayey SILT, brown, with subangular tuffaceous gravel, cobbles and boulders, trace rootlets. Moist
							2			BASALT, gray to black, slightly weathered, very strong
							3			
							4			
							5			
							6			
							7			
							8			
							9			
							10			
							11			Vitric TUFF, black to gray subangular tuffaceous gravel (clinker) and cobbles, dense to very dense
							12			
							13			
							14			BASALT, gray, slightly to moderately weathered, strong
							15			
							16			Boring terminated at about 16 feet Groundwater was not encountered
							17			
							18			

SAMPLE TYPE		OTHER LABORATORY TESTS	
MC - Modified California	SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis

## LOG OF BORING



Geotechnical & Environmental  
Consultants  
Construction Management,  
Testing & Inspection

Keokea Waiohuli Development  
Proposed Borrow Site  
Waiohuli, Maui, Hawaii

DATE: March 2005

PROJECT NO.: 24304.11

BORING KEOKS.GPJ BORING.GDT 8/11/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. B-9
BORING ELEVATION:	LOGGED BY: JAGN	
DATE (S) DRILLED: 7/31	TYPE RIG: Hoe Ram	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
		21.3				BS-B9	1		MH	Gravelly SILT, brown, medium stiff, moist with tuffaceous gravel, cobbles and boulders, trace rootlets
						2				
						3				
						4				
							5			Basalt ROCK, bluish gray, slightly weathered, very strong
						6				
						7				
							8			
							9			GRAVEL, gray tuffaceous gravels (clinker) with cobbles and boulders
						10				
						11				
							12			Boring terminated at about 12 feet Groundwater was not encountered
							13			
							14			

<b>SAMPLE TYPE</b>		<b>OTHER LABORATORY TESTS</b>	
MC - Modified California	SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	D&M - Dames & Moore	PI - Atterberg Limits	SA - Sieve Analysis

## LOG OF BORING

 <b>Geotechnical &amp; Environmental Consultants</b> Construction Management, Testing & Inspection	<b>Keokea Waiohuli Development</b> Proposed Borrow Site Waiohuli, Maui, Hawaii	
	DATE: March 2005	PROJECT NO.: 24304.11

BORING KE0BS.GPJ BORING.GDT 8/11/04

BORING LOCATION: See Site Plan	DRILLER: PSC	BORING NO. B-10
BORING ELEVATION:	LOGGED BY: JAGN	
DATE (S) DRILLED: 7/31	TYPE RIG: Hoe Ram	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLE NUMBER	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION	
		21.8				BS-B10	1		MH	Gravelly SILT, brown, medium stiff, moist, with tuffaceous subangular cobbles and boulders, trace rootlets	
							2				
							3				
							4			BASALT, bluish gray, slightly to moderately weathered, very strong	
							5				
							6				
							7				
							8				
							9				
							10				
							11			Vitric TUFF, gray tuffaceous gravels (clinker), cobbles and boulders. Dense to very dense	
							12				
							13				
							14			BASALT, bluish gray, slightly to moderately weathered, strong.	
							15				
							16				
							17			Boring terminated at about 16 feet Groundwater was not encountered	
							18				

<b>SAMPLE TYPE</b>		<b>OTHER LABORATORY TESTS</b>	
MC - Modified California	SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression
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**LOG OF BORING**

 <b>Geotechnical &amp; Environmental Consultants</b> Construction Management, Testing & Inspection	<b>Keokea Waiohuli Development</b> Proposed Borrow Site Waiohuli, Maui, Hawaii	
	DATE: March 2005	PROJECT NO.: 24304.11

BORING KE0BS.GPJ BORING.GDT 8/11/04

# SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
<b>COARSE GRAINED SOILS</b>  MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	<b>GRAVEL AND GRAVELLY SOILS</b>  (LITTLE OR NO FINES)	<b>CLEAN GRAVELS</b>		<b>GW</b>	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		(LITTLE OR NO FINES)		<b>GP</b>	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		<b>GRAVELS WITH FINES</b>  (APPRECIABLE AMOUNT OF FINES)		<b>GM</b>	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
	<b>SAND AND SANDY SOILS</b>  50% OR MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	<b>CLEAN SANDS</b>  (LITTLE OR NO FINES)		<b>SW</b>	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		(LITTLE OR NO FINES)		<b>SP</b>	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		<b>SANDS WITH FINES</b>  (APPRECIABLE AMOUNT OF FINES)		<b>SM</b>	SILTY SANDS, SAND - SILT MIXTURES
<b>FINE GRAINED SOILS</b>  50% OR MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	<b>SILTS AND CLAYS</b>  LIQUID LIMIT LESS THAN 50		<b>ML</b>	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY	
			<b>CL</b>	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS	
			<b>OL</b>	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	
	<b>SILTS AND CLAYS</b>  LIQUID LIMIT GREATER THAN OR EQUAL TO 50		<b>MH</b>	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS	
			<b>CH</b>	INORGANIC CLAYS OF HIGH PLASTICITY	
			<b>OH</b>	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS	
<b>ROCKS</b>					<b>VOLCANIC BASALT / ANDESITE</b>

## UNIFIED SOIL CLASSIFICATION SYSTEM



**CONSULTANTS, LLC**  
SOILS, FOUNDATION, AND GEOLOGICAL ENGINEERS

Keokea-Waiohuli Development  
Proposed DHHL Agricultural Subdivision Road Network  
Kula, Makawao, Maui, Hawaii

DATE: March 2005

PROJECT NO. 24304.10

I **CONSOLIDATION OF SEDIMENTARY ROCKS;** usually determined from unweathered samples. Largely dependent on cementation.

U = unconsolidated  
P = poorly consolidated  
M = moderately consolidated  
W = well consolidated

II **BEDDING OF SEDIMENTARY ROCKS**

Splitting Property	Thickness	Stratification
Massive	Greater than 4.0 ft.	very thick bedded
Blocky	2.0 to 4.0 ft.	thick-bedded
Slabby	0.2 to 2.0 ft.	thin-bedded
Flaggy	0.05 to 0.2 ft.	very thin-bedded
Shaly or platy	0.01 to 0.05 ft.	laminated
Papery	less than 0.01 ft.	thinly laminated

III **FRACTURING**

Intensity	Size of Pieces in Feet
Very little fractured	Greater than 4.0
Occasionally fractured	1.0 to 4.0
Moderately fractured	0.5 to 1.0
Closely fractured	0.1 to 0.5
Intensely fractured	0.05 to 0.1
Crushed	Less than 0.05

IV **HARDNESS**

1. **Soft** – reserved for plastic material alone.
2. **Low hardness** – can be gouged deeply or carved easily with a knife blade.
3. **Moderately hard** – can be readily scratched by a knife blade; scratch leaves a heavy trace of dust and is readily visible after the powder has been blown away.
4. **Hard** – can be scratched with difficulty; scratch produces little powder and is often faintly visible.
5. **Very hard** – cannot be scratched with a knife blade; leaves a metallic streak.

V **STRENGTH**

1. **Plastic or very low strength.**
2. **Friable** - Crumbles easily by rubbing with fingers.
3. **Weak** – An unfractured specimen of such material will crumble under light hammer blows.
4. **Moderately strong** – Specimen will withstand a few heavy hammer blows before breaking.
5. **Strong** – Specimen will withstand a few heavy ringing hammer blows and will yield with difficulty only dust and small flying fragments.
6. **Very strong** – Specimen will resist heavy ringing hammer blows and will yield with difficulty only dust and small flying fragments.

VI **WEATHERING** – The physical and chemical disintegration and decomposition of rocks and minerals by natural processes such as oxidation, reduction, hydration, solution, carbonation and freezing and thawing.

- D. **Deep** – Moderate to complete mineral decomposition; extensive disintegration; deep and thorough discoloration; many fractures, all extensively coated or filled with oxides, carbonates and/or clay or silt.
- M. **Moderate** – Slight change or partial decomposition of minerals; little disintegration; cementation little to unaffected. Moderate to occasionally intense discoloration. Moderately coated fractures.
- L. **Little** - No megascopic decomposition of minerals; little or no affect on normal cementation. Slight and intermittent, or localized discoloration. Few stains on fracture surfaces.
- F. **Fresh** – Unaffected by weathering agents. No disintegration or discoloration. Fractures usually less numerous than joints.

## ROCK CLASSIFICATION SYSTEM



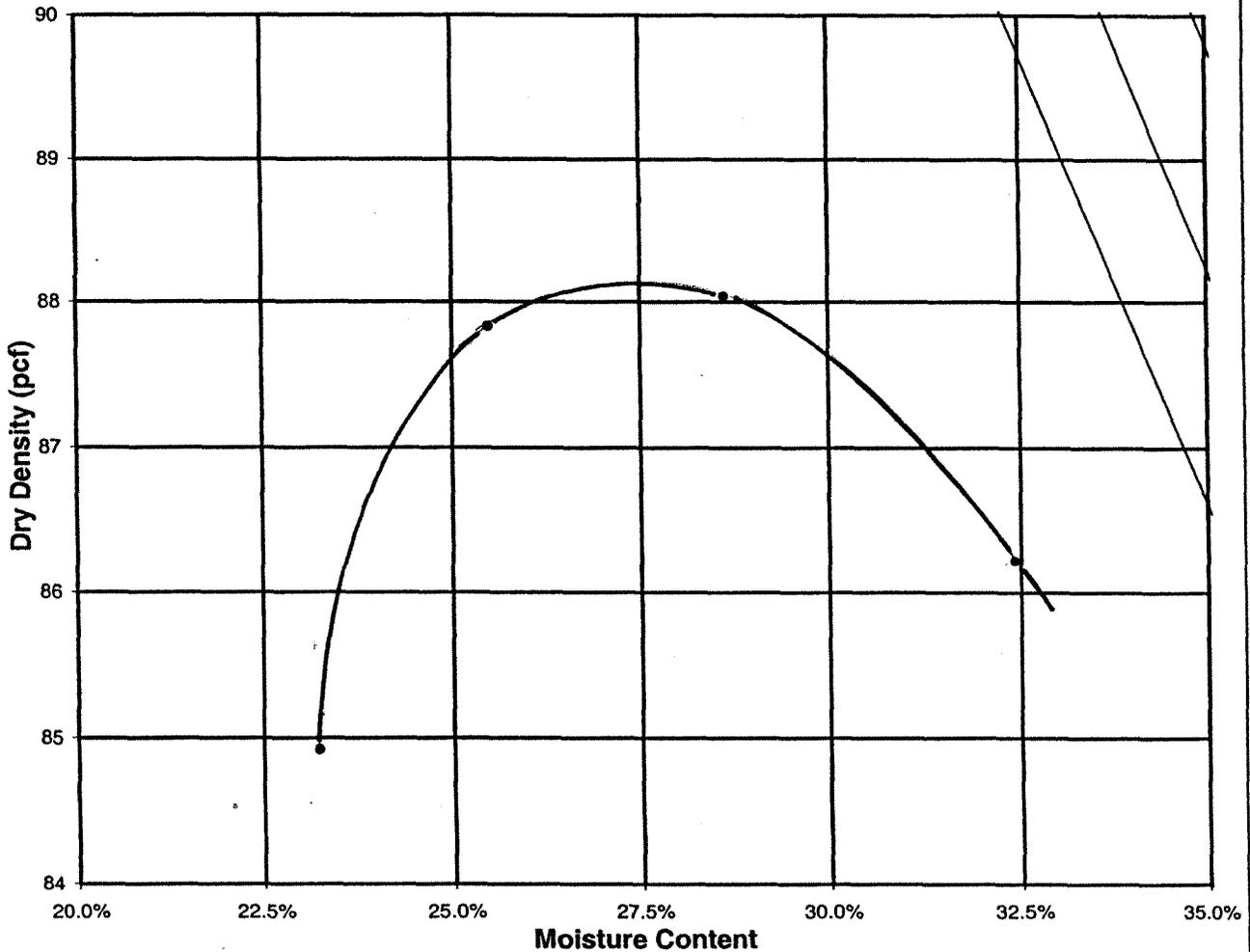
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Keokea-Waiohuli Development  
Proposed DHHL Agricultural Subdivision Road Network  
Kula, Makawao, Maui, Hawaii

DATE: March 2005

PROJECT NO. 24304.10

### MOISTURE-DENSITY RELATIONSHIP



Sample Source: TP-1 Road Alignment

Description: Dark Brown Clayey SILT

	Test Point 1	Test Point 2	Test Point 3	Test Point 4
Wet Density (pcf)	104.65	110.2	113.24	114.17
Moisture Content	23.23%	25.48%	28.63%	32.42%
Dry Density (pcf)	84.92	87.83	88.04	86.22

Maximum Dry Density (pcf): 88.0  
 Optimum Moisture Content (%): 28.6  
 Test Method: ASTM D-1557

Atterberg Limits  
 LL                      PL                      PI

### COMPACTION TEST RESULTS ASTM D-1557



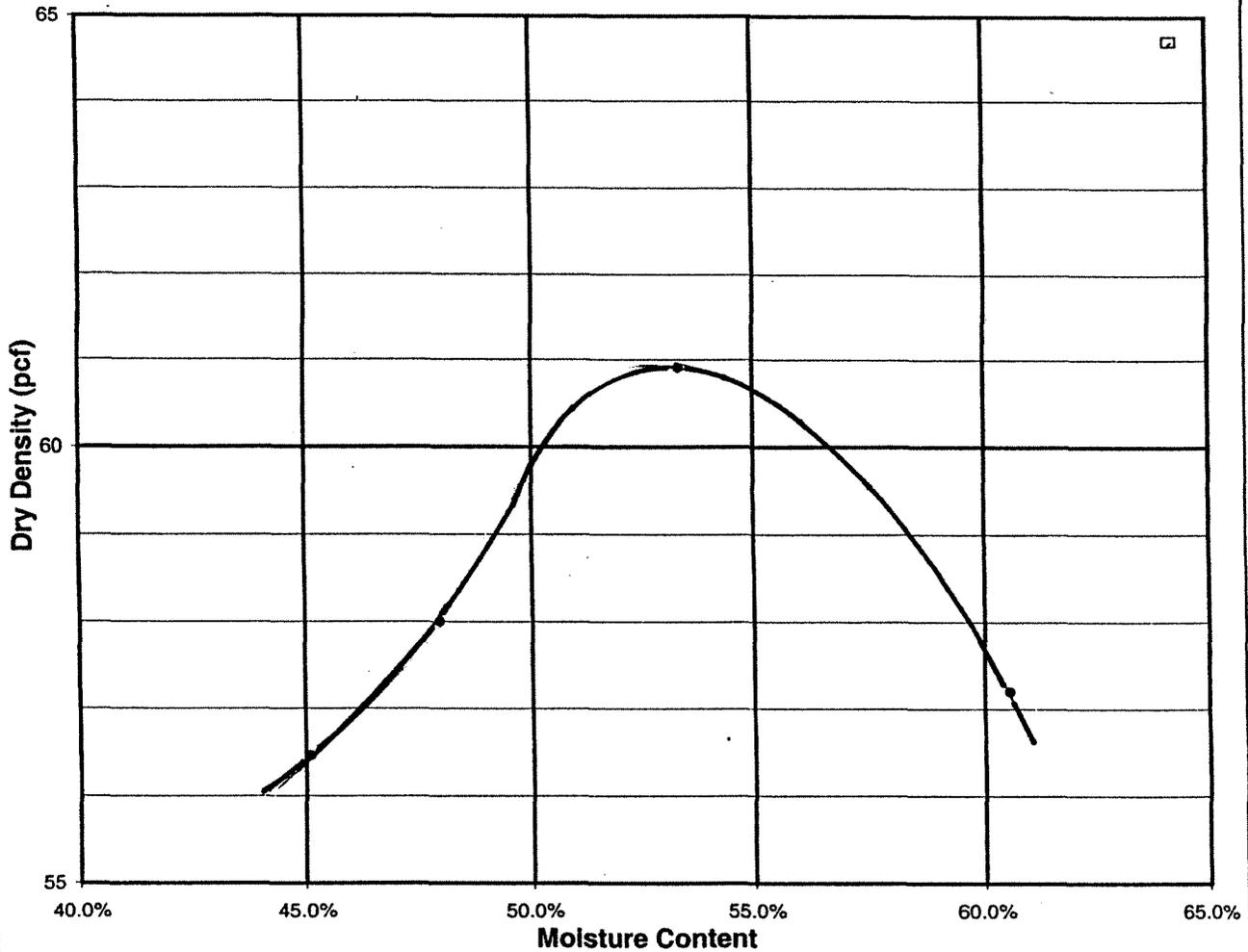
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 Proposed Agricultural Subdivision Road Network  
 Kula, Makawao, Maui, Hawaii

Date: March 2005

PROJECT NO. 24304.10

### MOISTURE-DENSITY RELATIONSHIP



Sample Source: TP-4 Road Alignment

Description: Dark Brown Volcanic Ash

	Test Point 1	Test Point 2	Test Point 3	Test Point 4
Wet Density (pcf)	81.98	85.78	93.42	91.86
Moisture Content	45.1%	47.9%	53.4%	60.6%
Dry Density (pcf)	56.5	58.0	60.9	57.2

Maximum Dry Density (pcf): 60.9  
 Optimum Moisture Content (%) : 53.4

Test Method: ASTM D-1557-91C

Atterberg Limits

<u>LL</u>	<u>PL</u>	<u>PI</u>
82	70	12

### COMPACTION TEST RESULTS ASTM D-1557



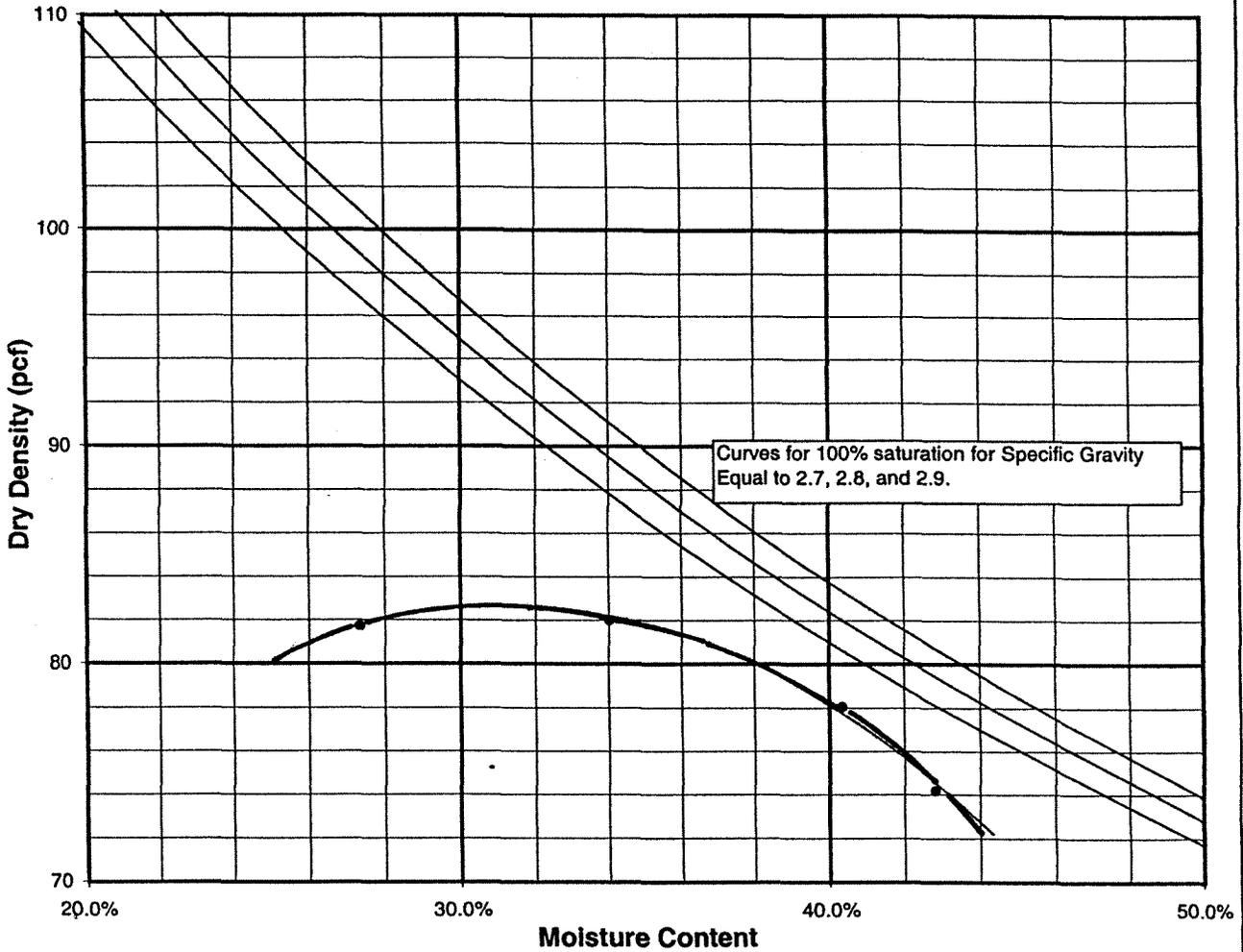
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 Proposed Agricultural Subdivision Road Network  
 Kula, Makawao, Maui, Hawaii

Date: March 2005

PROJECT NO. 24304.10

### MOISTURE-DENSITY RELATIONSHIP



Sample Source: TP-18 Prop.Rd. Alignment

Description: Brown Volcanic Ash

	Test Point 1	Test Point 2	Test Point 3	Test Point 4
Wet Density (pcf)	104	109.88	109.65	105.95
Moisture Content	27.3%	34.0%	40.4%	42.8%
Dry Density (pcf)	81.7	82.0	78.1	74.2

Maximum Dry Density (pcf): 82.0  
 Optimum Moisture Content (%) : 34

Test Method: ASTM D-1557-91C

Atterberg Limits

<u>LL</u>	<u>PL</u>	<u>PI</u>
69	68	1

### COMPACTION TEST RESULTS ASTM D-1557



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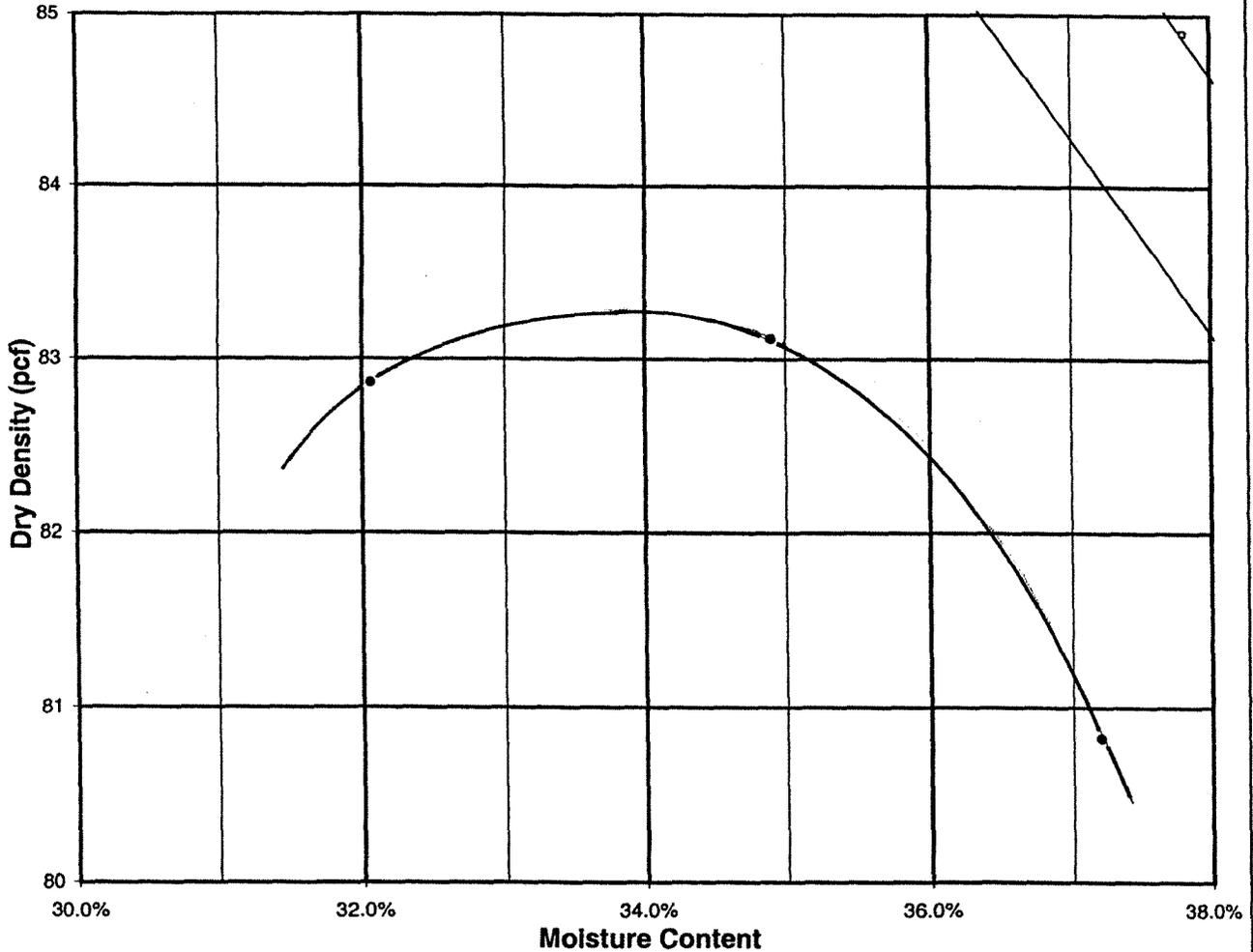
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 Proposed Agricultural Subdivision Road Network  
 Kula, Makawao, Maui, Hawaii

Date: March 2005

PROJECT NO. 24304.10

PLATE NO: 67

### MOISTURE-DENSITY RELATIONSHIP



Sample Source: TP-20 Road Alignment

Description: Brown SILT

	Test Point 1	Test Point 2	Test Point 3	Test Point 4
Wet Density (pcf)	109.42	112.12	110.88	
Moisture Content	32.06%	34.90%	37.20%	
Dry Density (pcf)	82.86	83.12	80.82	

Maximum Dry Density (pcf): 83.25  
 Optimum Moisture Content (%): 34  
 Test Method: ASTM D-1557

Atterberg Limits

LL

PL

PI

### COMPACTION TEST RESULTS

ASTM D-1557



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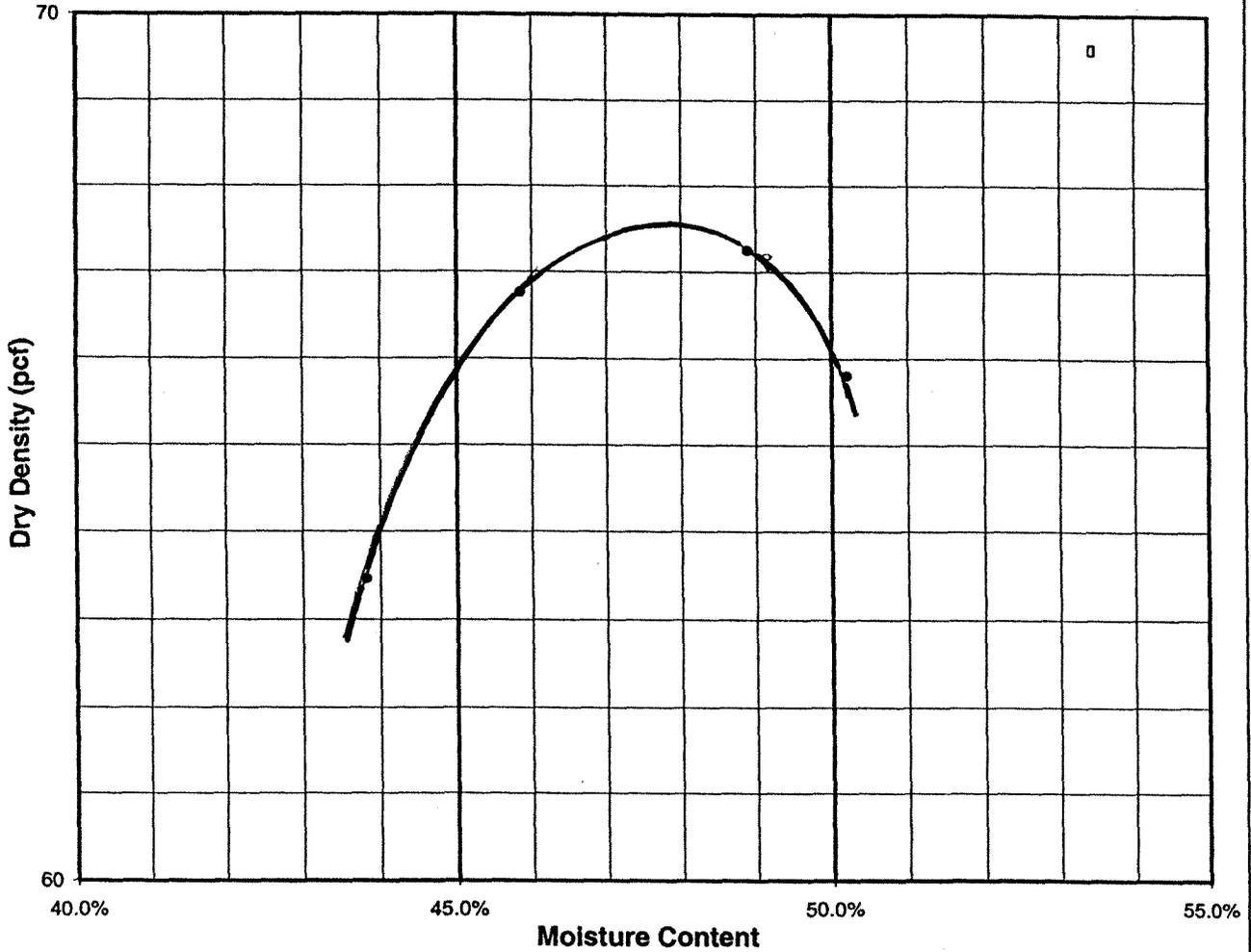
Proposed Agricultural Subdivision Borrow Site

Kula, Makawao, Maui, Hawaii

Date: March 2005

PROJECT NO. 24304.11

### MOISTURE-DENSITY RELATIONSHIP



Sample Source: TP-28 Prop. Rd. Alignment

Description: Brown Volcanic Ash

	Test Point 1	Test Point 2	Test Point 3	Test Point 4
Wet Density (pcf)	91.31	97.46	100.2	98.83
Moisture Content	43.8%	45.9%	48.9%	50.2%
Dry Density (pcf)	63.5	66.8	67.3	65.8

Maximum Dry Density (pcf): 67.3  
 Optimum Moisture Content (%): 48.9

Test Method: ASTM D-1557-91C

Atterberg Limits

<u>LL</u>	<u>PL</u>	<u>PI</u>
62	60	2

### COMPACTION TEST RESULTS

ASTM D-1557



**PSC Consultants, LLC**

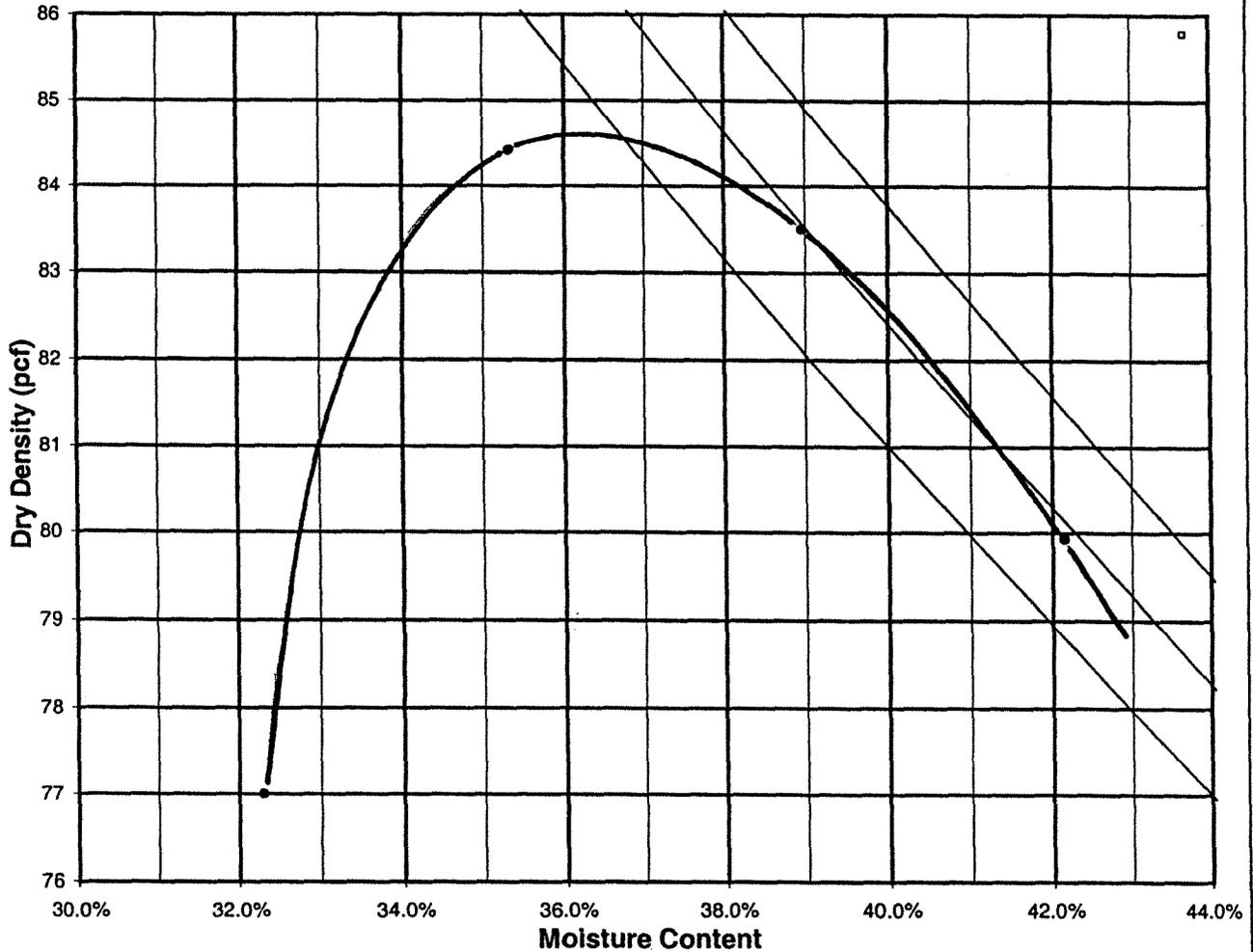
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Keokea/Waiohuli Development  
 Proposed Agricultural Subdivision Road Network  
 Kula, Makawao, Maui, Hawaii

Date: March 2005

PROJECT NO. 24304.10

### MOISTURE-DENSITY RELATIONSHIP



Sample Source: TP-41 Road Alignment

Description: Brown SILT (ML) trace of gravel and clay

	Test Point 1	Test Point 2	Test Point 3	Test Point 4
Wet Density (pcf)	101.87	114.24	116.03	113.62
Moisture Content	32.30%	35.32%	38.96%	42.15%
Dry Density (pcf)	77.00	84.42	83.50	79.93

Maximum Dry Density (pcf): 84.50  
 Optimum Moisture Content (%): 36  
 Test Method: ASTM D-1557

Atterberg Limits  
 LL                      PL                      PI

### COMPACTION TEST RESULTS ASTM D-1557



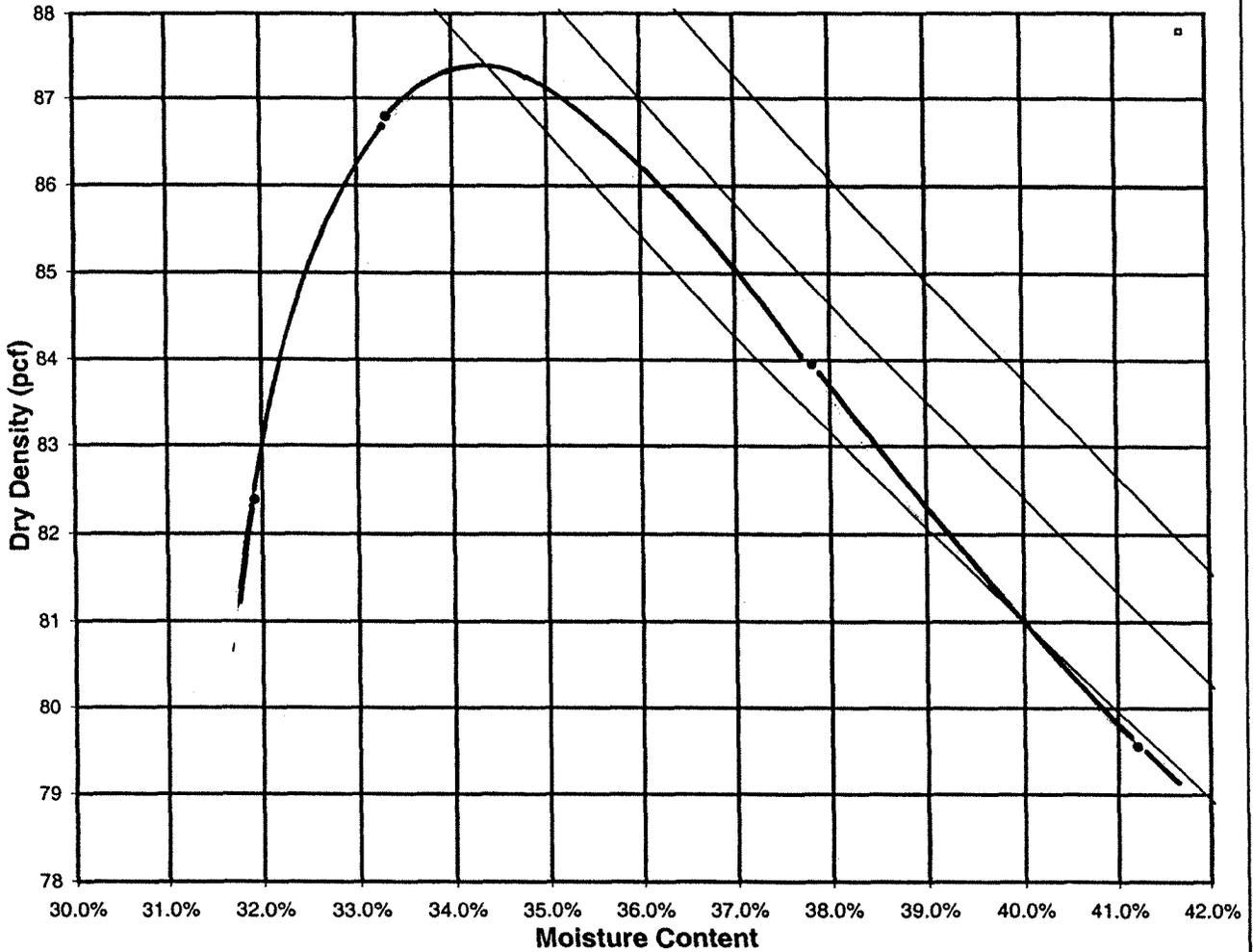
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 Proposed Agricultural Subdivision Borrow Site  
 Kula, Makawao, Maui, Hawaii

Date: March 2005

PROJECT NO. 24304.11

### MOISTURE-DENSITY RELATIONSHIP



Sample Source: TP-45 Road Alignment

Description: Dark Brown Clayey SILT

	Test Point 1	Test Point 2	Test Point 3	Test Point 4
Wet Density (pcf)	108.68	115.7	115.69	112.33
Moisture Content	31.92%	33.31%	37.82%	41.21%
Dry Density (pcf)	82.38	86.79	83.95	79.55

Maximum Dry Density (pcf): about 87.3  
 Optimum Moisture Content (%): about 34.5  
 Test Method: ASTM D-1557

Atterberg Limits  
 LL                      PL                      PI

### COMPACTION TEST RESULTS ASTM D-1557



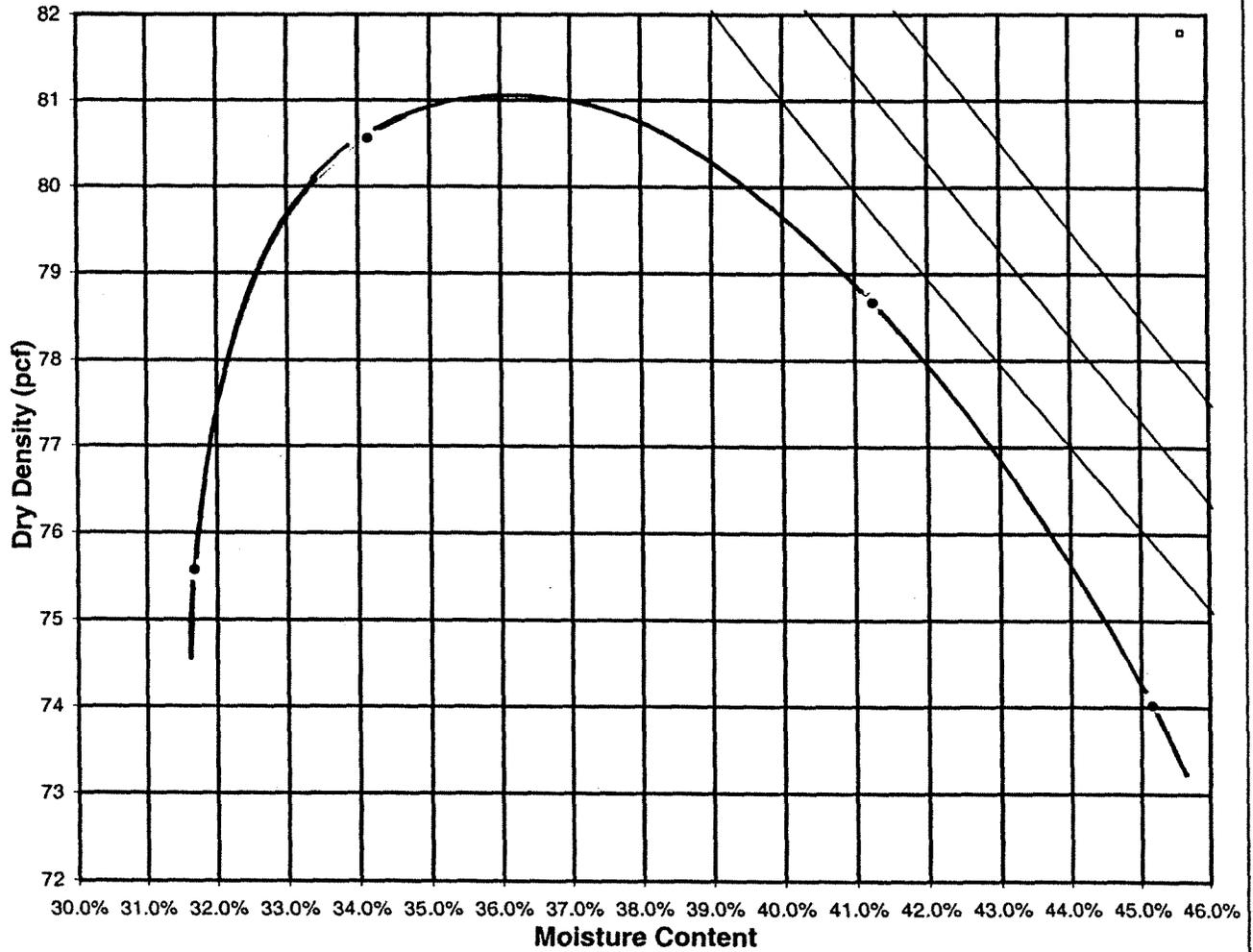
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 Proposed Agricultural Subdivision Road Network  
 Kula, Makawao, Maui, Hawaii

Date: March 2005

PROJECT NO. 24304.10

### MOISTURE-DENSITY RELATIONSHIP



Sample Source: TP-47 Road Alignment

Description: Amber Brown Clayey SILT

	Test Point 1	Test Point 2	Test Point 3	Test Point 4
Wet Density (pcf)	99.51	108.06	111.12	107.44
Moisture Content	31.68%	34.14%	41.25%	45.16%
Dry Density (pcf)	75.57	80.56	78.67	74.02

Maximum Dry Density (pcf): 81  
 Optimum Moisture Content (%): 36

Atterberg Limits

LL

PL

PI

Test Method: ASTM D-1557

### COMPACTION TEST RESULTS

ASTM D-1557



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Keokea/Walohuli Development

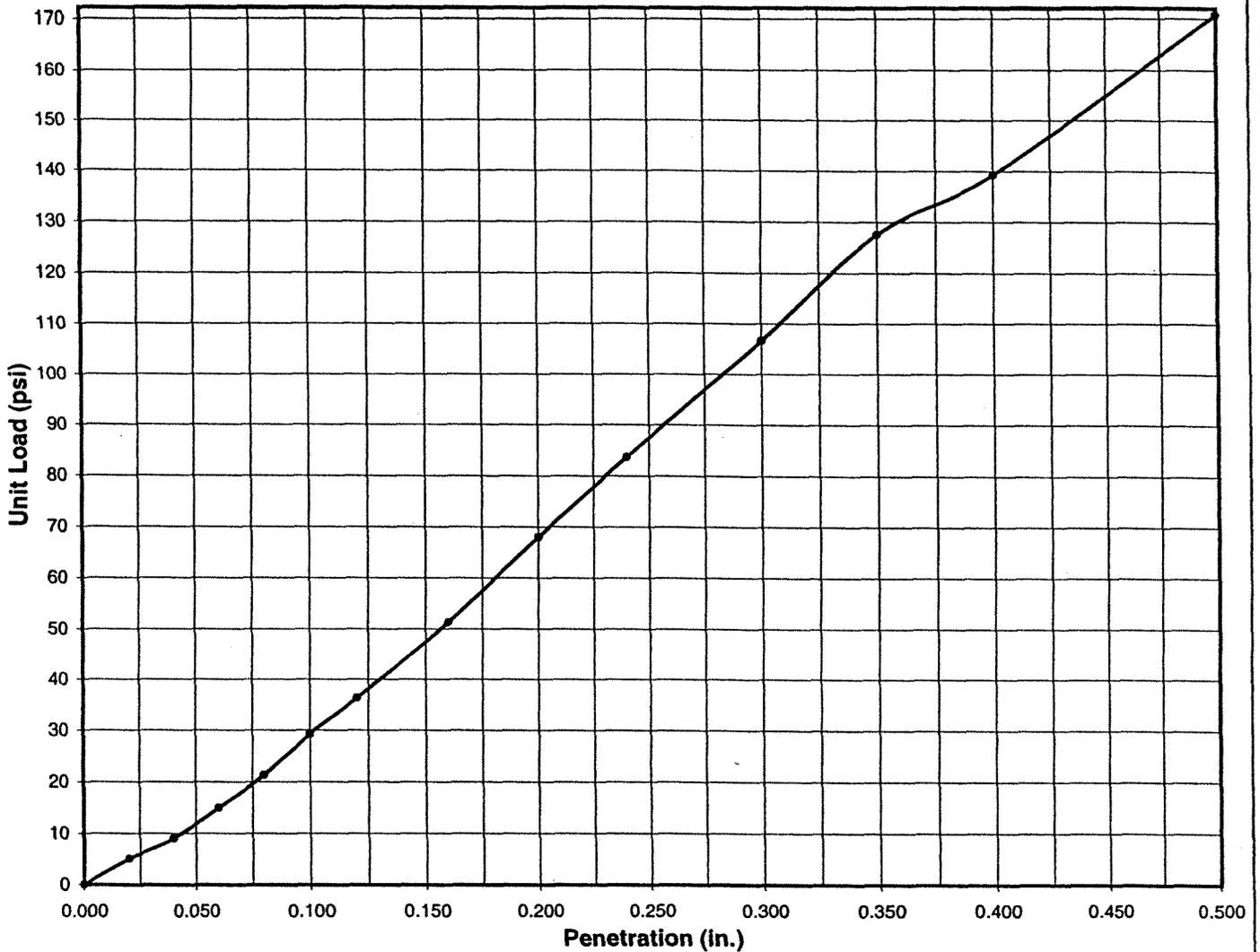
Proposed Agricultural Subdivision Road Network

Kula, Makawao, Maui, Hawaii

Date: March 2005

PROJECT NO. 24304.10

### CBR CURVE



**Sample Source:** TP-1

**Depth:** 0-5

**Description:** Brown Clayey Silt (MH)

	Before Expansion	After Expansion
Relative Compaction (%):	90.93%	90.20%
Moisture Content (%):	37.66%	38.66%
Dry Density (pcf):	80.00	79.41
Percent Swell or Expansion Value (%):	0.80%	
Compaction Test Method:	ASTM D-1557 A	
CBR Value @ 0.1" Corrected:	3	
CBR Value @ 0.2" Corrected:	4.5	

**Atterberg Limits**

LL                      PL                      PI

### CALIFORNIA BEARING RATIO ASTM D-1883-94



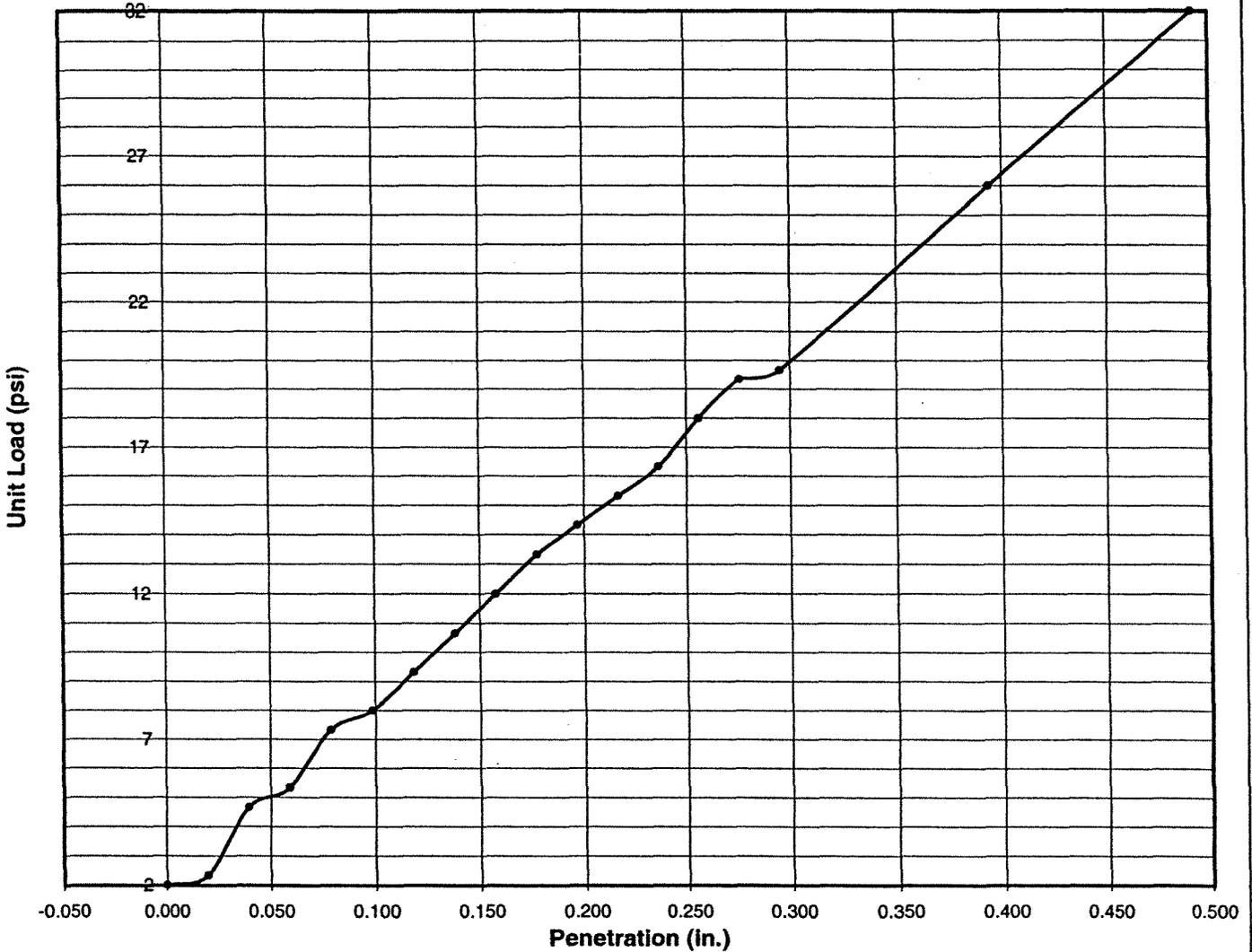
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Keokea-Waiohuli Development  
DHHL Agricultural Subdivision Road System  
Keokea, Maui, Hawaii

Date: March 2005

PROJECT NO. 24304.12

**CBR CURVE**



Sample Source: TP-4

Depth: 0-2 ft

Description: Brown Silt (MH)  
volcanic ash

	Before Expansion	After Expansion
Relative Compaction (%):	94.55%	94.48%
Moisture Content (%):	60.35%	61.74%
Dry Density (pcf):	57.63	57.54
Percent Swell or Expansion Value (%):	1.65%	
Compaction Test Method:	ASTM D-1557 A	
CBR Value @ 0.1" Corrected:	0.8	
CBR Value @ 0.2" Corrected:	0.95	

**Atterberg Limits**

<b>LL</b>	<b>PL</b>	<b>PI</b>
82.00	70	12

**CALIFORNIA BEARING RATIO  
ASTM D-1883-94**



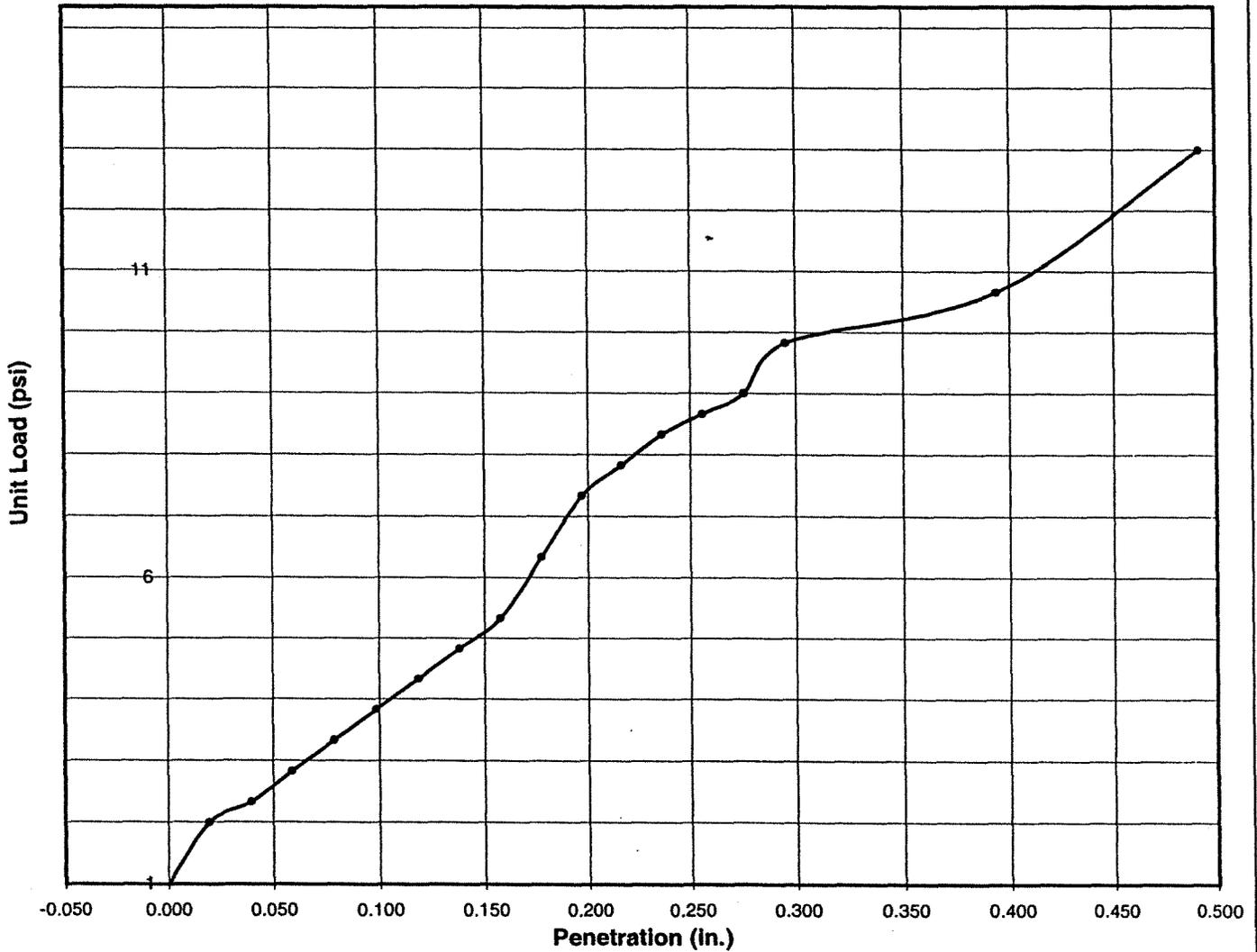
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DHHL Agricultural Lots Subdivision Road Project  
Keokea, Kula, Makawao, Maui, Hawaii

Date: July 2004

PROJECT NO. 24304.10

### CBR CURVE



**Sample Source:** TP-18

**Depth:** 0-2

**Description:** Brown Silt (MH)  
volcanic ash

	Before Expansion	After Expansion
Relative Compaction (%):	85.00%	85.09%
Moisture Content (%):	47.88%	49.03%
Dry Density (pcf):	69.73	69.77
Percent Swell or Expansion Value (%):	-0.06%	
Compaction Test Method:	ASTM D-1557 A	
CBR Value @ 0.1" Corrected:	0.35	
CBR Value @ 0.2" Corrected:	0.46	

**Atterberg Limits**

<u>LL</u>	<u>PL</u>	<u>PI</u>
51.50	44	7.5

### CALIFORNIA BEARING RATIO ASTM D-1883-94



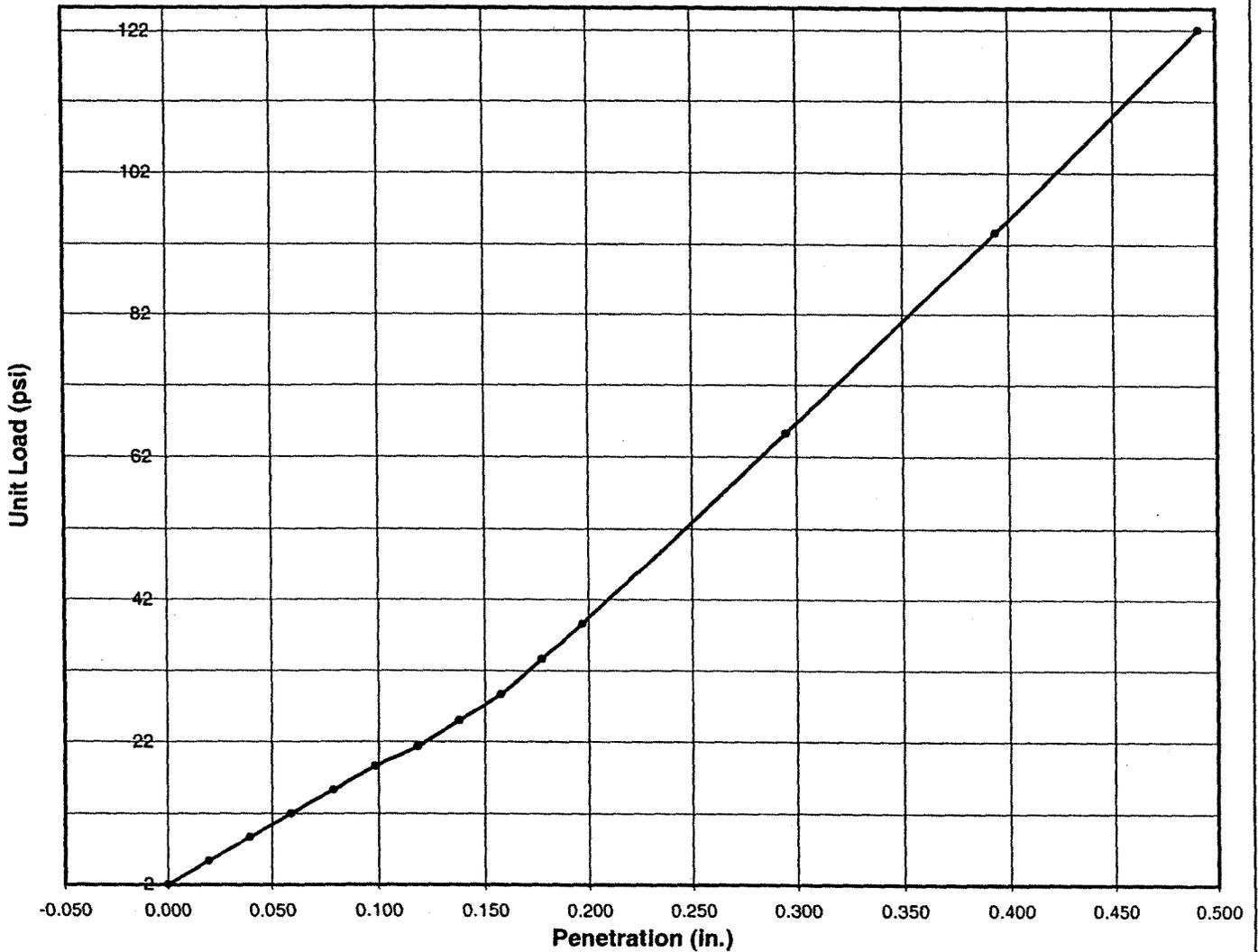
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Keokea Waiohuli Development  
DHHL Agricultural Lots Subdivision Road Project  
Keokea, Kula, Makawao, Maui, Hawaii

Date: March 2005

PROJECT NO. 24304.10

**CBR CURVE**



Sample Source: TP-28

Depth: 0-2

Description: Brown Silt (MH)  
volcanic ash

	Before Expansion	After Expansion
Relative Compaction (%):	94.60%	93.00%
Moisture Content (%):	52.72%	56.92%
Dry Density (pcf):	63.61	62.61
Percent Swell or Expansion Value (%):	1.69%	
Compaction Test Method:	ASTM D-1557 A	
CBR Value @ 0.1" Corrected:	1.9	
CBR Value @ 0.2" Corrected:	2.6	

**Atterberg Limits**

<b>LL</b>	<b>PL</b>	<b>PI</b>
62.00	60	2

**CALIFORNIA BEARING RATIO  
ASTM D-1883-94**



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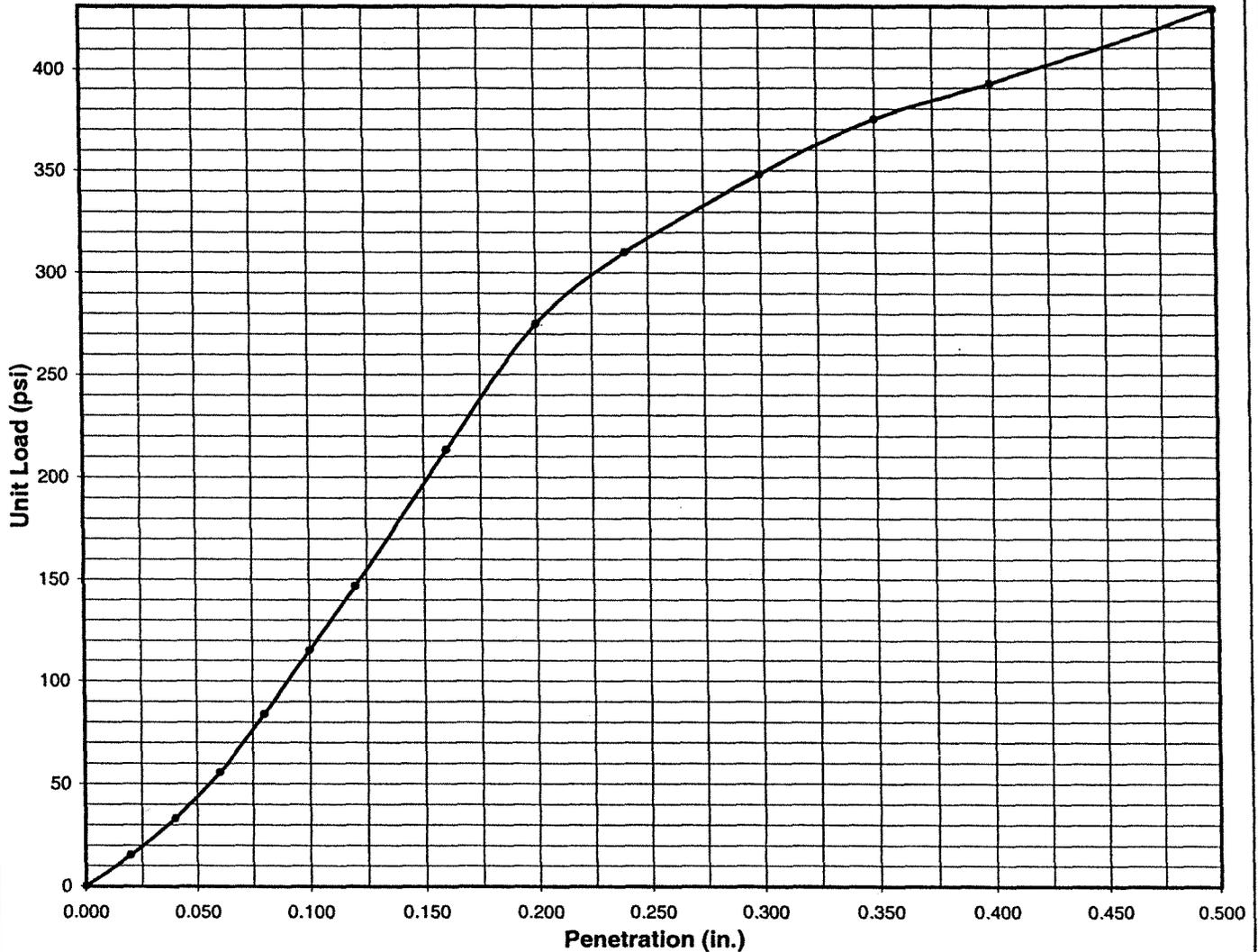
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Keokea Waiohuli Development  
DHHL Agricultural Lots Subdivision Road Project  
Keokea, Kula, Makawao, Maui, Hawaii

Date: March 2005

PROJECT NO. 24304.10

### CBR CURVE



**Sample Source:** TP-45

**Depth:** 0-5

**Description:** Brown Clayey Silt (MH)  
with gravel, trace sand

	Before Expansion	After Expansion
Relative Compaction (%):	92.48%	92.34%
Moisture Content (%):	42.26%	43.42%
Dry Density (pcf):	80.27	80.14
Percent Swell or Expansion Value (%):	0.17%	
Compaction Test Method:	ASTM D-1557 A	
CBR Value @ 0.1" Corrected:	11.53	
CBR Value @ 0.2" Corrected:	18.33	

**Atterberg Limits**

LL                      PL                      PI

### CALIFORNIA BEARING RATIO ASTM D-1883-94



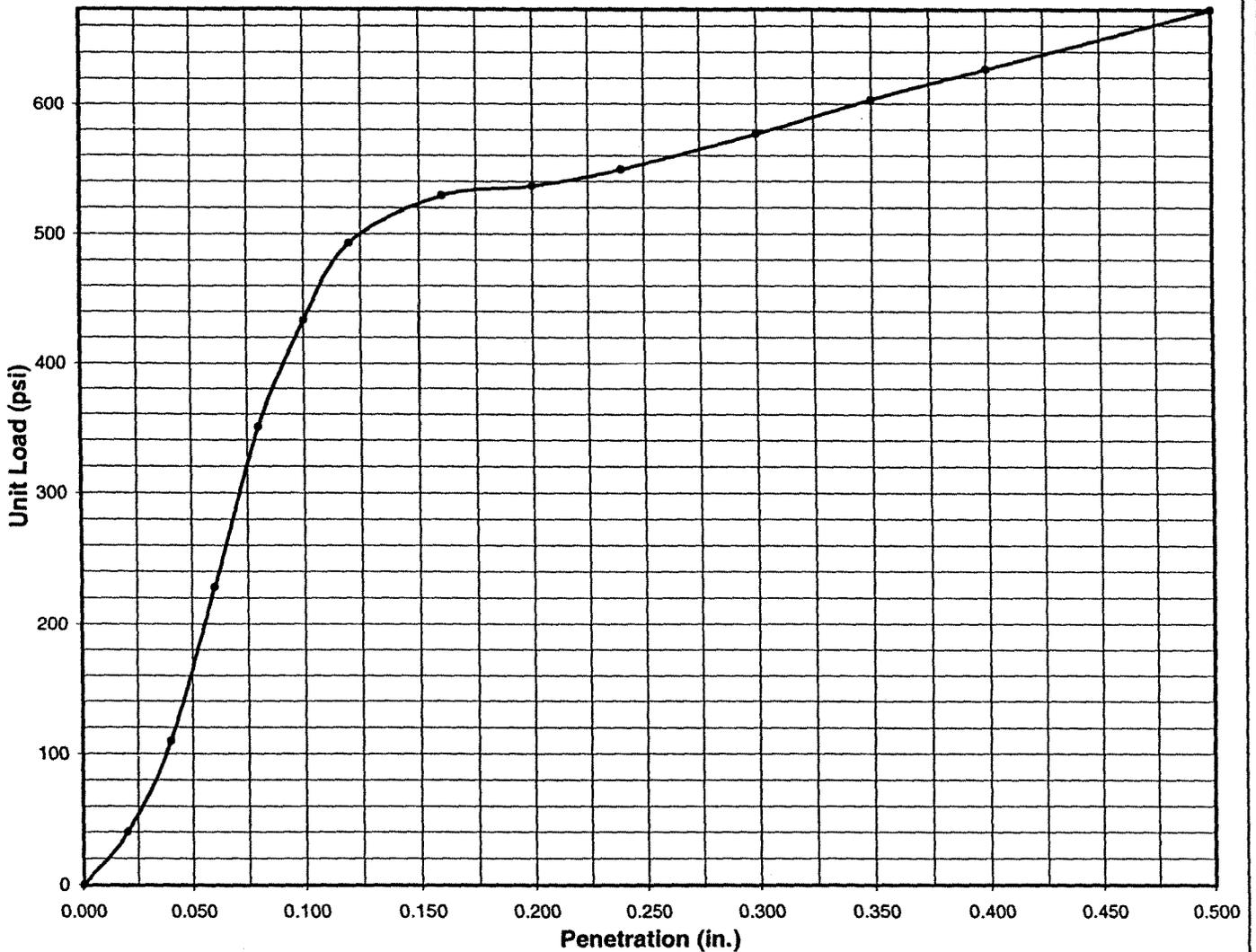
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Keokea-Waiohuli Development  
DHHL Agricultural Subdivision Road System  
Keokea, Maui, Hawaii

Date: March 2005

PROJECT NO. 24304.10

**CBR CURVE**



**Sample Source:** TP-47

**Depth:** 0-6

**Description:** Amber brown Silty Clay (CL-ML), with cobbles

	Before Expansion	After Expansion
Relative Compaction (%):	97.85%	97.44%
Moisture Content (%):	42.00%	43.69%
Dry Density (pcf):	78.83	78.50
Percent Swell or Expansion Value (%):	0.48%	
Compaction Test Method:	ASTM D-1557 A	
CBR Value @ 0.1" Corrected:	43.3	
CBR Value @ 0.2" Corrected:	35.77	

**Atterberg Limits**  
**LL**                      **PL**                      **PI**

**CALIFORNIA BEARING RATIO  
 ASTM D-1883-94**



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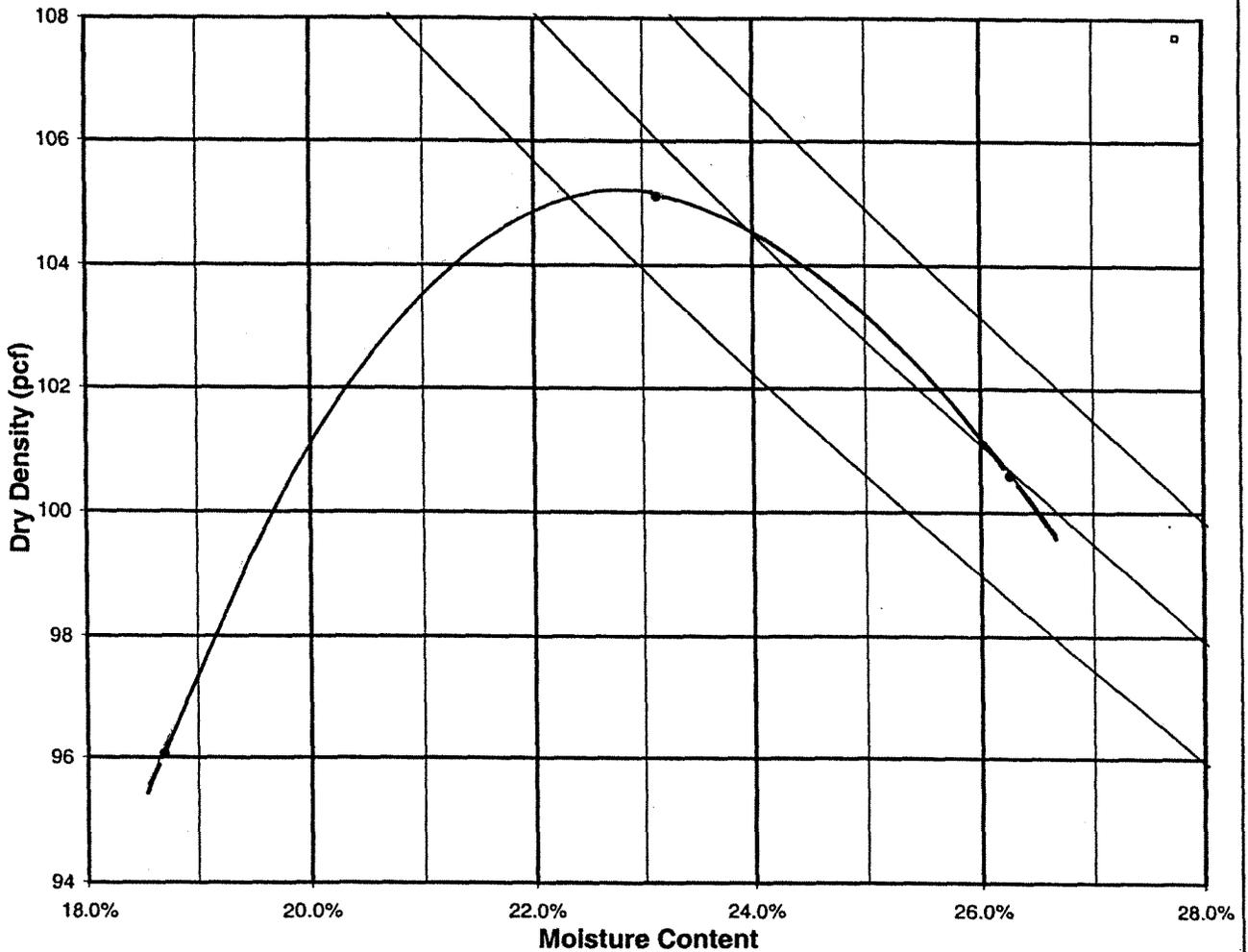
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Date: March 2005

PROJECT NO. 24304.10



### MOISTURE-DENSITY RELATIONSHIP



Sample Source: TP-3 Borrow Area

Description: Dark brown to gray clayey SILT with tuffaceous gravel, cobbles, trace sand

	Test Point 1	Test Point 2	Test Point 3	Test Point 4
Wet Density (pcf)	114.01	129.4	127	
Moisture Content	18.69%	23.13%	26.26%	
Dry Density (pcf)	96.06	105.10	100.59	

Maximum Dry Density (pcf): 105.1  
 Optimum Moisture Content (%): 23  
 Test Method: ASTM D-1557

Atterberg Limits  
LL      PL      PI

### COMPACTION TEST RESULTS ASTM D-1557



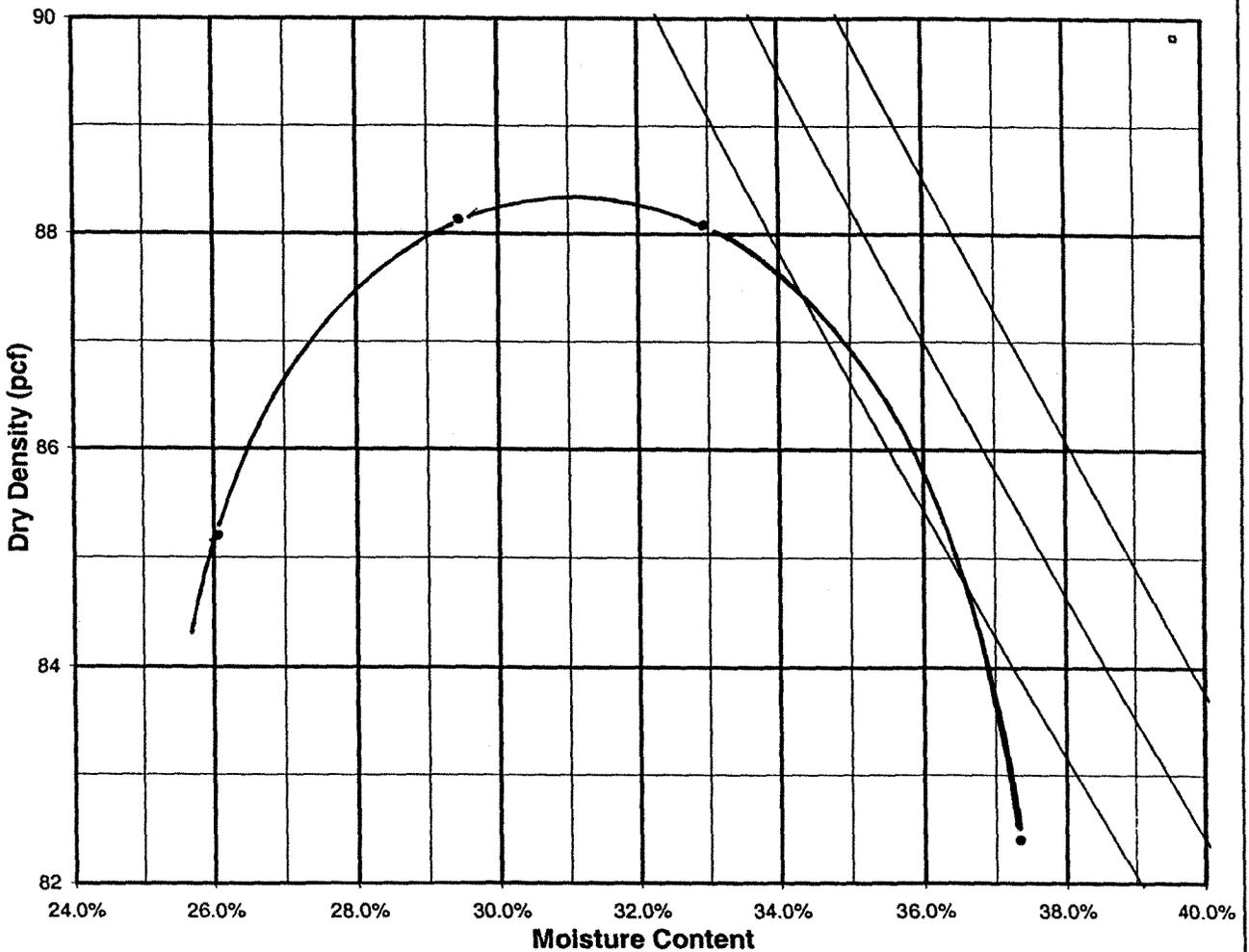
**PSC Consultants, LLC**  
 SOILS, FOUNDATION, AND GEOLOGICAL ENGINEERS

Keokea/Waiohuli Development  
 Proposed Agricultural Subdivision Borrow Site  
 Kula, Makawao, Maui, Hawaii

Date: March 2005

PROJECT NO. 24304.11

### MOISTURE-DENSITY RELATIONSHIP



Sample Source: TP-6 Borrow Area

Description: Brown clayey SILT with cobbles

	Test Point 1	Test Point 2	Test Point 3	Test Point 4
Wet Density (pcf)	107.4	114.07	117.08	113.16
Moisture Content	26.06%	29.44%	32.93%	37.34%
Dry Density (pcf)	85.20	88.13	88.08	82.40

Maximum Dry Density (pcf): 88.1  
 Optimum Moisture Content (%): 29.44  
 Test Method: ASTM D-1557

Atterberg Limits  
 LL                      PL                      PI

### COMPACTION TEST RESULTS ASTM D-1557



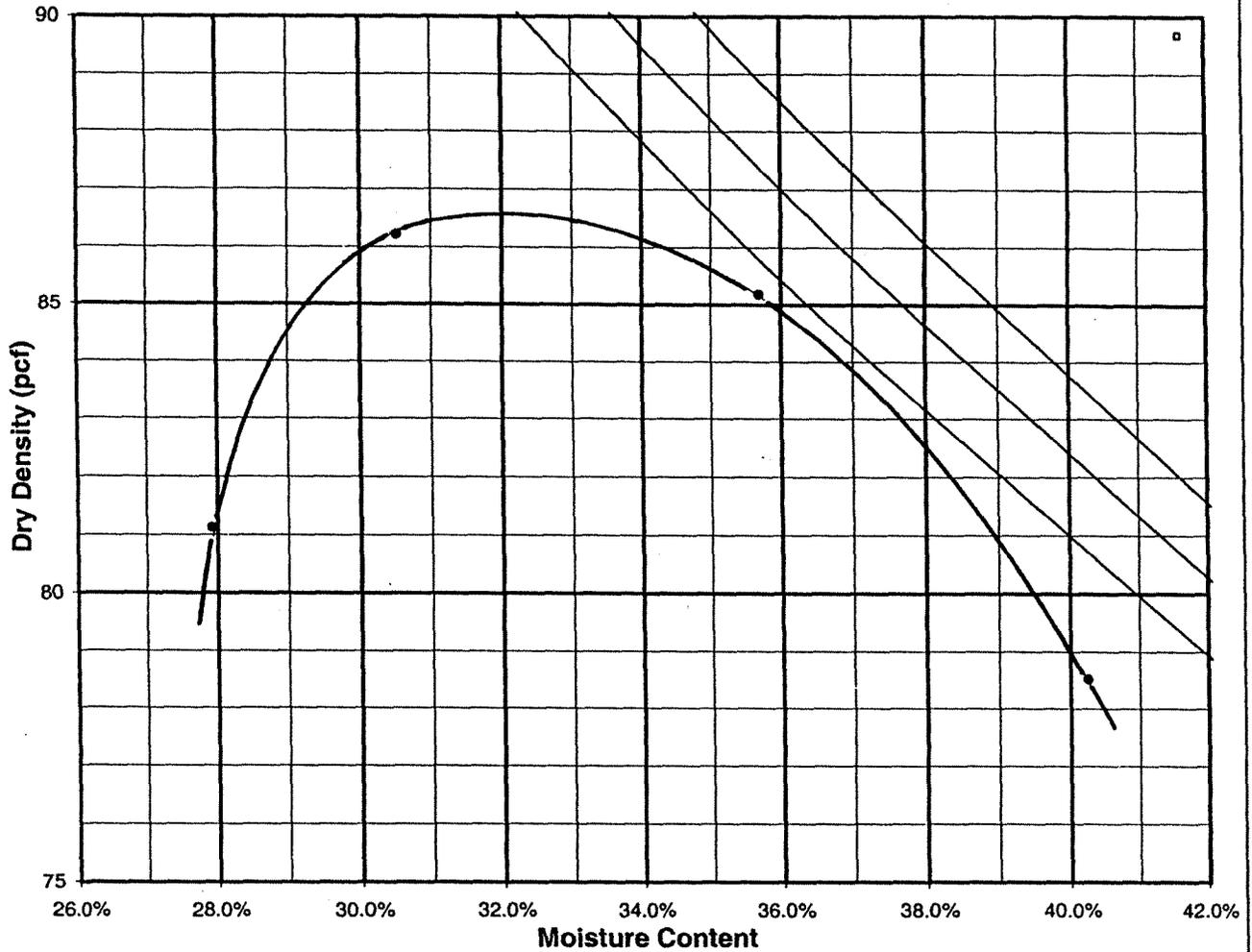
**PSC Consultants, LLC**  
 SOILS, FOUNDATION, AND GEOLOGICAL ENGINEERS

Keokea/Waiohuli Development  
 Proposed Agricultural Subdivision Bor. Site  
 Kula, Makawao, Maui, Hawaii

Date: March 2005

PROJECT NO. 24304.11

### MOISTURE-DENSITY RELATIONSHIP



Sample Source: TP-8 Borrow Area

Description: Brown clayey SILT with basaltic gravel and cobbles

	Test Point 1	Test Point 2	Test Point 3	Test Point 4
Wet Density (pcf)	103.78	112.51	115.58	110.12
Moisture Content	27.92%	30.51%	35.69%	40.25%
Dry Density (pcf)	81.13	86.21	85.18	78.52

Maximum Dry Density (pcf): 86.2  
 Optimum Moisture Content (%): 30.5

Atterberg Limits

LL

PL

PI

Test Method: ASTM D-1557

### COMPACTION TEST RESULTS ASTM D-1557



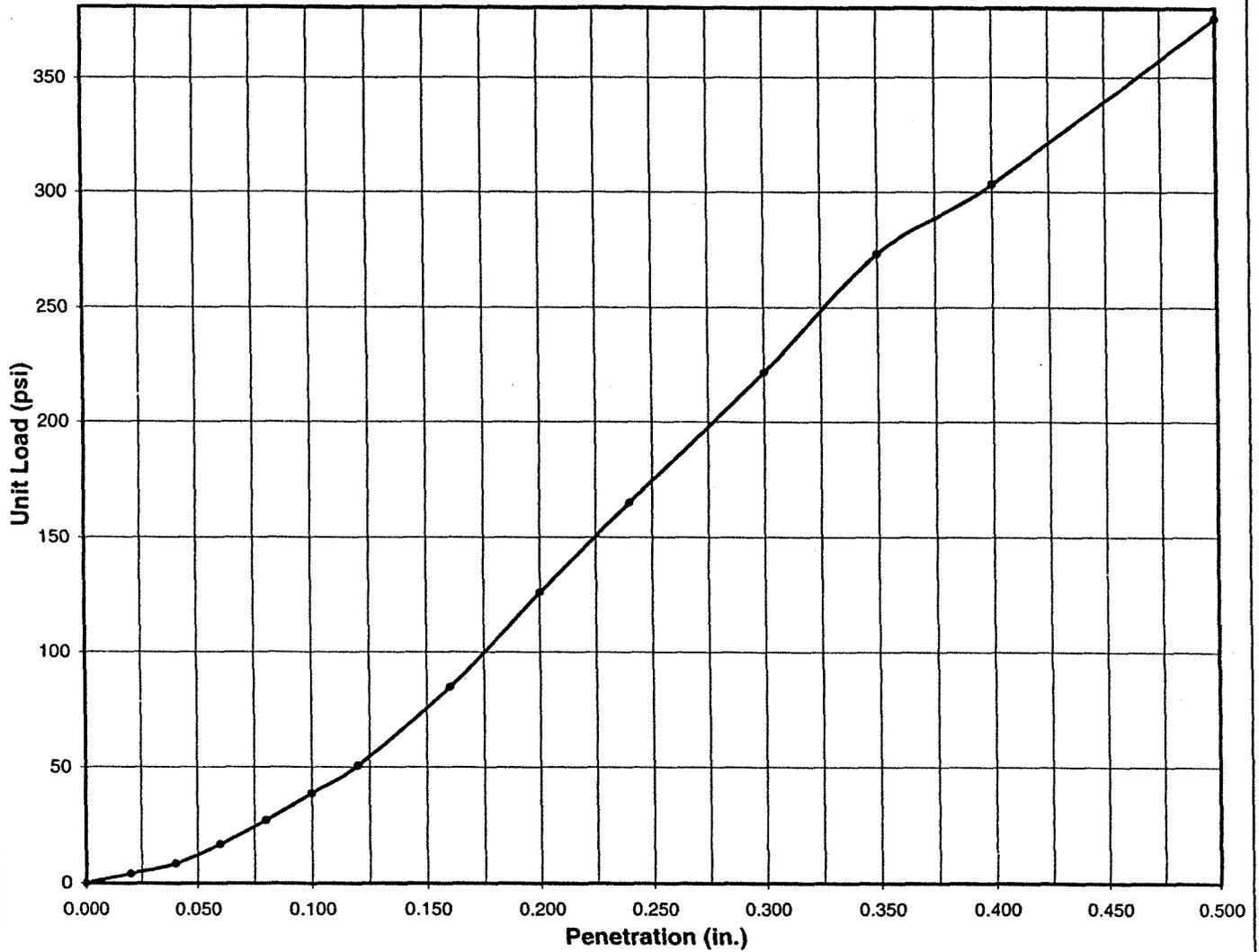
**PSC Consultants, LLC**  
 SOILS, FOUNDATION, AND GEOLOGICAL ENGINEERS

Keokea/Waiohuli Development  
 Proposed Agricultural Subdivision Borrow Site  
 Kula, Makawao, Maui, Hawaii

Date: March 2005

PROJECT NO. 24304.11

**CBR CURVE**



**Sample Source:** Borrow Area

**Depth:** 0-6

**Description:** Brown silt with approx. 25% sandy gravel

	Before Expansion	After Expansion
Relative Compaction (%):		
Moisture Content (%):	28.21%	29.21%
Dry Density (pcf):	92.35	90.64
Percent Swell or Expansion Value (%):	0.76%	
Compaction Test Method:	ASTM D-1557 A	
CBR Value @ 0.1" Corrected:	3.867	
CBR Value @ 0.2" Corrected:	8.4	

**Atterberg Limits**

LL                      PL                      PI

**CALIFORNIA BEARING RATIO  
ASTM D-1883-94**



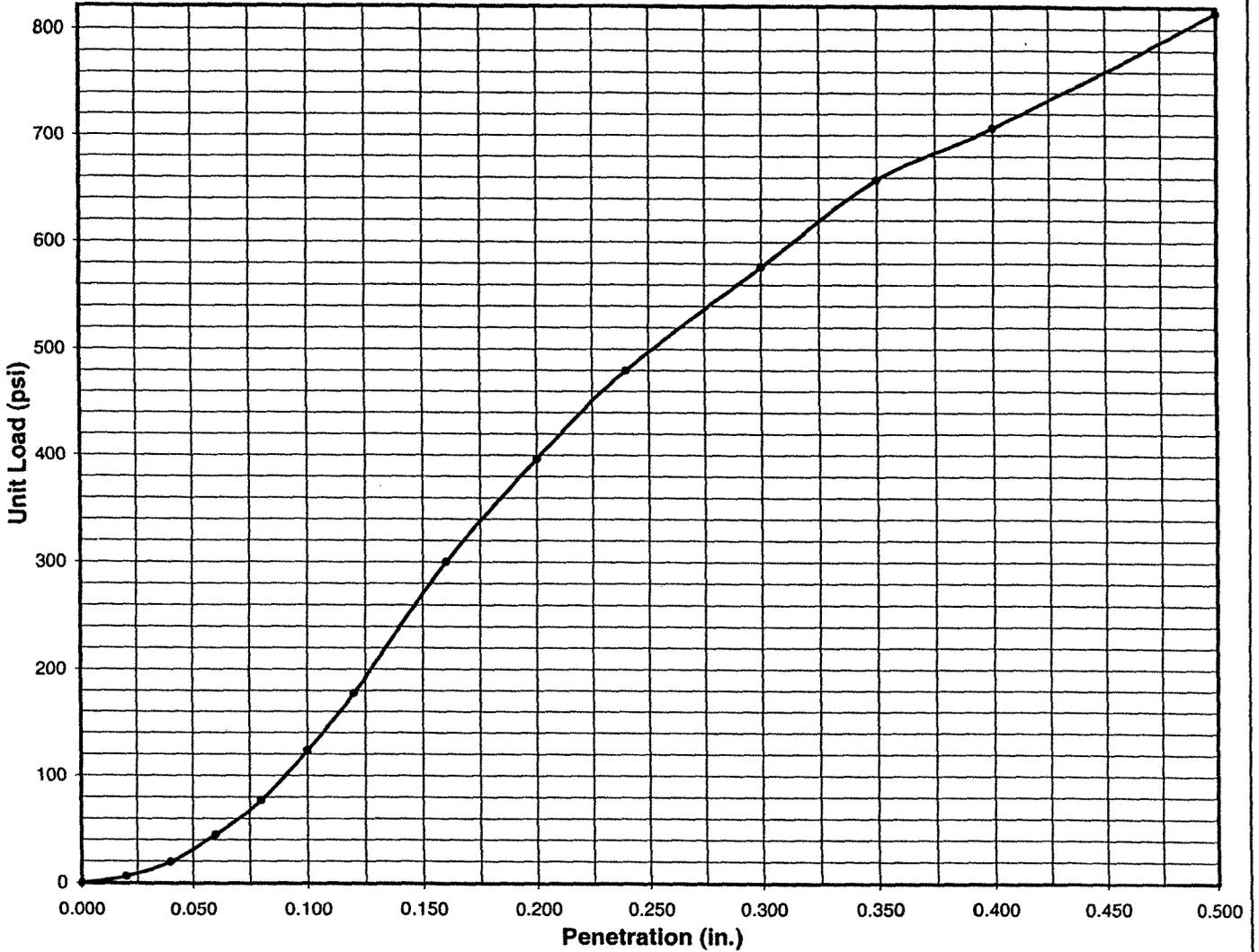
**PSC Consultants, LLC**  
SOILS, FOUNDATION, AND GEOLOGICAL ENGINEERS

Keokea-Waiohuli Development  
DHHL Agricultural Subdivision Road System  
Keokea, Maui, Hawaii

Date: March 2005

PROJECT NO. 24304.10

**CBR CURVE**



**Sample Source:** Borrow Area

**Depth:** 0-6

**Description:** Brown silt with approx. 50% gravel and sand (ML-GW)

	Before Expansion	After Expansion
Relative Compaction (%):		
Moisture Content (%):	17.38%	22.85%
Dry Density (pcf):	105.03	104.15
Percent Swell or Expansion Value (%):	0.91%	
Compaction Test Method:	ASTM D-1557 A	
CBR Value @ 0.1" Corrected:	12.33	
CBR Value @ 0.2" Corrected:	26.44	

**Atterberg Limits**

LL                      PL                      PI

**CALIFORNIA BEARING RATIO  
ASTM D-1883-94**



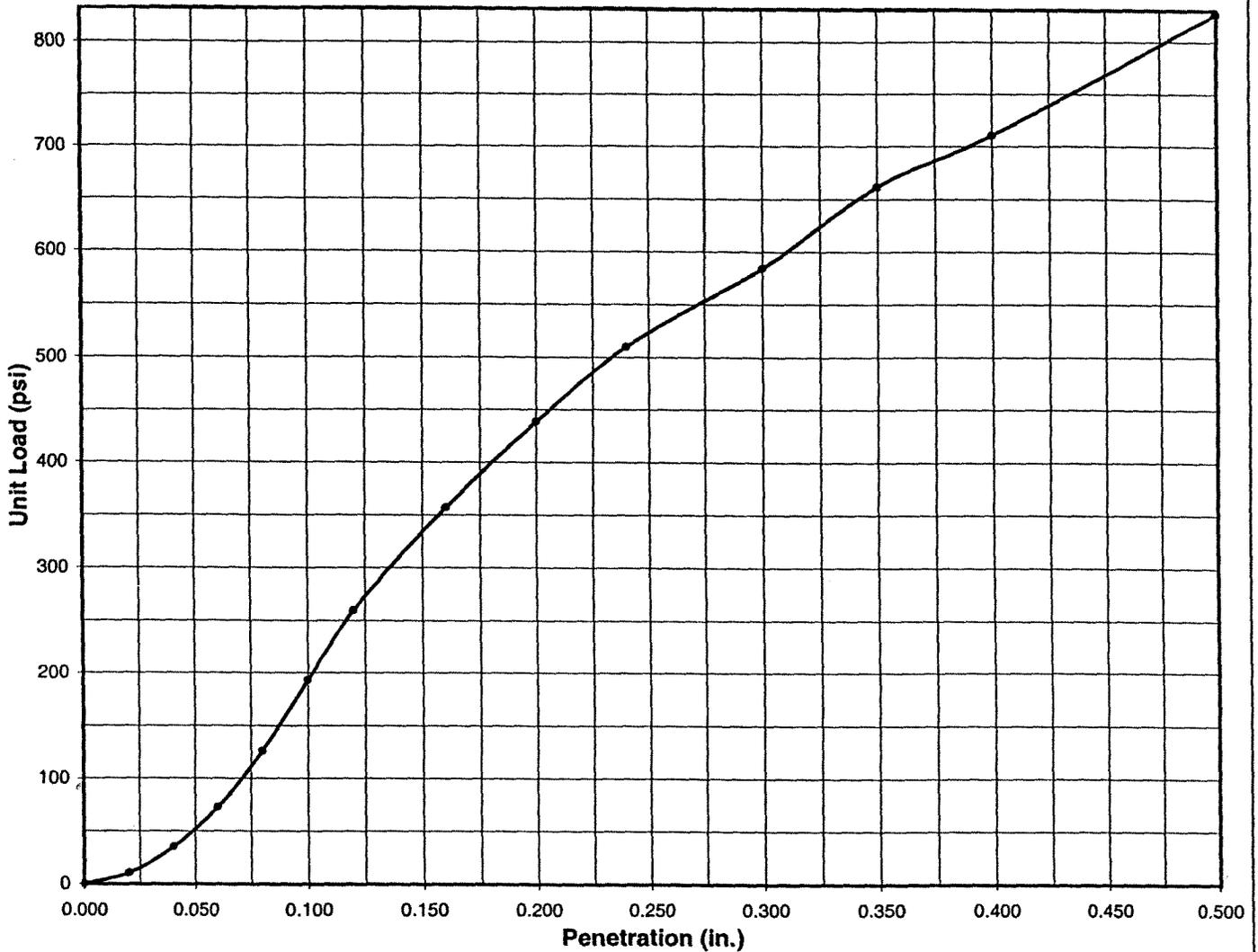
**PSC Consultants, LLC**  
SOILS, FOUNDATION, AND GEOLOGICAL ENGINEERS

Keokea-Waiohuli Development  
DHHL Agricultural Subdivision Road System  
Keokea, Maui, Hawaii

Date: March 2005

PROJECT NO. 24304.10

### CBR CURVE



**Sample Source:** Borrow Area

**Depth:** 0-6

**Description:** 50% Silt with approx. 50% gravel (ML-GP) Gravel >#4 and less than 3/4"

	Before Expansion	After Expansion
Relative Compaction (%):		
Moisture Content (%):	18.02%	23.52%
Dry Density (pcf):	102.20	101.44
Percent Swell or Expansion Value (%):	0.74%	
Compaction Test Method:	ASTM D-1557 A	
CBR Value @ 0.1" Corrected:	19.33	
CBR Value @ 0.2" Corrected:	29.22	

**Atterberg Limits**

LL                      PL                      PI

### CALIFORNIA BEARING RATIO ASTM D-1883-94



**PSC Consultants, LLC**  
SOILS, FOUNDATION, AND GEOLOGICAL ENGINEERS

Keokea-Waiohuli Development  
DHHL Agricultural Subdivision Road System  
Keokea, Maui, Hawaii

Date: March 2005

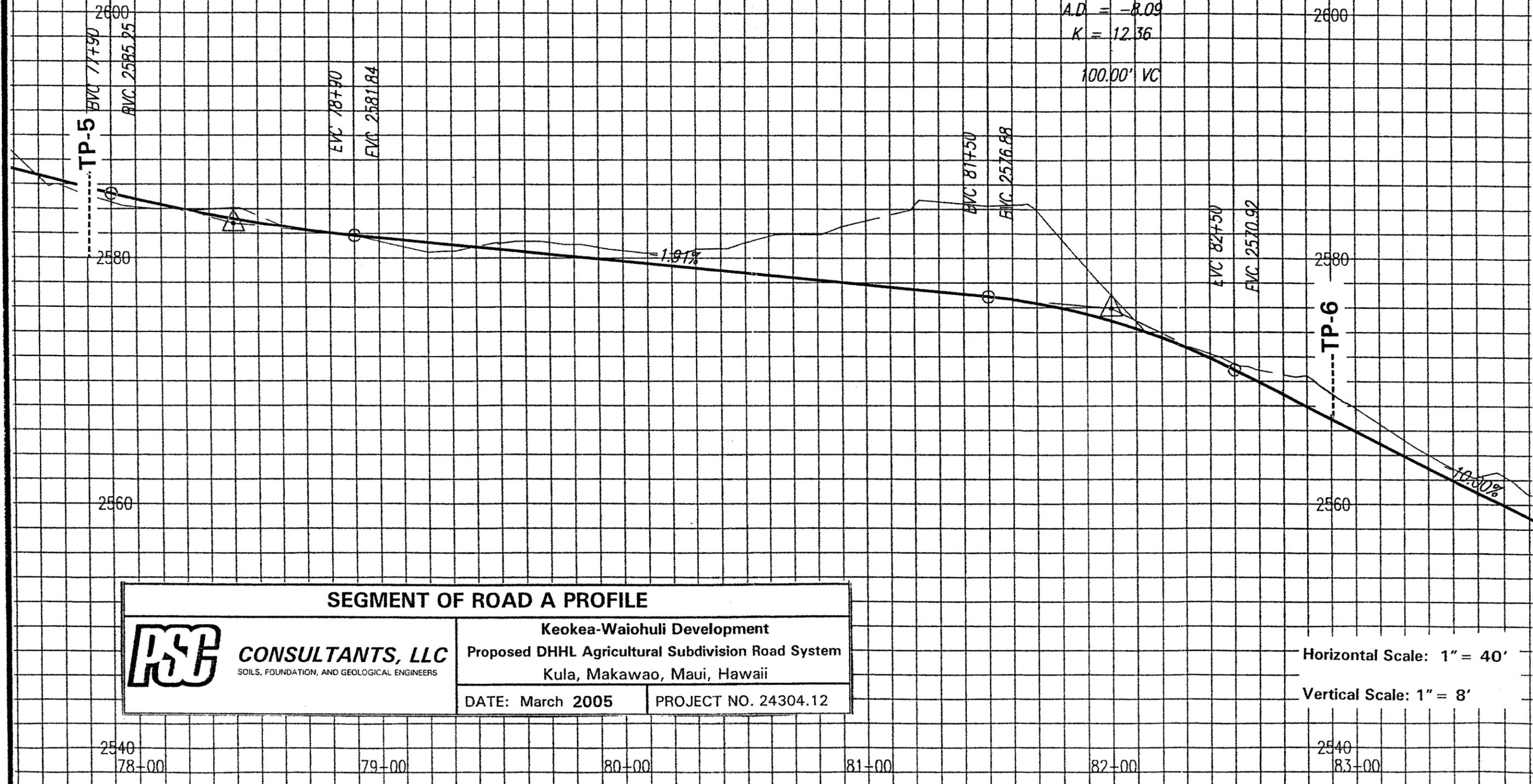
PROJECT NO. 24304.10

PVC STA = 78+40  
 PVI ELEV = 2582.80  
 A.D. = 2.99  
 K = 33.49

100.00' VC

PVC STA = 82+00  
 PVI ELEV = 2575.92  
 A.D. = -8.09  
 K = 12.36

100.00' VC



**SEGMENT OF ROAD A PROFILE**



Keokea-Waiohuli Development  
 Proposed DHHL Agricultural Subdivision Road System  
 Kula, Makawao, Maui, Hawaii  
 DATE: March 2005    PROJECT NO. 24304.12

Horizontal Scale: 1" = 40'

Vertical Scale: 1" = 8'

Reference: Revised Road A Profile by CP&E (10/22/04)

**PRELIMINARY GEOTECHNICAL EXPLORATION REPORT  
KEOKEA-WAIOHULI SUBDIVISION PHASES 1, 2, and 4A  
KULA, MAKAWAO, MAUI, HAWAII  
TMK: (2) 2-2-002:14, 55 AND 71**

For:

Community Planning and Engineering, Inc.  
1286 Queen Emma Street  
Honolulu, Hawaii 96813

By:



Geotechnical • Environmental • Construction Management  
Testing • Inspection • Drilling & Sampling

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[www.pscconsultants.com](http://www.pscconsultants.com)

**PRELIMINARY GEOTECHNICAL EXPLORATION REPORT  
KEOKEA-WAIOHULI SUBDIVISION PHASES 1, 2 AND 4A  
KULA, MAKAWAO, MAUI, HAWAII  
TMK: (2) 2-2-002:14, 55 and 71**

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**PRELIMINARY GEOTECHNICAL EXPLORATION REPORT  
KEOKEA-WAIOHULI SUBDIVISION PHASES 1, 2 and 4A  
KULA, MAKAWAO, MAUI, HAWAII  
TMK: (2) 2-2-002:14, 55 and 71**

April 05, 2013

PSC Job No. 212302.20

**SUMMARY OF FINDINGS AND RECOMMENDATIONS**

The project site includes the future construction at Phases 1, 2 and 4A within the Keokea-Waiohuli Development on the western slopes of Mount Haleakala. Phase 1 has been constructed and the future construction will cover grading work for drainage and lot boundary shifts at some lots. Phase 2 covers construction at Roads H, J and extension of Road E, and includes about 70 lots. Phase 4A covers Road M and includes about 25 lots.

The area is underlain by volcanic flows of basaltic andesite, andesitic basalt and picritic basalt geologically termed as the Kula volcanic series. Sections of the subdivision within the Kula Volcanic series will encounter volcanic ash generally intermixed with vitric tuffaceous gravels, cobbles and boulders of varying proportions (vitric) on top of the andesitic basalts. The surface soils range in thickness from 0 to more than 8 feet in some locations. The Kula volcanic ash by itself is not suitable for engineered fills due to its low density, weak strength and high natural moisture content. The surface soils are generally classified as silt (MH) based on the Unified Soil Classification System, and when dry are prone to wind and water erosion. Laboratory tests from the previous preliminary geotechnical exploration for roadways show that these silts near ground surface, a silt/volcanic ash soil, generally have relatively low dry densities and do not provide adequate support for the proposed road.

To achieve a relatively uniform support under the roadway and culvert foundations, it is recommended that the soft or loose silt/ash soils be excavated down to 2 feet below the design/finish subgrade or until stiff to very stiff silt or gravelly materials are exposed. The silt/ash soils should then be replaced with non-expansive, select fill material.

This report supplements the Geotechnical Exploration Report of Typical Foundations on Certain Lots at Keokea-Waiohuli Development dated April 30, 2007, and Preliminary Geotechnical Exploration Report for the Keokea-Waiohuli Development dated March 31, 2005 by PSC Consultants, LLC.

**INTRODUCTION**

This report presents the results of our geotechnical exploration and survey to develop typical roadway, general grading and drainage recommendations for the proposed Keokea-Waiohuli Development for Phases 1, 2 and 4A located at Keokea and Waiohuli, Maui, Hawaii. The general location and vicinity of the project site is shown on the Project Location Map, Plate 1.



Our work on the project was performed in general accordance with our proposal and scope of work dated May 4, 2012. This report summarizes our findings and recommendations.

## **PROJECT CONSIDERATIONS**

The project site is within the partially completed Keokea-Waiohuli Development located along the western slopes of Mount Haleakala west of Kula Highway Route 37 opposite Keokea Park. The terrain within the undeveloped area is steep to moderate and rough with boulders, cinder flows and rock outcrops. The majority of the study area, particularly the southern half of the site, is covered with vegetation consisting of groves of haole koa trees, giant cacti and grass. The northern half of the site contains fewer trees and was previously used as pasture or graze land. The site generally slopes downward in a western direction from Kula Highway. The proposed new construction includes approximately 95 lots and Roads H, J and M, and extension of Road E. Roads A, D and most of Road E were completed by a previous construction contract. This area is shown in Plate 3, Site Plan - Roads.

The previous reports by PSC Consultants revealed that the surface soil in the areas studied consisted of light brown to brown clayey silt with gravel and cobbles. This soil has high insitu moisture content and low dry density, and in the dry and uncompacted state, exhibits little or no cohesion and becomes highly susceptible to erosion from both wind and water. A dense and weathered basalt formation is present as occasional outcroppings and under the surface soils. Volcanic ash pockets are present, and this ash is characterized by poor workability, and in its dry state, becomes very loose.

The volcanic ash derived soil, in its pure form, is not recommended for engineered fill or for road embankment unless it is reconstituted with granular material. A recommended grading scheme consists of removing 2 feet of the surface volcanic ash soil material below the design subgrade where ash is encountered and replacing these with borrow fill of non-expansive granular capping material to support the roadway pavement structure.

A borrow area designated as a stockpile site is located at the northwestern lower end of the construction site. This area was a former borrow site (Plate 2) and will be used as a source of general fill material and as disposal area for the unsuitable soils that will be removed from the roadway construction site.

The excavation and embankment quantities for the new construction were not available but is expected to balance. We anticipate that asphaltic concrete pavements and or concrete pavements will be required for Roads H, J and M, and Road E extension. While specific traffic loading has not been specified, we anticipate a medium vehicle loading for the project consisting primarily of passenger vehicles and delivery trucks.



## PURPOSE AND SCOPE

The purpose of our geotechnical exploration and survey is to gather information on the nature, distribution and characteristics of the near surface soils encountered for the new roads and to provide grading and pavement recommendations for the proposed roads. The scope of our exploration consisted of the following tasks and work efforts:

1. Review of the existing available data from published and unpublished sources pertaining to the geology and soil conditions at the site and conduct a reconnaissance survey of the project site;
2. Schedule the field exploration and coordinate with Community Planning and Engineering, Inc. (CPE) for the test pit locations and site access;
3. Coordinate field exploration and logging of the test pits by a field engineer;
4. Excavate 9 test pits, 1 to 5 feet deep, with use of backhoe, approximately 400 feet apart (including test pits and borings under the March 2005 report) along Roads H, J and M, Road E extension and at the stockpile site, and collect surface bulk samples for classification and CBR tests for pavement design;
5. Classify the materials encountered and to evaluate their engineering properties relative to their intended use by laboratory testing of select soil samples obtained from the field. Also conduct CBR tests to determine their suitability for pavement support;
6. Mobilization and demobilization of drilling/excavating equipment and operators; and
7. Preparation of this report summarizing our work on the project and presenting our findings and recommendations.

## SUBSURFACE CONDITIONS

### Project Site Geology

The project site is underlain mainly by volcanic flows of basaltic andesite, andesitic basalt and picritic basalt, geologically termed as the Kula volcanic series. These volcanic flows are covered with a surface layer of volcanic ash derived silt sometimes intermixed with tuffaceous gravels, cobbles and boulders (weathered tuff) generally described as Kula Loam in the majority of the study area. These surface soils range in thickness from surface outcroppings of basaltic rock to more than 4 feet in some locations. The ash material is generally not suitable for pavement and foundation support, and for embankment fill.

### Subdivision Road Alignment

The proposed road network will generally traverse over volcanic-ash derived silt materials with varying amounts of gravels, cobbles and boulders. The thickness of the surface soil layer ranges from 1- to about 8-feet deep.



Plate 3 shows location of existing roads adjoining the proposed roads.

#### Road H

Road "H" is about 2,000 feet in length and connects Road E extension to existing Road F. Two test pits, TP-4 and TP-9 (Plates 8 and 13), were excavated along this road and encountered a basalt layer at about 4 feet and 2 feet below ground elevation, respectively.

#### Road J

Road J runs parallel to existing Road F and is located at the west side of subdivision, about 1900 feet in length, connecting Road E extension with existing Road D. Test pits 5 and 6 (Plates 9 and 10) encountered a basalt layer at about 2 feet and 4 feet below ground level, respectively.

#### Road M

Road M is located at the east side of subdivision about 2500 feet in length, connects to Road E at the north side of Road M and connects to Road A at the south side. Test pits 1 and 2 (Plates 5 and 6), both encountering basalt layers at about 4 feet below ground level.

#### Road E Extension

Road E extension is located at the west side of the subdivision and extends west from existing Road E approximately 600 feet. Test pit 3 (Plate 7) at intersection of Road E and H shows a basalt layer at 2 feet below ground level.

### **Borrow/Stockpile Site**

The designated borrow/stockpile site is located in an area about 1600 feet north of proposed Road J. This site was a former borrow area covered in PSC report dated March 2005 with ten borings and was used as a borrow area for engineered fill material during the construction of Keokea-Waiohuli Development in 2006-2008. Test pits 7 and 8 (Plates 11 and 12) were excavated in the stockpile area.

Currently, this area is a stockpile area about 10 feet high. Test Pits 7 and 8 were excavated to observe the type of material within the stockpile area. Test Pit 7 was dug at the southern corner below Waiohuli Detention Basin No. 1 and encountered 6.5 feet of gravelly silt over basalt. Test Pit 8 was dug on the northern corner of the Borrow/Stockpile site and encountered about 7 feet of silty gravel underlain by basalt. Based on the materials encountered at the test pits, the materials at the stockpile area are suitable for use as general fill. Any unsuitable materials, if encountered, should not be used as general fill.

## **DISCUSSION AND RECOMMENDATIONS**

### **General**

Our field exploration and visual mapping indicated that volcanic ash derived silt soil, also known as Kula Loam, generally cover the project site, occasionally with varying amounts of gravel, cobbles and boulders. Occasional basaltic rock outcrops are also common. The thickness of surface soil ranges from approximately a few inches to more than 8 feet in some locations



throughout the project site. These silt soils contain relatively high amounts of moisture. In a dry state, it loses cohesive strength and becomes prone to wind and water erosion. Our field exploration also showed that a large part of the soil overburden within the study area contained considerable amounts of coarse materials such as tuffaceous/basaltic gravels, cobbles and boulders. In some areas the coarse materials exceeded the fines. These overburden materials are underlain with fresh to moderately weathered andesitic basaltic flows known as Kula volcanic series.

### **Site Preparation**

At the onset of earthwork, the area within the contract grading limits should be cleared of trees, vegetation, debris, rubbish, boulders and other deleterious materials. These materials should be removed and properly disposed of off-site.

Areas to receive fill (such as at silt, silty gravels and gravelly silt areas) are to be over-excavated down 2 feet, and scarified to a depth of 6 inches. The subgrade should then be moisture conditioned to about 2 percent above optimum moisture content and recompacted to a minimum of 90 percent of its maximum dry density as determined in accordance with ASTM Test Method D1557-78. Soft or yielding areas should be over-excavated to expose firm soil surface and stabilized by backfilling with select material placed in 8-inch thick loose lifts and compacted to 90 percent of its maximum dry density.

### **Site Grading**

#### General

Currently, numerous boulders, rock outcrops and groves of haole koa trees abound at the site. The boulders may be stockpiled for future use, such as for rip rap, gravity walls, landscaping and other such purposes.

Materials used for fills placed within the upper 2 feet of the embankments should be select non-expansive material less than 3 inches in maximum dimension. If additional off site borrow soil is required, it should be tested and approved by a geotechnical engineer prior to its delivery to the project site.

#### Earthwork and Grading

Soft or loose unsuitable silt/volcanic ash soils encountered within the roadways should be stripped to a depth of at least 2 feet below grade or until stiff to very stiff or gravelly materials are encountered, and replaced with select granular material. Where the design subgrade encounters silty gravel, gravelly silt with cobbles, and boulders or weathered basalt, over excavation will not be necessary. After grading, scarification and proof rolling, the subbase and base course may be placed directly on top of these gravelly insitu materials. If the clinker gravel is covered in volcanic ash matrix, the use of a geofabric, such as Mirafi 140, is recommended to prevent contamination of the select borrow fill or subbase. Where fresh basalt rocks are encountered, the subbase course may be placed directly over the basalt rocks after grading.



### Over Excavation

Some of the existing upper silt/volcanic ash soils do not contain, or have very little percentage of coarse material and are not suitable for support of roadways, house pads and driveways. These soils are porous (susceptible to collapse/settle with increased water content), have a relatively low dry density, are prone to erosion, and should be over-excavated and replaced with select onsite granular soils or borrow. The silt/volcanic ash should be over excavated down to at least 2 feet or until stiff to very stiff or dense gravelly materials are encountered, and replaced with select granular materials.

### Fill Placement and Compaction

The fill should be placed in level lifts with a maximum loose thickness of 8-inches and compacted to a minimum of 90 percent at house pads and 95 percent at driveways. Each layer should be spread uniformly and processed to attain uniformity of the material and water content. Additional fill material should not be placed on any fill layer which has not been properly compacted and tested.

Lava tubes, if encountered, should be filled with select granular material.

### Boulder Fills

Many surface boulders were noted around the site. In addition, a large quantity of boulders will be generated from excavation operations. Boulders at the surface and in the excavations may be used in the deeper fills, provided that the following recommendations are followed:

1. Boulders must not be nested together and should be placed so that compaction equipment is able to suitably compact the soil around them. Boulder placement and compaction should be reviewed and monitored by a geotechnical engineer;
2. Boulders, 6" plus size rocks, can be used below 5 feet from finish grade or below utility lines whichever is at the greater depth; and
3. Care must be exercised to avoid placement of boulders in proposed utility alignments to prevent difficulty in later excavations of utility trenches.

### Slopes

Cut and fill slopes of 2H:1V (horizontal to vertical) may be used. This is based on the assumption that cut slopes have a high percentage of gravels and cobbles and the fill slopes will be constructed of select material.

Steeper cut slope ratios up to 1H:1V may be used in weathered basalt formations.

Fill slopes should be constructed by overfilling 2 to 3 feet, then cutting back to the design slope to obtain a well-compacted slope face.

Where the existing ground is steeper than five horizontal to one vertical (5H:1V), keying and benching are required to properly bond the new fill to the slope. The filling



operations should start at the lowest point and continue up in level compacted layers, as recommended above.

Water should be diverted away from the tops of slopes and slope planting should be implemented to minimize surface erosion.

### **Pavements**

We anticipate that asphaltic concrete pavements will be required for the roadways in the subdivision and while specific traffic loading has not been specified, we anticipate a medium vehicle loading for the project consisting primarily of passenger vehicles and delivery trucks. We have made our preliminary pavement design assuming the pavement subgrade soil will consist of compacted tuffaceous, basaltic/andesitic fill materials with a minimum CBR value of 25. The fill material within 2 feet below the pavement subgrade should be compacted to 95 percent relative compaction. Based on the above assumptions, we recommend the following flexible and rigid pavement sections be used for preliminary design purposes:

#### Flexible Pavement Section

2-Inches	Asphaltic Concrete
6-Inches	Aggregate Base Course
<u>6-Inches</u>	<u>Aggregate Subbase Course</u>
14-Inches	Total Pavement thickness on a minimum of 2 feet of properly compacted select borrow material or insitu basaltic/andesitic rock formation.

#### Rigid Pavement Section

6-Inches	Concrete
<u>6-Inches</u>	<u>Aggregate Subbase Course</u>
12-Inches	Total Thickness

The base course should be compacted to 95 percent of its maximum dry density as determined in accordance with ASTM Test Method D 1557-91.

CBR and density test and/or field observations should be performed on the actual subgrade used for the road construction to confirm the adequacy of the above pavement sections. The recommended pavement sections assume that adequate drainage will be provided.

### **Service Roads**

Surface topping will be 3" minus select material. Where dense rocks and cobbles are present, the select material will be placed on the rock/cobble surface. If silt is present on dense rocks and cobbles, the silt should be cleaned from the rocks and cobbles. At silt areas, roadway should be cleared to 12" below service road finish grade and select material placed to 12" thickness. Select material should be rolled to provide a compacted smooth surface.



### **Road Drainage**

Subdrains should be provided where there is a possibility that runoff from rainfall or irrigation could saturate the subsurface soils. Exposed surface soils should be protected from erosive runoff by providing surface drains, diversion berms and other flood control devices. The access of water into the roadbed soil under the pavement should be minimized in order to stabilize the moisture content as by incorporating water inhibiting membrane into the design as described in Item 1.21.1-d of the DOT Pavement Design Manual (Rev. March 2002).

### **Utility Trenches**

We envision that utility lines will be required for the proposed subdivision road project. A granular bedding consisting of 6 inches of No. 3B Fine gravel is recommended under the pipes. Free draining granular materials, such as No. 3B Fine gravel (ASTM C 33, No. 67 gradation), should also be used for the trench backfill, up to about 12 inches above the pipes to provide adequate support around the pipes and compaction of the No. 3B fine gravel should be lowered to reduce potential for damage to the pipes.

The upper portion of the trench backfill from 1-foot above the pipes to the top of the subgrade or finished grade should consist of select granular material. The backfill should be moisture conditioned, placed in maximum 8-inch, level, loose lifts and mechanically compacted to not less than 90 percent relative compaction to reduce the potential for future ground subsidence. Where trenches are below pavement areas, the upper 2 feet of the trench backfill below the pavement finish grade should be compacted to 95 percent relative compaction.

### **Design Review**

Drawings and specifications for the proposed construction should be submitted to PSC Consultants, LLC, as geotechnical consultant, for review and written comments prior to construction. This review is needed to evaluate adherence of the plans to the recommendations provided herein. If this review is not made, PSC cannot assume responsibility for the interpretations made by others or errors resulting there from.

### **Construction Observation and Testing**

The recommendations provided in this report are based on subsurface conditions disclosed by widely spaced exploratory borings and excavations. The geotechnical consultant should check the interpolated subsurface conditions during construction. The geotechnical consultant should attend the pre-construction meeting between the contractors and owners/designers.

During grading, the geotechnical consultant should;

- ❖ Observe excavation, placement and compaction of engineered fill for the road pavement structures;
- ❖ Observe preparation and compaction of aggregate base for asphalt/concrete pavement and flatwork subgrade;
- ❖ Check and test any imported materials prior to their use as fill;



- ❖ Perform field tests to evaluate fill compaction;
- ❖ Observe subgrade conditions at the bottom of pipeline trenches;
- ❖ Observe fill placement and compaction around the pipes in the utility trenches; and
- ❖ Observe the fine-grading and exterior drainage improvements constructed around the finished structures.

The recommendations provided in this report assume that PSC will be retained as the geotechnical consultant during the construction phase of the project. If another geotechnical consultant is selected, we request that the selected consultant provide a letter to the architect/designer and owner/client (with a copy to PSC) indicating that they fully understand our recommendations and that they are in full agreement with the recommendations contained in this report. If deviations from soil conditions and recommendations presented in this report occur, they should provide amended recommendations as new geotechnical consultants of record for the project.

### **LIMITATIONS**

The analyses and recommendations submitted in this report are based, in part, upon information obtained from field test pits and visual observations. Variations of subsoil conditions between the test pits may occur, and the nature and extent of these variations may not become evident until construction is underway. If variations then appear evident, it will be necessary to reevaluate the recommendations provided in this report.

The test pit locations were selected by PSC Consultants LLC, by taping existing features and structures shown on the plans available. The physical locations and elevations should be considered accurate only to the degree implied by the method used.

This report has been prepared for the exclusive use of Community Planning and Engineering, Inc., their client and their consultants for specific application to the proposed Keokea-Waiohuli Development Phases 1, 2 and 4A in accordance with generally accepted geotechnical engineering principles and practices. No warranty is expressed or implied.

This report has been prepared solely for the purpose of assisting Community Planning and Engineering, Inc. in the design evaluation of the proposed project. Therefore, it may not contain sufficient data or proper information to serve as the basis for preparation of construction documents and cost estimates for a roadway or lot construction. A contractor wishing to bid on this project is urged to retain a competent geotechnical engineer to assist in the interpretation of this report and/or in the performance of additional site-specific exploration for bid estimating purposes.



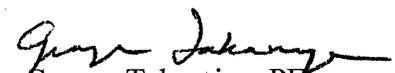
The owner/client should be aware that unanticipated soil/rock conditions are commonly encountered. Unforeseen soil/rock conditions, such as soft deposits, hard layers or cavities, may occur in localized areas and may require probing or corrections in the field (which may result in construction delays) to attain a properly constructed project. Therefore, a sufficient contingency fund is recommended to accommodate these extra costs.

The findings in this report are valid as of the present date. However, changes in the soil conditions can occur with the passage of time whether they are due to natural processes or to the works of man on this or adjacent properties. In addition, changes in applicable or appropriate standards occur, whether they result from legislation, or from the broadening of knowledge. Accordingly, the findings in this report might be invalidated, wholly or partially, by changes outside of our control. Therefore, this report is subject to review by the controlling agencies and is valid for a period of 2 years.

Respectfully submitted,  
PSC CONSULTANTS, LLC

  
Derrick Chan  
Project Engineer



  
George Takamiya, PE  
Senior Engineer

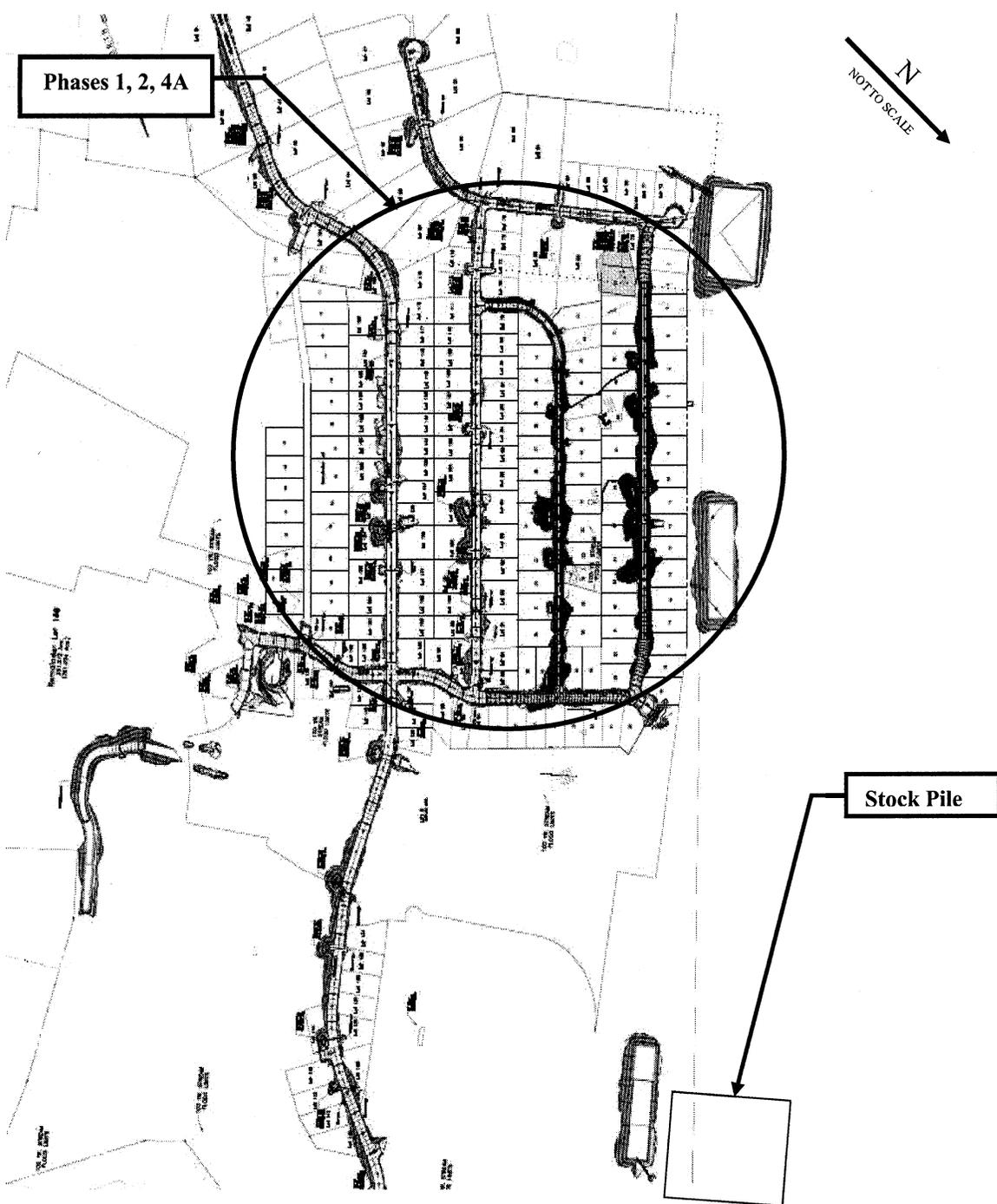
This work was prepared by  
me or under my supervision  
(License Expires April 2014)

DC/GT/PSC:lk

Enclosures:	Plate 1	Project Location Map
	Plate 2	Site Plan
	Plate 3	Site Plan - Roads
	Plate 4	Site Plan - Borrow/Stockpile Site
	Plates 5 through 13	Log of Boring (TP1 through TP9)
	Plate 14	Unified Soil Classification System
	Plate 15	Rock Classification System
	Plates 16 through 19	Compaction Test Results – ASTM D1557
	Plate 20	California Bearing Ratio – ASTM D1883
	Plates 20A through 20C	California Bearing Ratio – ASTM D1883-94
	Plate 21	Grain Size Distribution
	Plates 22 through 25	Sieve Analysis – ASTM D422-63
	Plate 26	Atterberg Limits Data







Phases 1, 2, 4A

N  
NOT TO SCALE

Stock Pile

Reference: CPE Site plan of Phases 1, 2, 4A

**SITE PLAN**

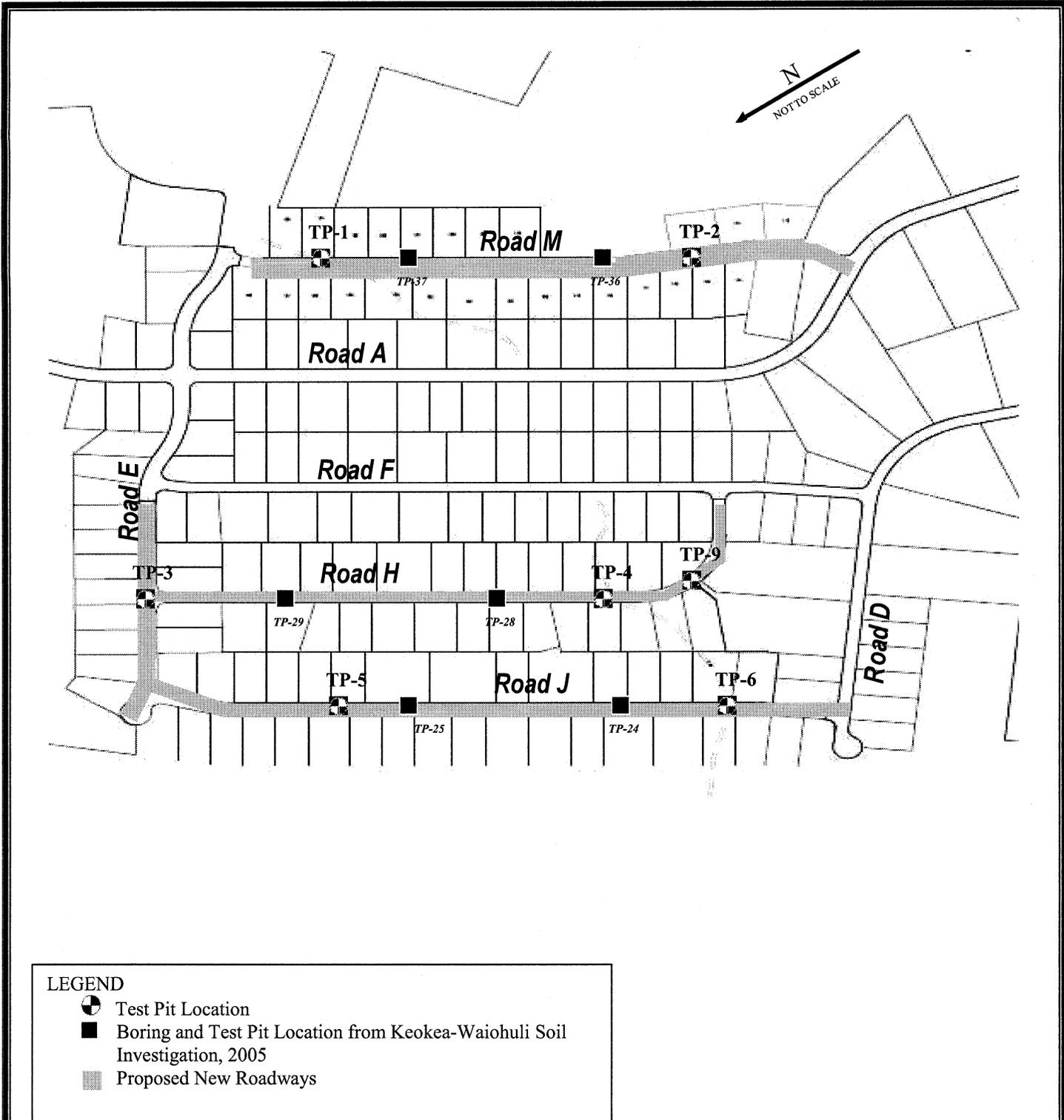


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SOILS, FOUNDATION, AND GEOLOGICAL ENGINEERS

Keokea-Waiohuli Subdivision Phases 1, 2 and 4A  
Kula, Makawao, Maui, Hawaii

DATE: April 2013

PROJECT NO. 212302.20



**LEGEND**

-  Test Pit Location
-  Boring and Test Pit Location from Keokea-Waiohuli Soil Investigation, 2005
-  Proposed New Roadways

Reference: CPE Site plan of Phases 1, 2, 4A

**SITE PLAN - ROADS**

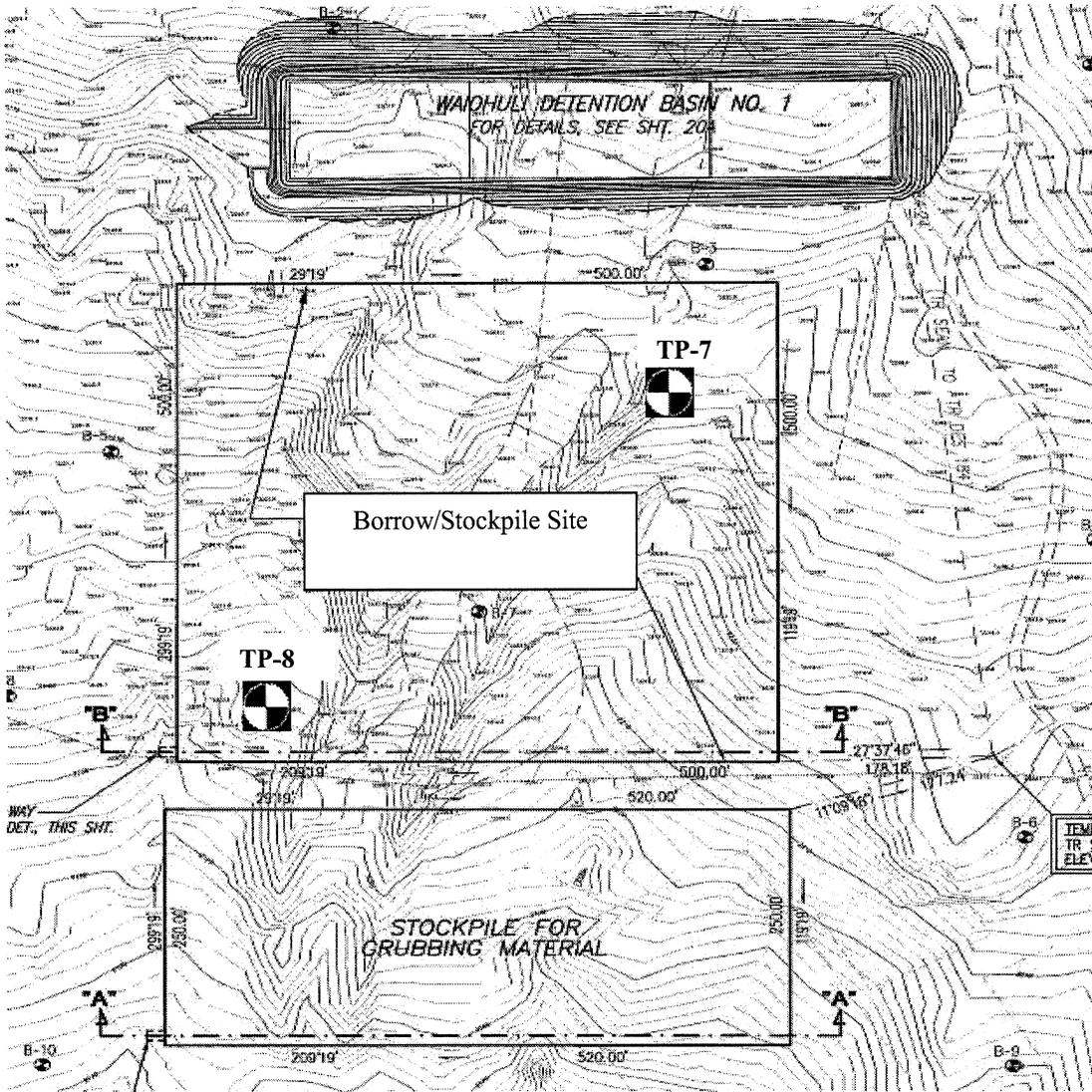


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Kula, Makawao, Maui, Hawaii

DATE: April 2013

PROJECT NO. 212302.20



LEGEND  
 Test Pit Location

Reference: Construction Plans for Keokea-Waiohuli Development Phase 1

## SITE PLAN - BORROW/STOCKPILE SITE



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DATE: April 2013

PROJECT NO. 212302.20

BORING LOCATION: See Plate 3	DRILLER: Ed Gaynor	<b>BORING TP-1</b>
BORING ELEVATION (ft):	LOGGED BY: DSC	
DATE (S) DRILLED: 03/08/13	TYPE RIG: Bobcat 325	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLER TYPE	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
MD/CBR	83	32.7				Grab 1-1	1			Dry Vegetation, tall grass
							2		MH	SILT, dark brown, trace of clay, rootlets, basaltic gravel and cobbles, moist
							4			BASALT, dark gray, moderately weathered, strong
							5			Test pit terminated at about 4.5 ft (Refusal). Ground water was not encountered.
							6			
							7			
							8			

**SAMPLE TYPE**

D&M - Dames & Moore    SPT - Standard Penetration  
 CB - Core Barrel        SH - Shelby Tube  
 AUG - Auger Cuttings    NR - No Recovery

**OTHER LABORATORY TESTS**

MD - Moisture/Density        UC - Unconfined Compression  
 CON - Consolidation Test    SG - Specific Gravity  
 PI - Atterberg Limits        SA - Sieve Analysis

**LOG OF BORING**



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Keokea-Waiohuli Subdivision Phases 1, 2 and 4A  
 Kula, Makawao, Maui, Hawaii

DATE: April 2013

PROJECT NO.: 212302.20

210301 MAMALAOHOA RD W/ROD A. 212302.20 CPE KEOKEA-WAIOHULI PH. 1, 2, 4A, GPJ TEST PIT, GDT 4/4/13

BORING LOCATION: See Plate 3	DRILLER: Ed Gaynor	<b>BORING TP-2</b>
BORING ELEVATION (ft):	LOGGED BY: DSC	
DATE (S) DRILLED: 03/07/13	TYPE RIG: Bobcat 325	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLER TYPE	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
SAPI	7.4					GRAB 2-1	1		GP GM	Dry Vegetation, Tall Grass
							2			Poorly Graded GRAVEL with SILT and SAND, gray lava gravel, cobbles and boulders with silt matrix, trace roots, dark brown, moist
							3			BASALT, dark gray, strong, weathered
							4		Test pit terminated at about 3.5 ft (Refusal). Ground water was not encountered.	
							5			
							6			
							7			
							8			

<b>SAMPLE TYPE</b>	<b>OTHER LABORATORY TESTS</b>
D&M - Dames & Moore    SPT - Standard Penetration    MD - Moisture/Density    UC - Unconfined Compression	
CB - Core Barrel    SH - Shelby Tube    CON - Consolidation Test    SG - Specific Gravity	
AUG - Auger Cuttings    NR - No Recovery    PI - Atterberg Limits    SA - Sieve Analysis	

## LOG OF BORING

	<b>Keokea-Waiohuli Subdivision Phases 1, 2 and 4A</b> <b>Kula, Makawao, Maui, Hawaii</b>	
	DATE: April 2013	PROJECT NO.: 212302.20

210301 MAMALAOHOA RD W/ROD A. 212302.20 CPE KEOKEA-WAIOHULI PH. 1, 2, 4A.GPJ TEST PIT.GDT 4/4/13

BORING LOCATION: See Plate 3	DRILLER: Ed Gaynor	<b>BORING TP-3</b>
BORING ELEVATION (ft):	LOGGED BY: DSC	
DATE (S) DRILLED: 03/07/13	TYPE RIG: Bobcat 325	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLER TYPE	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
MD/CBR	96	14.8				GRAB 3-1	1		GM	Heavy Vegetation Silty GRAVEL, dark brown, very stiff, 1"-3" subangular vesticate gray basalt, boulders, moist
							2			BASALT Test pit terminated at about 2 ft (Refusal). Ground water was not encountered.
							3			
							4			
							5			
							6			
							7			
							8			

<b>SAMPLE TYPE</b>		<b>OTHER LABORATORY TESTS</b>	
D&M - Dames & Moore	SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	NR - No Recovery	PI - Atterberg Limits	SA - Sieve Analysis

## LOG OF BORING



**CONSULTANTS, LLC**  
SOILS, FOUNDATION, AND GEOLOGICAL ENGINEERS

Keokea-Waiohuli Subdivision Phases 1, 2 and 4A  
Kula, Makawao, Maui, Hawaii

DATE: April 2013	PROJECT NO.: 212302.20
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210301 MAMALAOHUA RD W/ROD A. 212302.20 CPE KEOKEA-WAIOHULI PH. 1, 2, 4A.GPJ TEST PIT.GDT 4/4/13

BORING LOCATION: See Plate 3	DRILLER: Ed Gaynor	<b>BORING TP-4</b>
BORING ELEVATION (ft):	LOGGED BY: DSC	
DATE (S) DRILLED: 03/08/13	TYPE RIG: Bobcat 325	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLER TYPE	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
SAPI		3.2				GRAB 4-1	1		GW GM	Light Brush, bushes Well-Graded GRAVEL with SILT and SAND, brown, boulders, cobbles, gray, strong, trace rootlets, trace red clay, dry
							2			BASALT Test pit terminated at about 1.75 ft (Refusal). Ground water was not encountered.
							3			
							4			
							5			
							6			
							7			
							8			

<b>SAMPLE TYPE</b>	<b>OTHER LABORATORY TESTS</b>
D&M - Dames & Moore	SPT - Standard Penetration
CB - Core Barrel	SH - Shelby Tube
AUG - Auger Cuttings	NR - No Recovery
	MD - Moisture/Density
	CON - Consolidation Test
	PI - Atterberg Limits
	UC - Unconfined Compression
	SG - Specific Gravity
	SA - Sieve Analysis

**LOG OF BORING**

	<b>Keokea-Waiohuli Subdivision Phases 1, 2 and 4A</b> Kula, Makawao, Maui, Hawaii	
	DATE: April 2013	PROJECT NO.: 212302.20

210301 MAMALAOHOA RD WIRQD A. 212302.20 CPE KEOKEA-WAIOHULI PH. 1, 2, 4A, GPJ TEST PIT, GDT 4/4/13

BORING LOCATION: See Plate 3	DRILLER: Ed Gaynor	<b>BORING TP-5</b>
BORING ELEVATION (ft):	LOGGED BY: DSC	
DATE (S) DRILLED: 03/08/13	TYPE RIG: Bobcat 325	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLER TYPE	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
							0			DRY GRASS VEGETATION
							1		ML SM	Sandy SILT, brown, soft, with gravel cobbles and boulders, dry
						2				
SA/PI		15.9				3	GRAB 5-1			
							4			BASALT, vesticate, strong, gray
							5			Test pit terminated at about 4.5 ft (Refusal). Ground water was not encountered.
							6			
							7			
							8			

<b>SAMPLE TYPE</b>		<b>OTHER LABORATORY TESTS</b>	
D&M - Dames & Moore	SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	NR - No Recovery	PI - Atterberg Limits	SA - Sieve Analysis

**LOG OF BORING**

	<b>Keokea-Waiohuli Subdivision Phases 1, 2 and 4A</b> <b>Kula, Makawao, Maui, Hawaii</b>	
	DATE: April 2013	PROJECT NO.: 212302.20

210301 MAMALAOHOA RD W/ROD A. 212302.20 CPE KEOKEA-WAIOHULI PH. 1, 2, 4A.GPJ TEST PIT.GDT 4/4/13

BORING LOCATION: See Plate 3	DRILLER: Ed Gaynor	<b>BORING TP-6</b>
BORING ELEVATION (ft):	LOGGED BY: DSC	
DATE (S) DRILLED: 03/08/13	TYPE RIG: Bobcat 325	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLER TYPE	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
										DRY VEGETATION GRASS
MD/CBR	73	37.0				GRAB 6-1	1		MH	SILT, brown, stiff, trace rootlets and clay, with basalt cobbles and boulders, dry
							2			
							3			
							4			BASALT, strong, weathered, gray, dry
							5			Test pit terminated at about 4 ft (Refusal). Ground water was not encountered.
							6			
							7			
							8			

<b>SAMPLE TYPE</b>	<b>OTHER LABORATORY TESTS</b>
D&M - Dames & Moore    SPT - Standard Penetration    MD - Moisture/Density    UC - Unconfined Compression	
CB - Core Barrel    SH - Shelby Tube    CON - Consolidation Test    SG - Specific Gravity	
AUG - Auger Cuttings    NR - No Recovery    PI - Atterberg Limits    SA - Sieve Analysis	

## LOG OF BORING

	Keokea-Waiohuli Subdivision Phases 1, 2 and 4A Kula, Makawao, Maui, Hawaii	
	DATE: April 2013	PROJECT NO.: 212302.20

210301 MAMALAOHOA RD W/ROD A. 212302.20 CPE KEOKEA-WAIOHULI PH. 1, 2, 4A.GPJ TEST PIT.GDT 4/4/13

BORING LOCATION: See Plate 4	DRILLER: Ed Gaynor	<b>BORING TP-7</b>
BORING ELEVATION (ft):	LOGGED BY: DSC	
DATE (S) DRILLED: 03/07/13	TYPE RIG: Bobcat 325	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLER TYPE	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
							0			OVERGROWN VEGETATION
							1			Gravelly SILT, brown, medium stiff, with basalt, boulders, trace of clay and rootlets, dry (volcanic ash)
MD/CBR	99	21.2				GRAB 7-1	2			
							3		ML	
							4			
							5			
							6			
							7			Test pit terminated at about 6.5 ft (Refusal). Ground water was not encountered.
							8			

<b>SAMPLE TYPE</b>	<b>OTHER LABORATORY TESTS</b>
D&M - Dames & Moore	SPT - Standard Penetration
CB - Core Barrel	SH - Shelby Tube
AUG - Auger Cuttings	NR - No Recovery
	MD - Moisture/Density
	CON - Consolidation Test
	PI - Atterberg Limits
	UC - Unconfined Compression
	SG - Specific Gravity
	SA - Sieve Analysis

**LOG OF BORING**

	<b>Keokea-Waiohuli Subdivision Phases 1, 2 and 4A</b> <b>Kula, Makawao, Maui, Hawaii</b>	
	DATE: April 2013	PROJECT NO.: 212302.20

210301 MAMALAOHOA RD W/RQD A. 212302.20 CPE KEOKEA-WAIOHULI PH. 1, 2, 4A.GPJ TEST PIT.GDT 4/4/13

BORING LOCATION: See Plate 4	DRILLER: Ed Gaynor	<b>BORING TP-8</b>
BORING ELEVATION (ft):	LOGGED BY: DSC	
DATE (S) DRILLED: 03/07/13	TYPE RIG: Bobcat 325	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLER TYPE	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
							1			GRASSY BRUSH
							2			Silty GRAVEL with SAND, dark brown silt, stiff, gray subangular basalt, moist
SA/PI		7.4				GRAB 8-1	3			
							4		GM	
							5			
							6			
							7			BASALT
							8			Test pit terminated at about 7 ft (Refusal). Ground water was not encountered.

**SAMPLE TYPE**

D&M - Dames & Moore    SPT - Standard Penetration  
 CB - Core Barrel            SH - Shelby Tube  
 AUG - Auger Cuttings      NR - No Recovery

**OTHER LABORATORY TESTS**

MD - Moisture/Density      UC - Unconfined Compression  
 CON - Consolidation Test    SG - Specific Gravity  
 PI - Atterberg Limits        SA - Sieve Analysis

**LOG OF BORING**

Keokea-Waiohuli Subdivision Phases 1, 2 and 4A  
 Kula, Makawao, Maui, Hawaii



**CONSULTANTS, LLC**

SOILS, FOUNDATION, AND GEOLOGICAL ENGINEERS

DATE: April 2013

PROJECT NO.: 212302.20

210301 MAMALAOHOA RD W/IRQD A. 212302.20 CPE KEOKEA-WAIOHULI PH. 1, 2, 4A, GPJ TEST PIT, GDT 4/4/13

BORING LOCATION: See Plate 3	DRILLER: Ed Gaynor	<b>BORING TP-9</b>
BORING ELEVATION (ft):	LOGGED BY: DSC	
DATE (S) DRILLED: 03/08/13	TYPE RIG: Bobcat 325	

OTHER LAB TESTS	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (%)	CORE RECOVERY (%)	R.Q.D. (%)	NUMBER OF BLOWS/12"	SAMPLER TYPE	DEPTH IN FEET	GRAPHIC SYMBOL	U.S.C.S.	GEOTECHNICAL DESCRIPTION
							1		MH	DRY VEGETATION GRASS Clayey SILT, brown, soft/stiff, trace rootlets, moist
						GRAB 9-1	2		GP	BASALT Test pit terminated at about 2 ft (Refusal). Ground water was not encountered.
							3			
							4			
							5			
							6			
							7			
							8			

210301 MAMALAOHOA RD W/ROAD A. 212302.20 CPE KEOKEA-WAIOHULI PH. 1, 2, 4A GPJ TEST PIT.GDT 4/4/13

<b>SAMPLE TYPE</b>		<b>OTHER LABORATORY TESTS</b>	
D&M - Dames & Moore	SPT - Standard Penetration	MD - Moisture/Density	UC - Unconfined Compression
CB - Core Barrel	SH - Shelby Tube	CON - Consolidation Test	SG - Specific Gravity
AUG - Auger Cuttings	NR - No Recovery	PI - Atterberg Limits	SA - Sieve Analysis

**LOG OF BORING**

	Keokea-Waiohuli Subdivision Phases 1, 2 and 4A Kula, Makawao, Maui, Hawaii	
	DATE: April 2013	PROJECT NO.: 212302.20

# SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
<b>COARSE GRAINED SOILS</b>  MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	<b>GRAVEL AND GRAVELLY SOILS</b>  MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	<b>CLEAN GRAVELS</b>  (LITTLE OR NO FINES)		<b>GW</b>	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		<b>GRAVELS WITH FINES</b>  (APPRECIABLE AMOUNT OF FINES)		<b>GP</b>	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		<b>GRAVELS WITH FINES</b>  (APPRECIABLE AMOUNT OF FINES)		<b>GM</b>	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
		<b>GRAVELS WITH FINES</b>  (APPRECIABLE AMOUNT OF FINES)		<b>GC</b>	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	<b>SAND AND SANDY SOILS</b>  50% OR MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	<b>CLEAN SANDS</b>  (LITTLE OR NO FINES)		<b>SW</b>	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		<b>CLEAN SANDS</b>  (LITTLE OR NO FINES)		<b>SP</b>	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
<b>SANDS WITH FINES</b>  (APPRECIABLE AMOUNT OF FINES)			<b>SM</b>	SILTY SANDS, SAND - SILT MIXTURES	
<b>SANDS WITH FINES</b>  (APPRECIABLE AMOUNT OF FINES)		<b>SC</b>	CLAYEY SANDS, SAND - CLAY MIXTURES		
<b>FINE GRAINED SOILS</b>  50% OR MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	<b>SILTS AND CLAYS</b>  LIQUID LIMIT LESS THAN 50		<b>ML</b>	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY	
			<b>CL</b>	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS	
			<b>OL</b>	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	
	<b>SILTS AND CLAYS</b>  LIQUID LIMIT GREATER THAN OR EQUAL TO 50		<b>MH</b>	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS	
			<b>CH</b>	INORGANIC CLAYS OF HIGH PLASTICITY	
			<b>OH</b>	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS	
<b>HIGHLY ORGANIC SOILS</b>				<b>PT</b>	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

## UNIFIED SOIL CLASSIFICATION SYSTEM



**CONSULTANTS, LLC**  
SOILS, FOUNDATION, AND GEOLOGICAL ENGINEERS

Keokea-Waiohuli Subdivision Phases 1, 2 and 4A  
Kula, Makawao, Maui, Hawaii

DATE: April 2013

PROJECT NO. 212302.20

I. CONSOLIDATION OF SEDIMENTARY ROCKS; usually determined from unweathered samples. Largely dependent on cementation.

- U = unconsolidated
- P = poorly consolidated
- M = moderately consolidated
- W = well consolidated

II. BEDDING OF SEDIMENTARY ROCKS

Splitting Property	Thickness	Stratification
Massive	Greater than 4.0 ft.	Very Thick-Bedded
Blocky	2.0 to 4.0 ft.	Thick-Bedded
Slabby	0.2 to 2.0 ft.	Thin-Bedded
Flaggy	0.05 to 0.2 ft.	Very Thin-Bedded
Shaly or Platy	0.01 to 0.05 ft.	Laminated
Papery	Less than 0.01 ft.	Thinly Laminated

III. FRACTURING

Intensity	Size of Pieces in Feet
Very Little Fractured	Greater than 4.0
Occasionally Fractured	1.0 to 4.0
Moderately Fractured	0.5 to 1.0
Closely Fractured	0.1 to 0.5
Intensely Fractured	0.05 to 0.1
Crushed	Less than 0.05

IV. HARDNESS

1. Soft – reserved for plastic material alone.
2. Low Hardness – can be gouged deeply or carved easily with a knife blade.
3. Moderately Hard – can be readily scratched by a knife blade; scratch leaves a heavy trace of dust and is readily visible after the powder has been blown away.
4. Hard – can be scratched with difficulty; scratch produces little powder and is often faintly visible.
5. Very Hard – cannot be scratched with a knife blade; leaves a metallic streak.

V. STRENGTH

1. Plastic or very low strength.
2. Friable – crumbles easily by rubbing with fingers.
3. Weak – an unfractured specimen of such material will crumble under light hammer blows.
4. Moderately Strong – specimen will withstand a few heavy hammer blows before breaking.
5. Strong – specimen will withstand a few heavy ringing hammer blows and will yield with difficulty only dust and small flying fragments.
6. Very Strong – specimen will resist heavy ringing hammer blows and will yield with difficulty only dust and small flying fragments.

VI. WEATHERING – The physical and chemical disintegration and decomposition of rocks and minerals by natural processes such as oxidation, reduction, hydration, solution, carbonation and freezing and thawing.

- D. Deep – moderate to complete mineral decomposition; extensive disintegration; deep and thorough discoloration; many fractures, all extensively coated or filled with oxides, carbonates and/or clay or silt.
- M. Moderate – slight change or partial decomposition of minerals; little disintegration; cementation little to unaffected; moderate to occasionally intense discoloration; moderately coated fractures.
- L. Little – no megascopic decomposition of minerals; little or no effect on normal cementation; slight and intermittent, or localized discoloration; few stains on fracture surfaces.
- F. Fresh – unaffected by weathering agents; no disintegration or discoloration; fractures usually less numerous than joints.

## ROCK CLASSIFICATION SYSTEM



**CONSULTANTS, LLC**  
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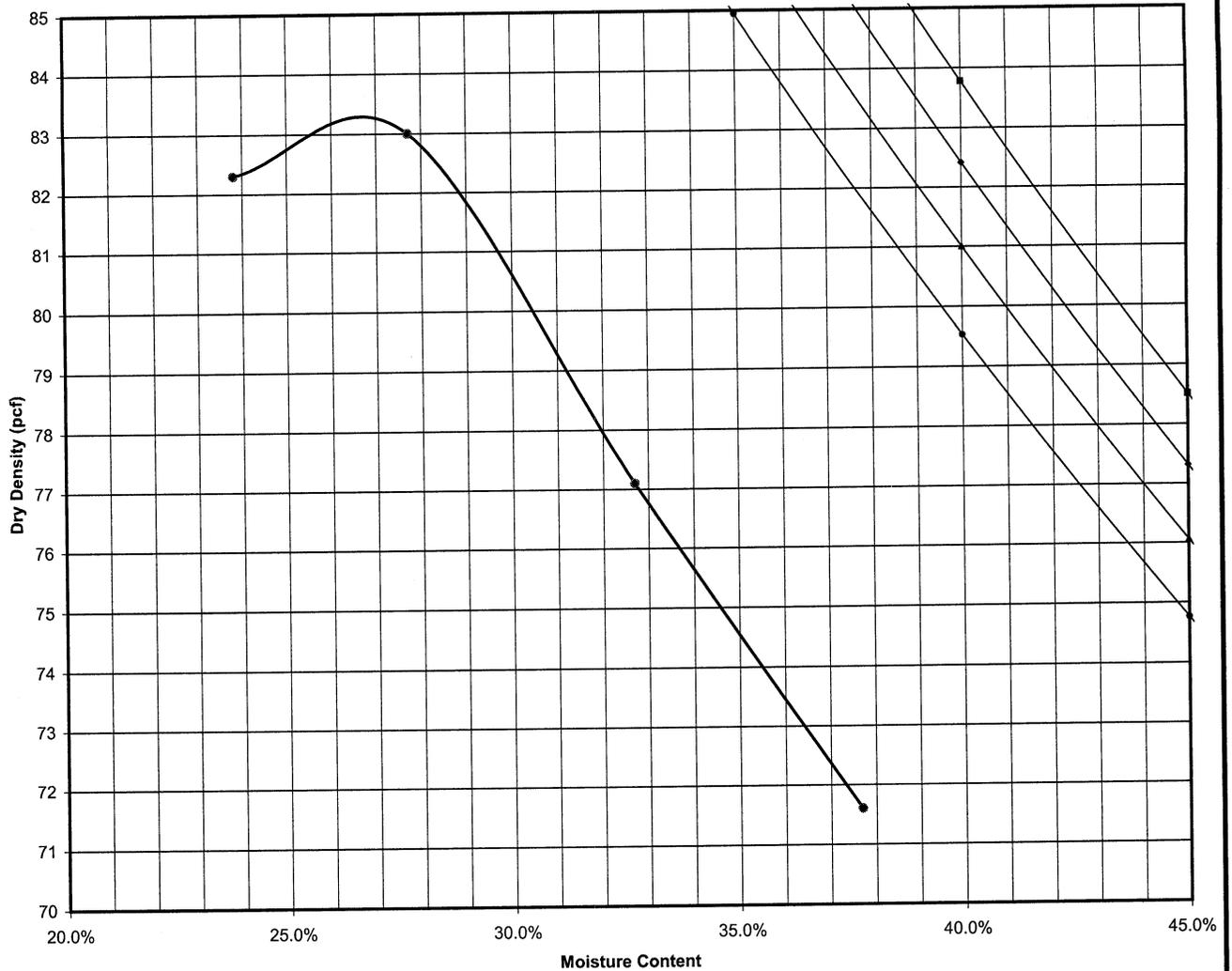
**Keokea-Waiohuli Subdivision Phases 1, 2 and 4A**  
**Kula, Makawao, Maui, Hawaii**

DATE: April 2013

PROJECT NO. 212302.20

Curves for  
100%  
saturation

### MOISTURE-DENSITY RELATIONSHIP



Sample Source: 1-1(TP-1)/Road M

Description: Dark Brown (MH) Silt w/ Basaltic Gravel

	Test Point 1	Test Point 2	Test Point 3	Test Point 4
Wet Density (pcf)	101.86	105.99	102.4	98.54
Moisture Content	23.80%	27.70%	32.70%	37.70%
Dry Density (pcf)	82.30	83.00	77.10	71.60

Maximum Dry Density (pcf): 83.4  
 Optimum Moisture Content (%) : 27  
 Test Method: ASTM D-1557

Atterberg Limits

LL PL PI

### COMPACTION TEST RESULTS

ASTM D-1557



**PSC Consultants, LLC**

SOILS, FOUNDATION, AND GEOLOGICAL ENGINEERS

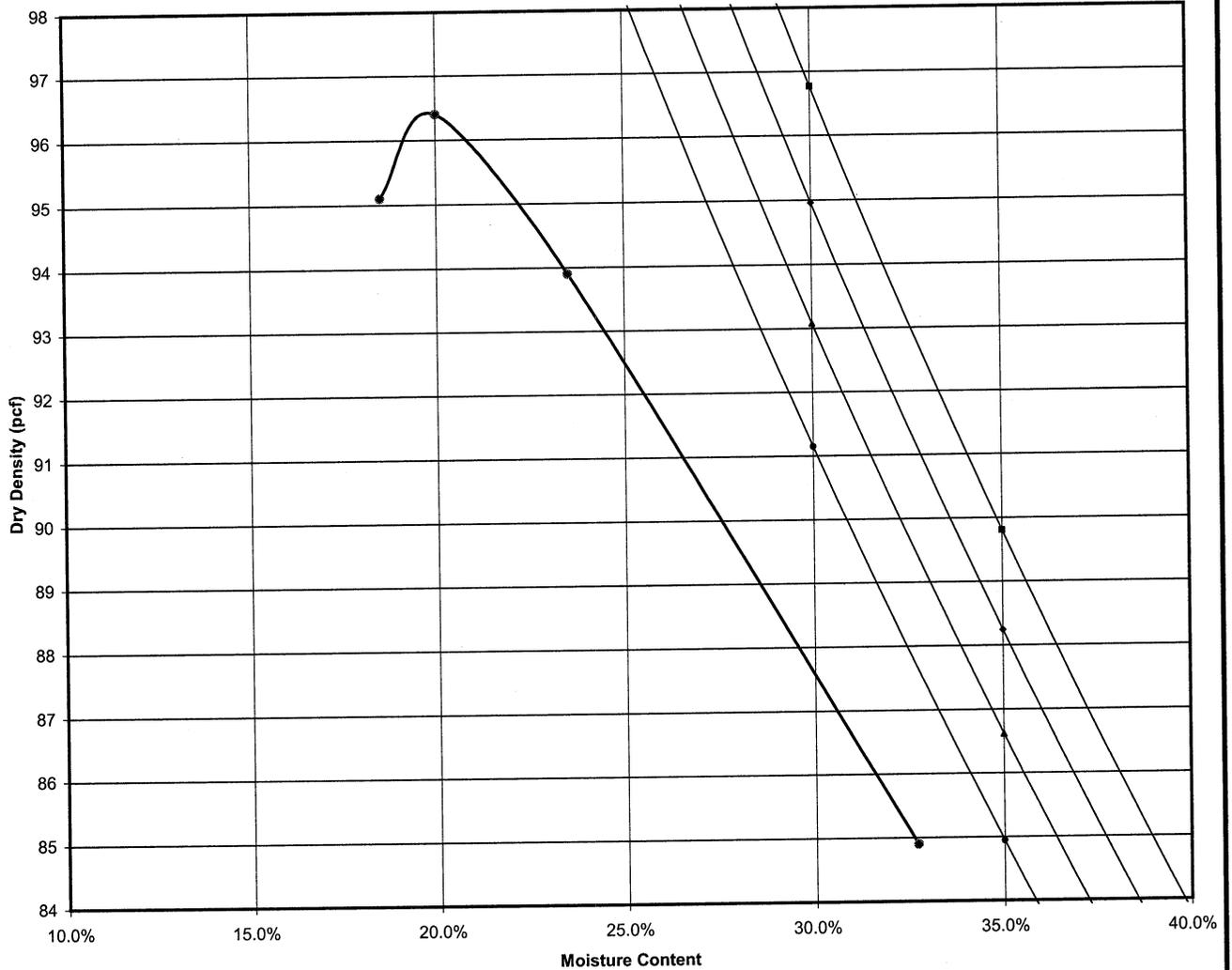
Keokea-Waiohuli Subdivision Phases 1, 2 and 4A  
 Kula, Makawao, Maui, Hawaii

Date: April 2013

Project No. 212302.20

Curves for  
100%  
saturation

### MOISTURE-DENSITY RELATIONSHIP



Sample Source: 3-1 (TP-3)/Road E/RoadH

Description: Dark Brown (GM) Silty GRAVEL

	Test Point 1	Test Point 2	Test Point 3	Test Point 4
Wet Density (pcf)	112.65	115.71	115.98	112.65
Moisture Content	18.50%	20.00%	23.50%	32.70%
Dry Density (pcf)	95.10	96.40	93.90	84.90

Maximum Dry Density (pcf): 96.4  
 Optimum Moisture Content (%): 20  
 Test Method: ASTM D-1557

Atterberg Limits

LL PL PI

### COMPACTION TEST RESULTS

ASTM D-1557



**PSC Consultants, LLC**

SOILS, FOUNDATION, AND GEOLOGICAL ENGINEERS

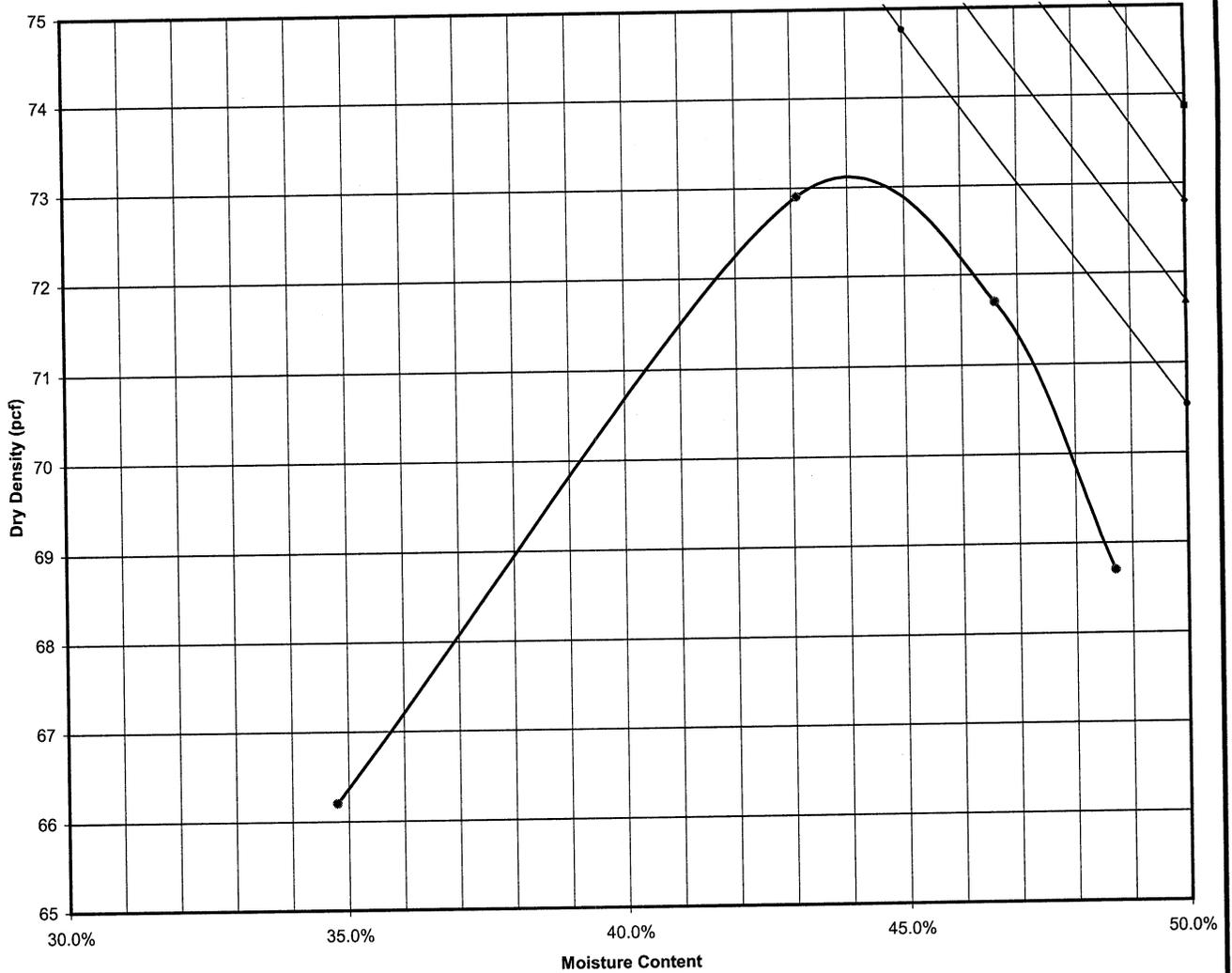
Keokea-Waiohuli Subdivision Phases 1, 2 and 4A  
 Kula, Makawao, Maui, Hawaii

Date: April 2013

Project No. 212302.20

Curves for  
100%  
saturation

### MOISTURE-DENSITY RELATIONSHIP



Sample Source: 6-1 (TP-6)/Road J

Description: Brown (MH) SILT w/ Basalt Cobbles

	Test Point 1	Test Point 2	Test Point 3	Test Point 4
Wet Density (pcf)	89.23	104.39	105.05	102.13
Moisture Content	34.80%	43.10%	46.60%	48.70%
Dry Density (pcf)	66.20	72.90	71.70	68.70

Maximum Dry Density (pcf): 73  
 Optimum Moisture Content (%): 44  
 Test Method: ASTM D-1557

Atterberg Limits

LL PL PI

### COMPACTION TEST RESULTS

ASTM D-1557



**PSC Consultants, LLC**

SOILS, FOUNDATION, AND GEOLOGICAL ENGINEERS

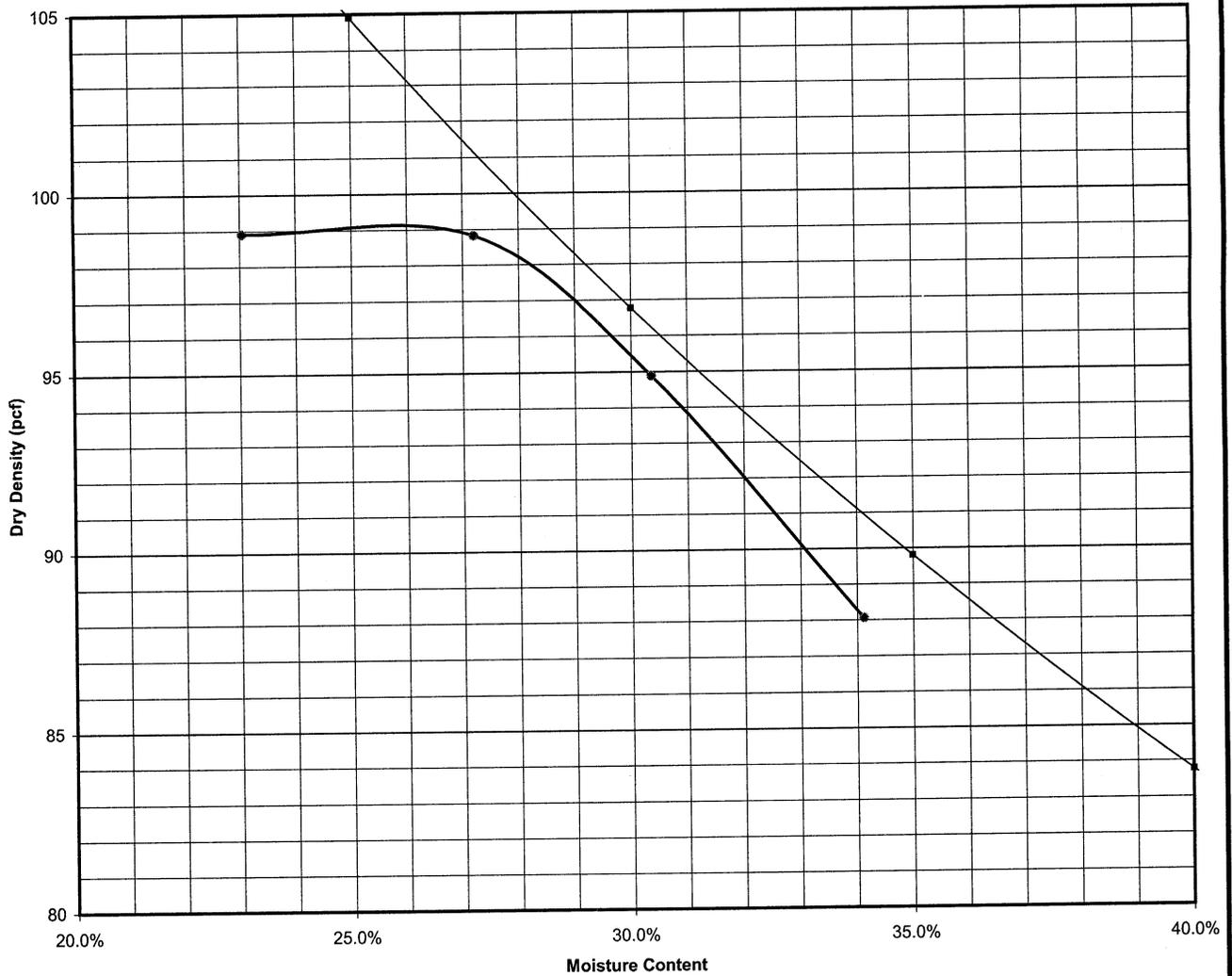
Keokea-Waiohuli Subdivision Phases 1, 2 and 4A  
 Kula, Makawao, Maui, Hawaii

Date: April 2013

Project No. 212302.20

Curves for  
100%  
saturation

### MOISTURE-DENSITY RELATIONSHIP



Sample Source: 7-1 (TP-7)/Stock Pile

Description: Brown (MH) Gravelly SILT

	Test Point 1	Test Point 2	Test Point 3	Test Point 4
Wet Density (pcf)	121.7	125.7	123.7	118.1
Moisture Content	23.04%	27.20%	30.36%	34.12%
Dry Density (pcf)	98.91	98.82	94.89	88.06

Maximum Dry Density (pcf): 99  
 Optimum Moisture Content (%): 23  
 Test Method: ASTM D-1557

Atterberg Limits

LL PL PI

### COMPACTION TEST RESULTS

ASTM D-1557



**PSC Consultants, LLC**

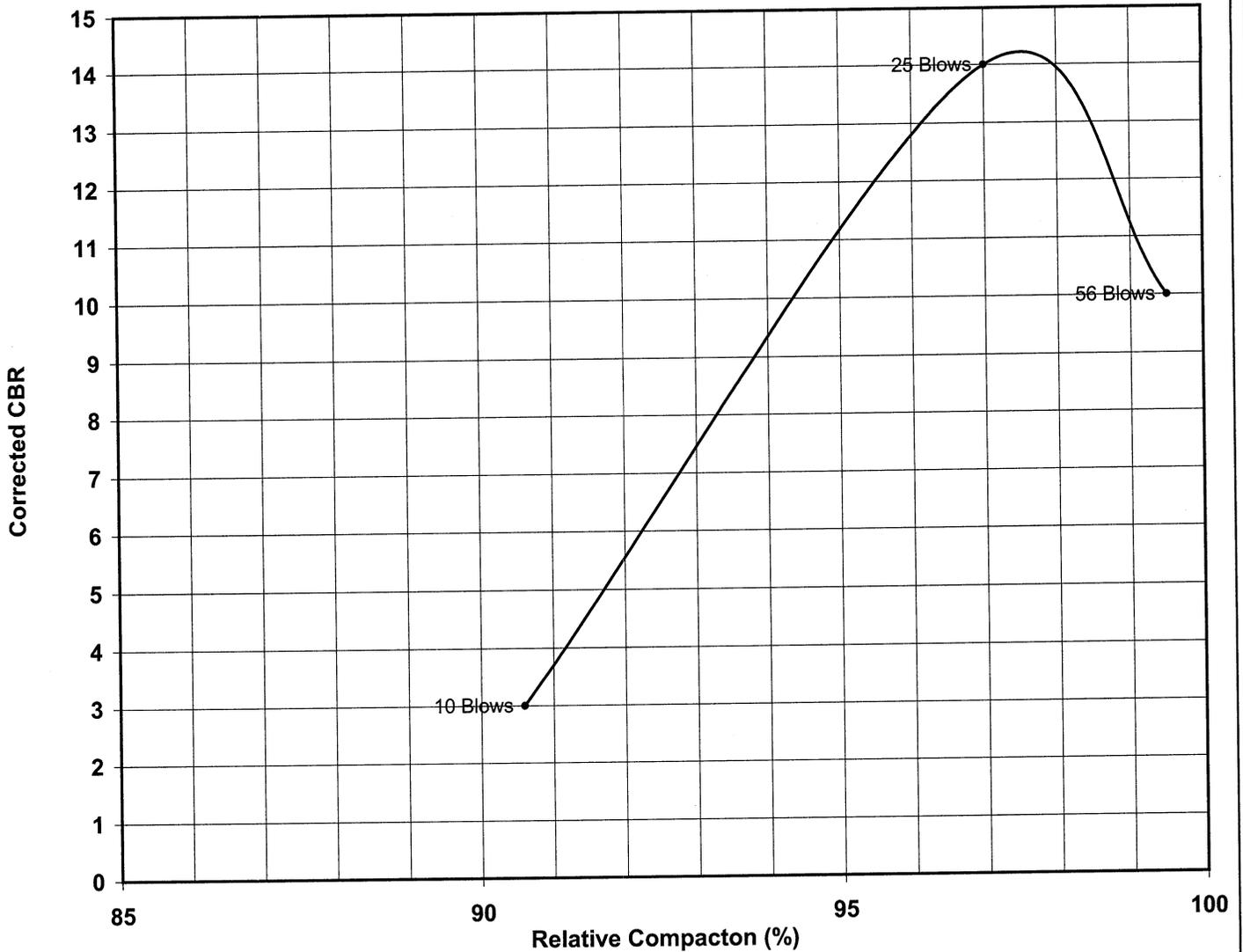
SOILS, FOUNDATION, AND GEOLOGICAL ENGINEERS

Keokea-Waiohuli Subdivision Phases 1, 2 and 4A  
 Kula, Makawao, Maui, Hawaii

Date: April 2013

Project No. 212302.20

**Dry Density vs. CBR**



**Sample Source:** 6-1(TP-6)/Road J

**Depth:** Grab

**Description:** Brown Silt w/ Basalt Gravel

Blows/Lift	Dry Density (pcf)	CBR	Relative comp. %
10	66.1	3	91
25	70.9	14	97
56	72.5	10	99.5

<b>CBR for at 95% Relative Compaction :</b>	<b>11</b>
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**CALIFORNIA BEARING RATIO  
ASTM D-1883**



**PSC Consultants, LLC**

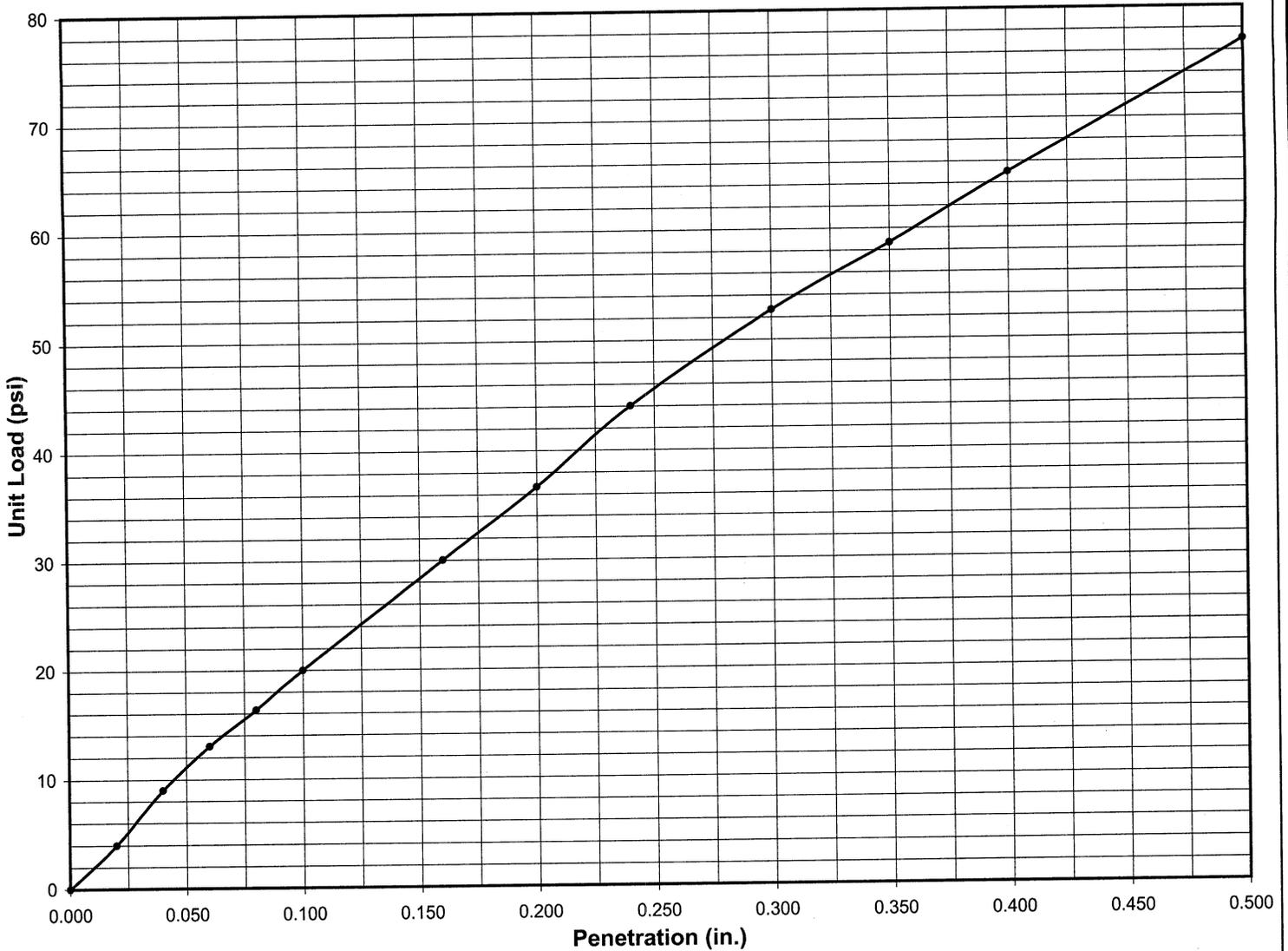
SOILS, FOUNDATION, AND GEOLOGICAL ENGINEERS

**Keokea-Waiohuli Subdivision Phases 1, 2 and 4A  
Kula, Makawao, Maui, Hawaii**

Date: April 2013

Project No. 212302.20

**CBR CURVE**



**Sample Source:** 6-1(TP-6)/Road J  
**Blows/lift:** 10

**Depth:** Grab

**Description:** Brown Silt w/ Basalt Gravel

	Before Expansion	After Expansion
Relative Compaction (%)	93.70%	90.59%
Moisture Content (%)	43.40%	48.23%
Dry Density (pcf)	68.40	66.13
Percent Swell or Expansion Value (%)	1.27%	
Compaction Test Method:	ASTM D-1557	
Corr. CBR Value @ 0.1" :	3	
Corr. CBR Value @ 0.2" :	2	

**Atterberg Limits**  
LL                      PL                      PI

**CALIFORNIA BEARING RATIO**  
**ASTM D-1883-94**



**PSC Consultants, LLC**

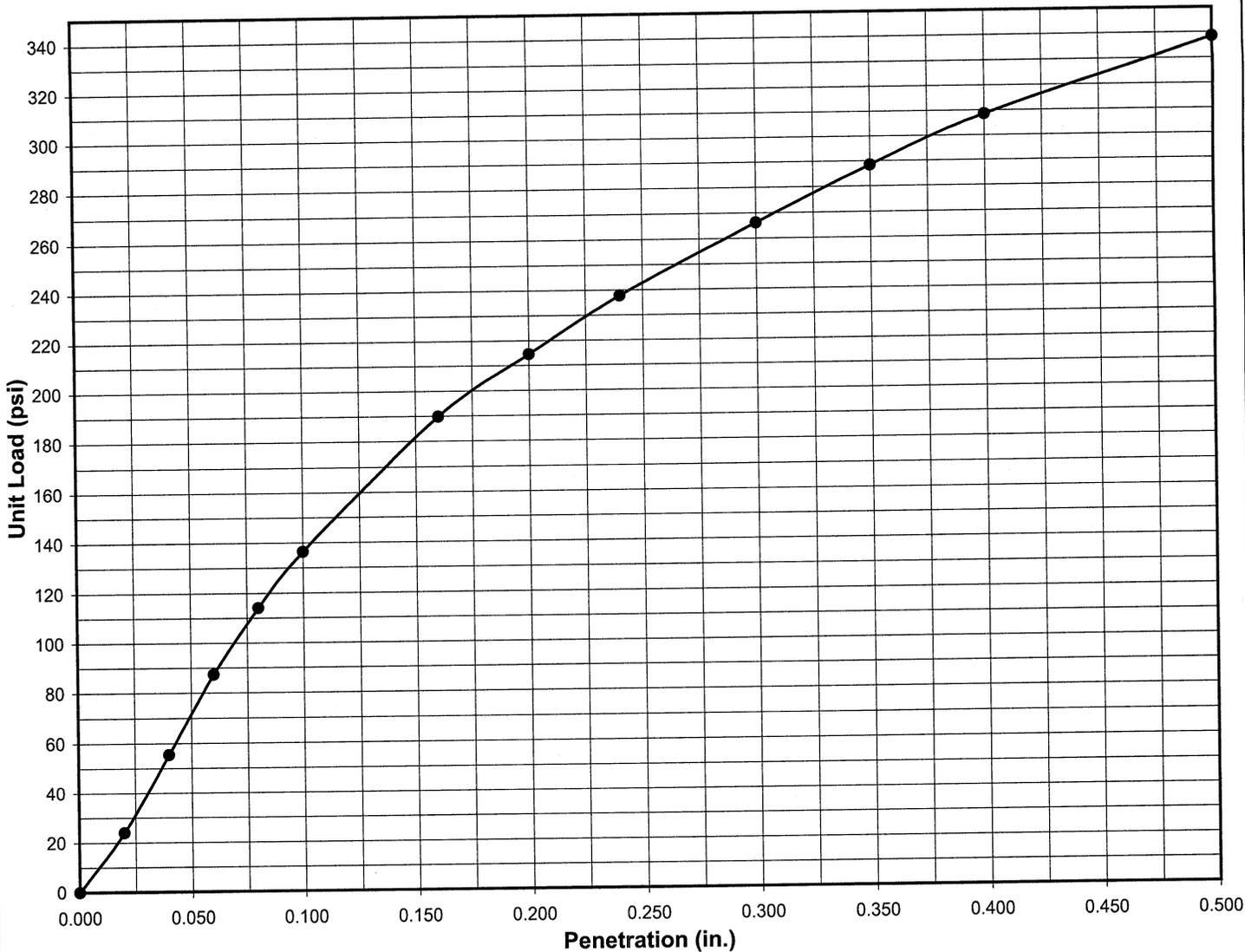
SOILS, FOUNDATION, AND GEOLOGICAL ENGINEERS

**Keokea-Waiohuli Subdivision Phases 1, 2 and 4A**  
**Kula, Makawao, Maui, Hawaii**

Date: April 2013

Project No. 212302.20

**CBR CURVE**



**Sample Source:** 6-1(TP-6)/Road J  
**Blows/lift:** 25

**Depth:** Grab

**Description:** Brown Silt w/ Basalt Gravel

	Before Expansion	After Expansion
Relative Compaction (%):	99.59%	97.12%
Moisture Content (%):	41.10%	44.70%
Dry Density (pcf):	72.70	70.90
Percent Swell or Expansion Value (%):	0.98%	
Compaction Test Method:	ASTM D-1557	
Corr. CBR Value @ 0.1" :	17	
Corr. CBR Value @ 0.2" :	14	

**Atterberg Limits**

LL                      PL                      PI

**CALIFORNIA BEARING RATIO**  
**ASTM D-1883-94**



**PSC Consultants, LLC**

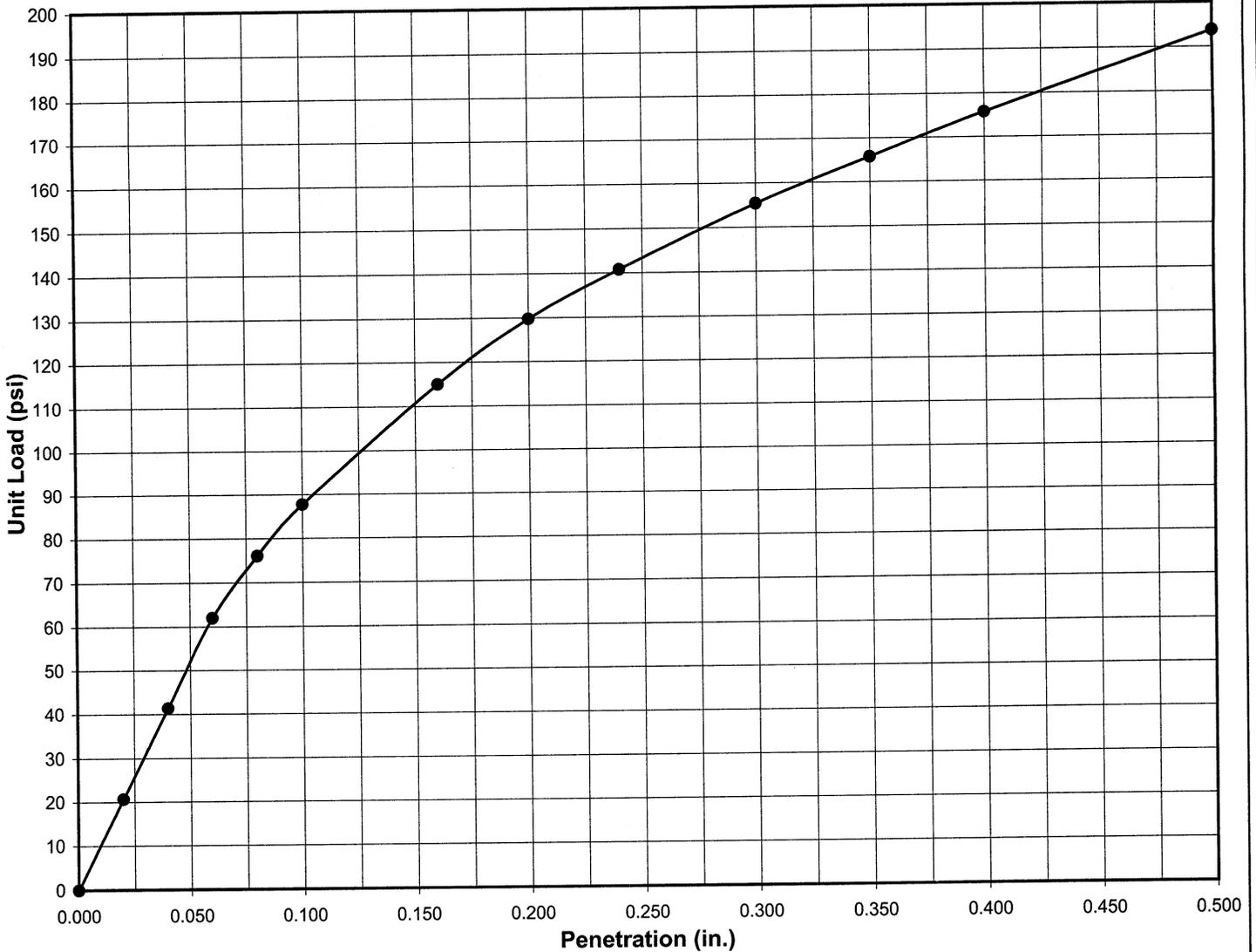
SOILS, FOUNDATION, AND GEOLOGICAL ENGINEERS

**Keokea-Waiohuli Subdivision Phases 1, 2 and 4A**  
**Kula, Makawao, Maui, Hawaii**

Date: April 2013

Project No. 212302.20

### CBR CURVE



**Sample Source:** 6-1(TP-6)/Road J  
**Blows/lift:** 56

**Depth:** Grab

**Description:** Brown Silt w/ Basalt Gravel

	Before Expansion	After Expansion
Relative Compaction (%):	100.00%	99.45%
Moisture Content (%):	43.80%	44.70%
Dry Density (pcf):	73.00	72.60
Percent Swell or Expansion Value (%):	0.47%	
Compaction Test Method:	ASTM D-1557	
Corr. CBR Value @ 0.1" :	10	
Corr. CBR Value @ 0.2" :	9	

Atterberg Limits

LL                      PL                      PI

### CALIFORNIA BEARING RATIO ASTM D-1883-94



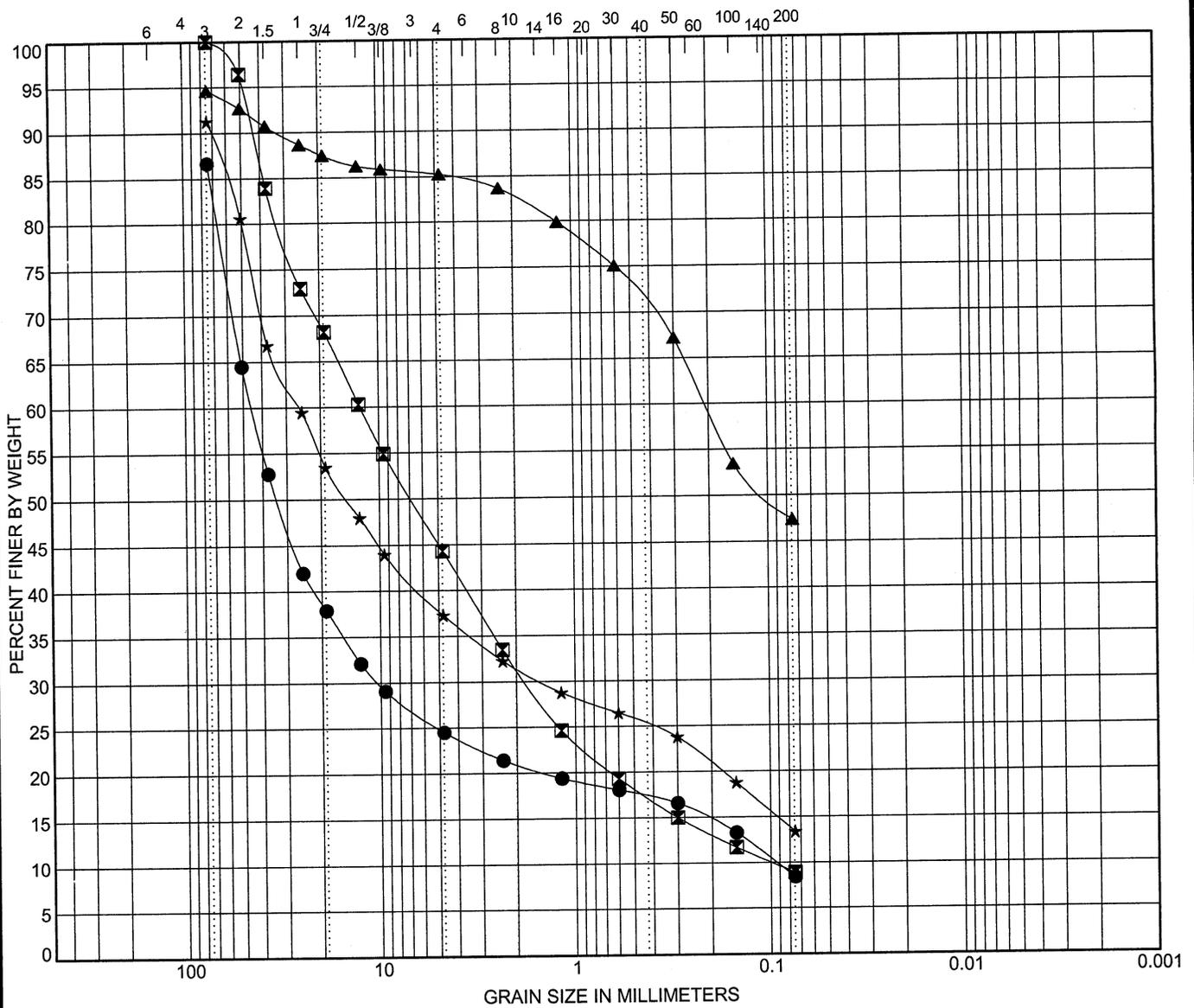
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SOILS, FOUNDATION, AND GEOLOGICAL ENGINEERS

**Keokea-Waiohuli Subdivision Phases 1, 2 and 4A  
 Kula, Makawao, Maui, Hawaii**

Date: April 2013

Project No. 212302.20



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	LL	PL	PI	Cc	Cu
● TP-2 @ DEPTH 1ft.	POORLY GRADED GRAVEL with SILT and SAND GP-GM	NP	NP	NP	25.27	480.62
☒ TP-4 @ DEPTH 1ft.	WELL-GRADED GRAVEL with SILT and SAND GW-GM	NP	NP	NP	2.62	126.90
▲ TP-5 @ DEPTH 3ft.	SANDY SILT ML-SM	NP	NP	NP		
★ TP-8 @ DEPTH 3ft.	SILTY GRAVEL with SAND GM	NP	NP	NP		

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TP-2 @ DEPTH 1ft.	75	45.202	10.364	0.094	62.2	16.1	8.4	
☒ TP-4 @ DEPTH 1ft.	75	12.497	1.797	0.098	55.7	35.4	8.9	
▲ TP-5 @ DEPTH 3ft.	75	0.208			9.4	37.9	47.4	
★ TP-8 @ DEPTH 3ft.	75	25.704	1.497		54.0	23.9	13.4	

**GRAIN SIZE DISTRIBUTION**

	Keokea-Waiohuli Subdivision Phases 1, 2 and 4A Kula, Makawao, Maui, Hawaii	
	Date: April 2013	Project No.: 212302.20

210301 SIEVE - MAMALAHOA 212302.20 CPE KEOKEA-WAIOHULI PH. 1, 2, 4A.GPJ TEST PIT.GDT 4/4/13

**SIEVE ANALYSIS (ASTM D422-63 Re- Approved 2002)**

Project	<u>Keokea-Waiohuli Subdivision Phases 1, 2 and 4A</u>	Job No.	<u>212302.20</u>
Sample Source	<u>Test Pit 2 (Road M)</u>	Purpose	<u>Classification</u>
Soil Description	<u>POORLY GRADED GRAVEL with SILT and SAND (GP-GM)</u>	Sample No.	<u>2-1</u>
Tested by	<u>DP</u>	Test Date(s)	<u>3/12/2013</u>

Wt of wet sample & tare (g)	<u>15150.2</u>	<b>-200 Wash</b>	
Wt of dry sample and tare (g)	<u>14165.9</u>	<b>Before Wash</b>	
Moisture (g)	<u>984.3</u>	Wt of dry sample and tare (g)	<u>14165.9</u>
Wt of tare (g)	<u>926.5</u>	<b>After Wash</b>	
Wt of dry sample (g)	<u>13239.4</u>	Wt of dry sample and tare (g)	<u>13236.0</u>
Moisture content	<u>7.4%</u>	Wt. Passing -200 (g)	<u>929.9</u>
		% Passing -200	<u>7.0%</u>

Sieve no.	Diameter (mm)	Cumulative Weight Retained (gm)	% Retained	% Passing
3"	75	1763.00	13.32%	86.68%
2"	50.8	4699.90	35.50%	64.50%
1-1/2"	37.5	6254.60	47.24%	52.76%
1"	25	7685.20	58.05%	41.95%
3/4"	19	8221.50	62.10%	37.90%
1/2"	12.7	8995.60	67.95%	32.05%
3/8"	9.5	9382.20	70.87%	29.13%
#4	4.75	9995.50	75.50%	24.50%
#8	2.36	10403.20	78.58%	21.42%
#16	1.18	10669.90	80.59%	19.41%
#30	0.6	10837.60	81.86%	18.14%
#50	0.3	11035.40	83.35%	16.65%
#100	0.15	11479.60	86.71%	13.29%
#200	0.075	12133.40	91.65%	8.35%
Pan				

**SIEVE ANALYSIS (ASTM D422-63 Re- Approved 2002)**

Project	<u>Keokea-Waiohuli Subdivision Phases 1, 2 and 4A</u>	Job No.	<u>212302.20</u>
Sample Source	<u>Test Pit 4 (Road H)</u>	Purpose	<u>Classification</u>
Soil Description	<u>WELL-GRADED GRAVEL w/ SILT and SAND (GW-GM)</u>	Sample No.	<u>4-1</u>
Tested by	<u>DP</u>	Test Date(s)	<u>3/12/2013</u>

Wt of wet sample & tare (g)	<u>12151.9</u>	<b>-200 Wash</b>	
Wt of dry sample and tare (g)	<u>11807.2</u>	<b>Before Wash</b>	
Moisture (g)	<u>344.7</u>	Wt of dry sample and tare (g)	<u>11807.2</u>
Wt of tare (g)	<u>928.5</u>	<b>After Wash</b>	
Wt of dry sample (g)	<u>10878.7</u>	Wt of dry sample and tare (g)	<u>10859.2</u>
Moisture content	<u>3.2%</u>	Wt. Passing -200 (g)	<u>948.0</u>
		% Passing -200	<u>8.7%</u>

Sieve no.	Diameter (mm)	Cumulative Weight Retained (gm)	% Retained	% Passing
3"	75	0.00	0.00%	100.00%
2"	50.8	394.00	3.62%	96.38%
1-1/2"	37.5	1750.80	16.09%	83.91%
1"	25	2952.50	27.14%	72.86%
3/4"	19	3458.80	31.79%	68.21%
1/2"	12.7	4318.10	39.69%	60.31%
3/8"	9.5	4904.80	45.09%	54.91%
#4	4.75	6061.70	55.72%	44.28%
#8	2.36	7232.20	66.48%	33.52%
#16	1.18	8199.20	75.37%	24.63%
#30	0.6	8782.40	80.73%	19.27%
#50	0.3	9251.40	85.04%	14.96%
#100	0.15	9600.70	88.25%	11.75%
#200	0.075	9907.70	91.07%	8.93%
Pan				

**SIEVE ANALYSIS (ASTM D422-63 Re- Approved 2002)**

Project	<u>Keokea-Waiohuli Subdivision Phases 1, 2 and 4A</u>	Job No.	<u>212302.20</u>
Sample Source	<u>Test Pit 5 (Road J)</u>	Purpose	<u>Classification</u>
Soil Description	<u>Orange-Brown Sandy SILT (ML-SM)</u>	Sample No.	<u>5-1</u>
Tested by	<u>DP</u>	Test Date(s)	<u>3/11/2013</u>

Wt of wet sample & tare (g)	<u>10568.9</u>	<b>-200 Wash</b>	
Wt of dry sample and tare (g)	<u>9248.9</u>	<b>Before Wash</b>	
Moisture (g)	<u>1320.0</u>	Wt of dry sample and tare (g)	<u>9248.9</u>
Wt of tare (g)	<u>929.5</u>	<b>After Wash</b>	
Wt of dry sample (g)	<u>8319.4</u>	Wt of dry sample and tare (g)	<u>5347.9</u>
Moisture content	<u>15.9%</u>	Wt. Passing -200 (g)	<u>3901.0</u>
		% Passing -200	<u>46.9%</u>

Sieve no.	Diameter (mm)	Cumulative Weight Retained (gm)	% Retained	% Passing
3"	75	446.80	5.37%	94.63%
2"	50.8	608.80	7.32%	92.68%
1-1/2"	37.5	772.20	9.28%	90.72%
1"	25	942.30	11.33%	88.67%
3/4"	19	1042.80	12.53%	87.47%
1/2"	12.7	1142.00	13.73%	86.27%
3/8"	9.5	1173.30	14.10%	85.90%
#4	4.75	1224.70	14.72%	85.28%
#8	2.36	1359.00	16.34%	83.66%
#16	1.18	1673.50	20.12%	79.88%
#30	0.6	2074.20	24.93%	75.07%
#50	0.3	2727.00	32.78%	67.22%
#100	0.15	3870.80	46.53%	53.47%
#200	0.075	4375.80	52.60%	47.40%
Pan				

**SIEVE ANALYSIS (ASTM D422-63 Re- Approved 2002)**

Project	<u>Keokea-Waiohuli Subdivision Phases 1, 2 and 4A</u>	Job No.	<u>212302.20</u>
Sample Source	<u>Test Pit 8 (Borrow/Stockpile Site)</u>	Purpose	<u>Classification</u>
Soil Description	<u>Brown Silty GRAVEL with SAND (GM)</u>	Sample No.	<u>8-1</u>
Tested by	<u>DP</u>	Test Date(s)	<u>3/11/2013</u>

Wt of wet sample & tare (g)	<u>10714.0</u>	<b>-200 Wash</b>	
Wt of dry sample and tare (g)	<u>10042.7</u>	<b>Before Wash</b>	
Moisture (g)	<u>671.3</u>	Wt of dry sample and tare (g)	<u>10042.7</u>
Wt of tare (g)	<u>923.6</u>	<b>After Wash</b>	
Wt of dry sample (g)	<u>9119.1</u>	Wt of dry sample and tare (g)	<u>9031.2</u>
Moisture content	<u>7.4%</u>	Wt. Passing -200 (g)	<u>1011.5</u>
		% Passing -200	<u>11.1%</u>

Sieve no.	Diameter (mm)	Cumulative Weight Retained (gm)	% Retained	% Passing
3"	75	793.30	8.70%	91.30%
2"	50.8	1768.80	19.40%	80.60%
1-1/2"	37.5	3023.40	33.15%	66.85%
1"	25	3690.40	40.47%	59.53%
3/4"	19	4243.50	46.53%	53.47%
1/2"	12.7	4738.40	51.96%	48.04%
3/8"	9.5	5105.80	55.99%	44.01%
#4	4.75	5720.20	62.73%	37.27%
#8	2.36	6174.80	67.71%	32.29%
#16	1.18	6496.60	71.24%	28.76%
#30	0.6	6703.40	73.51%	26.49%
#50	0.3	6948.10	76.19%	23.81%
#100	0.15	7400.30	81.15%	18.85%
#200	0.075	7901.40	86.65%	13.35%
Pan				





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Waipahu, Hawaii 96797

Tel: (808) 676-6677 - Fax: (808) 676-7733 - Email: [pscwahi@pscconsultants.com](mailto:pscwahi@pscconsultants.com)  
[www.pscconsultants.com](http://www.pscconsultants.com)

### LETTER OF TRANSMITTAL

TO: Community Planning & Engineering, Inc.  
1286 Queen Emma Street  
Honolulu, Hawaii 96813

DATE:	May 29, 2013
PSC JOB NO.:	212302.20
SUBJECT:	Report Addendum
	Keokea-Waiohuli Subdivision Phases 1, 2 and 4A
	Kula, Makawao, Maui, Hawaii

ATTENTION: Mr. Richard Santo, P.E.

We ARE SENDING YOU  Attached  Under separate cover via USPS the following items:

Invoice  Samples  Prints  Plans  Other: \_\_\_\_\_

Letter  Proposal  Report  Specifications

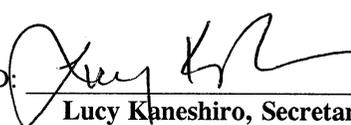
COPIES	DATE	DESCRIPTION
1 Original	May 28, 2013	Supplementary Recommendations Preliminary Geotechnical Exploration Report Keokea-Waiohuli Subdivision Phases 1, 2 and 4A Kula, Makawao, Maui, Hawaii TMK: (2) 2-2-002:14, 55 and 71

For approval  For information  Submit \_\_\_ copies for distribution  For your use  For review & comment

Return \_\_\_ corrected prints  As requested  Resubmit \_\_\_ copies for approval  Other \_\_\_\_\_

Remarks:

cc: \_\_\_\_\_

SIGNED:   
Lucy Kaneshiro, Secretary



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94-547 Ukee Street, Suite No. 210  
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(808) 676-6677 - Fax: (808) 676-7733 - Email: [pscwahi@pscconsultants.com](mailto:pscwahi@pscconsultants.com)

Mr. Richard Santo  
Community Planning and Engineering, Inc.  
1286 Queen Emma Street  
Honolulu, Hawaii 96813

May 28, 2013  
PSC Job No. 212303.20

**Subject:** Addendum to Preliminary Geotechnical Exploration Report  
Keokea-Waiohuli Subdivision Phases 1, 2 and 4A  
Kula, Makawao, Maui, Hawaii

**Reference:** Preliminary Geotechnical Exploration Report, Proposed Keokea-Waiohuli  
Subdivision Phases 1, 2 and 4A Kula, Makawao, Maui, Hawaii dated April 5,  
2013 prepared by PSC Consultants, LLC

Dear Mr. Santo:

We are pleased to provide our supplementary recommendations to the above-referenced report to address Service Roads:

The following is our revised paragraph on "Service Roads" (pg 7, last paragraph);

**1.) "Service Roads"**

Surface topping will be 2" asphalt concrete with 2" minimum base thickness of 3" minus select material. Where dense rocks and cobbles are present, the select material will be placed on the rock/cobble surface. If silt is present on dense rocks and cobbles, the silt should be cleaned from the rocks and cobbles. At silt areas, roadway should be cleared to 12" below service road finish grade or till silt pockets are removed, and select material placed where silt was removed. Select material should be rolled to 95 percent compaction and to a smooth surface for the AC topping."

2.) For concern on word "subdrain" at report paragraph on "Road Drainage" (pg 8, first paragraph), we would like to change "Subdrains" to "Drains and culverts" at first line of paragraph.

### Standard of Care

The above recommendations are provided in accordance with currently accepted standards of geotechnical engineering principles and practices. No warranty, expressed or implied, or merchantability or fitness is made or intended in connection with our work by furnishing of oral or written reports or findings.

We appreciate this opportunity to be of continued service to you. Should you have any questions, please give us a call.

Respectfully submitted,  
**PSC CONSULTANTS, LLC**



Derrick Chan  
Project Engineer

DSC/GT/PSC: lk



This work was prepared by  
me or under my supervision  
(License Expires April 30, 2014)



George Takamiya, P.E.  
Senior Engineer



State of Hawai'i  
DEPARTMENT OF LABOR AND INDUSTRIAL RELATIONS  
Princess Ruth Ke'elikolani Building  
830 Punchbowl Street  
Honolulu, Hawai'i 96813

September 21, 2015  
WAGE RATE SCHEDULE BULLETIN NO. 486

This schedule of wage rates contained herein is recognized by the Director of Labor and Industrial Relations to be prevailing on public construction work for the purposes of Chapter 104, Hawai'i Revised Statutes. The schedule of wage rates determines the applicable wage determination for each classification and does not impose any staffing requirements for any classification. The schedule of wage rates is applicable only to those laborers and mechanics employed at the site of work.

As required by law, future wage rates for laborers and mechanics are incorporated into this bulletin based on available information and are subject to change. Whenever the Director determines that the prevailing wage has increased as shown in the wage rate schedule, the contractor must increase the wages accordingly during the performance of the contract. For addenda or additional wage rate schedules, please consult the Internet at <http://labor.hawaii.gov/rs>.

The Apprentice Schedule is available on the Internet or upon request from the Research and Statistics Office. Pursuant to Section 12-22-6 (1), Hawai'i Administrative Rules, the Apprentice Schedule is applicable only to apprentices who are parties to apprenticeship agreements registered with or recognized by the Department of Labor and Industrial Relations.

Questions on the schedule should be referred to the Research and Statistics Office at (808) 586-9019.

The next regular schedule will be issued on or about February 15, 2016.

LINDA CHU TAKAYAMA  
Director



STATE OF HAWAII  
DAVID Y. IGE, Governor

DEPARTMENT OF LABOR AND INDUSTRIAL RELATIONS  
LINDA CHU TAKAYAMA, Director

RESEARCH AND STATISTICS OFFICE  
PHYLLIS DAYAO, Research & Statistics Officer

OPERATIONS MANAGEMENT INFORMATION STAFF  
Janet Kaya, Supervisor

In cooperation with:  
WAGE STANDARDS DIVISION  
PAMELA MARTIN, Administrator

WAGE RATE SCHEDULE BULLETIN NO. 486

Classification	Current			2016			2017			2018			Remarks See Pg 6-8
	Prevailing Wage Total	Basic Hourly Rate	Fringe Hourly Rate										
<b>* ASPHALT PAVING GROUP:</b>	<b>9/21/15</b>												
Asphalt Concrete Material Transfer	\$69.34	\$39.42	\$29.92	-	-	-	-	-	-	-	-	-	13
Asphalt Raker	\$68.38	\$38.46	\$29.92	-	-	-	-	-	-	-	-	-	13
Asphalt Spreader Operator	\$69.86	\$39.94	\$29.92	-	-	-	-	-	-	-	-	-	13
Laborer, Hand Roller	\$65.61	\$35.69	\$29.92	-	-	-	-	-	-	-	-	-	13
Roller Operator (5 tons and under)	\$68.11	\$38.19	\$29.92	-	-	-	-	-	-	-	-	-	13
Roller Operator (over 5 tons)	\$69.54	\$39.62	\$29.92	-	-	-	-	-	-	-	-	-	13
Screed Person	\$69.34	\$39.42	\$29.92	-	-	-	-	-	-	-	-	-	13
<b>EQUIPMENT OPERATOR:</b>													
Combination Loader/Backhoe (over 3/4 cu. yd.)	\$68.38	\$38.46	\$29.92	-	-	-	-	-	-	-	-	-	13
Combination Loader/Backhoe (up to 3/4 cu. yd.)	\$67.40	\$37.48	\$29.92	-	-	-	-	-	-	-	-	-	13
Concrete saws and/or Grinder (self-propelled unit on streets, highways, airports and canals)	\$69.34	\$39.42	\$29.92	-	-	-	-	-	-	-	-	-	13
Grader, Soil Stabilizer, Cold Planer	\$70.17	\$40.25	\$29.92	-	-	-	-	-	-	-	-	-	13
Loader (2-1/2 cu. yds. and under)	\$69.34	\$39.42	\$29.92	-	-	-	-	-	-	-	-	-	13
Loader (over 2-1/2 cu. yds. to and including 5 cu. yds.)	\$69.66	\$39.74	\$29.92	-	-	-	-	-	-	-	-	-	13
<b>TRUCK DRIVER:</b>													
Assistant to Engineer	\$68.11	\$38.19	\$29.92	-	-	-	-	-	-	-	-	-	13
Oil Tanker (double), Hot Liquid Asphalt Tanker	\$69.66	\$39.74	\$29.92	-	-	-	-	-	-	-	-	-	13
Semi-Trailer, Semi-Dump, Asphalt Distributor	\$69.34	\$39.42	\$29.92	-	-	-	-	-	-	-	-	-	13
Slip-in or Pup	\$69.66	\$39.74	\$29.92	-	-	-	-	-	-	-	-	-	13
Single or Rock Cans Tandem Dump Truck (8 cu. yds. & under, water level)	\$68.38	\$38.46	\$29.92	-	-	-	-	-	-	-	-	-	13
Single or Rock Cans Tandem Dump Truck (over 8 cu. yds., water level)	\$68.69	\$38.77	\$29.92	-	-	-	-	-	-	-	-	-	13
Tractor Trailer (hauling equipment)	\$69.77	\$39.85	\$29.92	-	-	-	-	-	-	-	-	-	13
Utility, Flatbed	\$68.11	\$38.19	\$29.92	-	-	-	-	-	-	-	-	-	13
<b>* BOILERMAKER</b>	<b>2/16/15</b>												
	\$63.63	\$34.18	\$29.45	-	-	-	-	-	-	-	-	-	13
<b>* CARPENTER:</b>	<b>9/21/15</b>			<b>8/29/16</b>			<b>9/4/17</b>			<b>9/3/18</b>			
Carpenter; Patent Scaffold Erector (Over 14 feet); Piledriver; Pneumatic Nailer	\$64.86	\$43.90	\$20.96	\$66.86	\$45.65	\$21.21	\$68.91	\$47.45	\$21.46	\$71.16	\$49.45	\$21.71	1,12,13
Millwright	\$65.11	\$44.15	\$20.96	\$67.11	\$45.90	\$21.21	\$69.16	\$47.70	\$21.46	\$71.41	\$49.70	\$21.71	1,12,13
Power Saw Operator (2 h.p. & above)	\$65.01	\$44.05	\$20.96	\$67.01	\$45.80	\$21.21	\$69.06	\$47.60	\$21.46	\$71.31	\$49.60	\$21.71	1,12,13
<b>* CEMENT FINISHER:</b>	<b>9/21/15</b>			<b>8/29/16</b>			<b>9/4/17</b>			<b>9/3/18</b>			
Cement Finisher; Curb Setter; Precast Panel Setter; Manhole Builder	\$63.73	\$37.90	\$25.83	\$65.34	\$38.50	\$26.84	\$66.98	\$39.10	\$27.88	\$68.53	\$39.80	\$28.73	2,12,13
Trowel Machine Operator	\$63.88	\$38.05	\$25.83	\$65.49	\$38.65	\$26.84	\$67.13	\$39.25	\$27.88	\$68.68	\$39.95	\$28.73	2,12,13
<b>* CHAIN-LINK FENCE ERECTOR (Note: increase on 10/5/15)</b>	<b>10/1/14</b>			<b>10/3/16</b>			<b>10/2/17</b>			<b>10/1/18</b>			
	\$30.55	\$19.00	\$11.55	\$34.45	\$21.30	\$13.15	\$36.55	\$22.60	\$13.95	\$38.75	\$24.00	\$14.75	10,13
	<b>10/5/15</b>												
	\$32.40	\$20.10	\$12.30										10,13
<b>* CHLORINATOR</b>	<b>9/21/15</b>												
	\$23.00	\$23.00	\$0.00	-	-	-	-	-	-	-	-	-	

WAGE RATE SCHEDULE BULLETIN NO. 486

Classification	Current			2016			2017			2018			Remarks See Pg 6-8
	Prevailing Wage Total	Basic Hourly Rate	Fringe Hourly Rate										
<b>* DIVER:</b>	<b>9/21/15</b>												
Diver (Aqua Lung) (Scuba) - Up to a depth of 30 feet	\$82.49	\$53.13	\$29.36	-	-	-	-	-	-	-	-	-	13
Diver (Aqua Lung) (Scuba) - Over a depth of 30 feet	\$91.86	\$62.50	\$29.36	-	-	-	-	-	-	-	-	-	13
Stand-By Diver (Aqua Lung) (Scuba)	\$73.11	\$43.75	\$29.36	-	-	-	-	-	-	-	-	-	13
Diver (Other than Aqua Lung)	\$91.86	\$62.50	\$29.36	-	-	-	-	-	-	-	-	-	3,13
Stand-By Diver (Other than Aqua Lung)	\$73.11	\$43.75	\$29.36	-	-	-	-	-	-	-	-	-	3,13
Tender (Other than Aqua Lung)	\$70.08	\$40.72	\$29.36	-	-	-	-	-	-	-	-	-	13
<b>* DRAPERY INSTALLER</b>	<b>9/21/15</b>												
	\$19.68	\$16.82	\$2.86	-	-	-	-	-	-	-	-	-	
<b>* DRYWALL INSTALLER</b>	<b>9/21/15</b>			<b>8/29/16</b>			<b>9/4/17</b>			<b>9/3/18</b>			
	\$65.11	\$44.15	\$20.96	\$67.11	\$45.90	\$21.21	\$69.16	\$47.70	\$21.46	\$71.41	\$49.70	\$21.71	12,13
<b>* ELECTRICIAN</b>	<b>8/23/15</b>			<b>2/21/16</b>									
Cable Splicer (inside/outside)	\$75.89	\$47.36	\$28.53	\$76.65	\$47.74	\$28.91	-	-	-	-	-	-	4,13
Ground Worker (outside)	\$66.22	\$32.29	\$23.93	\$66.82	\$32.55	\$24.27	-	-	-	-	-	-	4,13
Heavy Equipment Operator (outside)	\$64.66	\$38.75	\$25.91	\$65.31	\$39.06	\$26.25	-	-	-	-	-	-	4,13
Line Installer (outside); Wire Installer (inside)	\$70.27	\$43.05	\$27.22	\$70.98	\$43.40	\$27.58	-	-	-	-	-	-	4,13
Technician (inside/outside)	\$71.95	\$44.34	\$27.61	\$72.68	\$44.70	\$27.98	-	-	-	-	-	-	4,13
Telecommunication Worker	<b>9/21/15</b>			<b>8/28/16</b>			<b>9/3/17</b>						
Licensed Technician	\$39.49	\$27.68	\$11.81	\$40.78	\$28.79	\$11.99	\$42.13	\$29.94	\$12.19	-	-	-	13
Technician I / Splicer	\$37.87	\$26.30	\$11.57	\$39.09	\$27.35	\$11.74	\$40.38	\$28.44	\$11.94	-	-	-	13
<b>* ELEVATOR CONSTRUCTOR MECHANIC</b>	<b>2/16/15</b>												
	\$81.455	\$53.07	\$28.385	-	-	-	-	-	-	-	-	-	13
<b>* EQUIPMENT OPERATOR:</b>	<b>9/21/15</b>												
Group 1	\$67.80	\$38.44	\$29.36	-	-	-	-	-	-	-	-	-	5,13
Group 2	\$67.91	\$38.55	\$29.36	-	-	-	-	-	-	-	-	-	5,13
Group 3	\$68.08	\$38.72	\$29.36	-	-	-	-	-	-	-	-	-	5,13
Group 4	\$68.35	\$38.99	\$29.36	-	-	-	-	-	-	-	-	-	5,13
Group 5	\$68.66	\$39.30	\$29.36	-	-	-	-	-	-	-	-	-	5,13
Group 6	\$69.31	\$39.95	\$29.36	-	-	-	-	-	-	-	-	-	5,13
Group 7	\$69.63	\$40.27	\$29.36	-	-	-	-	-	-	-	-	-	5,13
Group 8	\$69.74	\$40.38	\$29.36	-	-	-	-	-	-	-	-	-	5,13
Group 9	\$69.85	\$40.49	\$29.36	-	-	-	-	-	-	-	-	-	5,13
Group 9A	\$70.08	\$40.72	\$29.36	-	-	-	-	-	-	-	-	-	5,13
Group 10	\$70.14	\$40.78	\$29.36	-	-	-	-	-	-	-	-	-	5,13
Group 10A	\$70.29	\$40.93	\$29.36	-	-	-	-	-	-	-	-	-	5,13
Group 11	\$70.44	\$41.08	\$29.36	-	-	-	-	-	-	-	-	-	5,13
Group 12	\$70.80	\$41.44	\$29.36	-	-	-	-	-	-	-	-	-	5,13
Group 12A	\$71.16	\$41.80	\$29.36	-	-	-	-	-	-	-	-	-	5,13
<b>FENCE ERECTOR (CHAIN-LINK TYPE)</b>													
See Chain-Link Fence Erector	-	-	-	-	-	-	-	-	-	-	-	-	
<b>* FLOOR LAYER (CARPET, LINOLEUM &amp; SOFT TILE)</b>	<b>3/1/15</b>												
	\$56.90	\$31.15	\$25.75	-	-	-	-	-	-	-	-	-	13

WAGE RATE SCHEDULE BULLETIN NO. 486

Classification	Current			2016			2017			2018			Remarks See Pg 6-8
	Prevailing Wage Total	Basic Hourly Rate	Fringe Hourly Rate										
* <b>GLAZIER</b>	<b>9/21/15</b>												
	\$63.15	\$34.78	\$28.37	-	-	-	-	-	-	-	-	-	6,13
* <b>HELICOPTER WORK:</b>	<b>9/21/15</b>												
Airborne Hoist Operator	\$71.66	\$42.30	\$29.36	-	-	-	-	-	-	-	-	-	13
Co-Pilot	\$71.80	\$42.44	\$29.36	-	-	-	-	-	-	-	-	-	13
Pilot	\$71.97	\$42.61	\$29.36	-	-	-	-	-	-	-	-	-	13
* <b>INSULATOR</b>	<b>9/21/15</b>						<b>9/3/17</b>			<b>9/2/18</b>			
	\$63.15	\$39.65	\$23.50	-	-	-	\$64.40	\$40.50	\$23.90	\$65.10	\$41.00	\$24.10	7,13
* <b>IRONWORKER:</b>	<b>9/21/15</b>			<b>9/1/16</b>									
Reinforcing, Structural	\$66.66	\$36.75	\$29.91	\$67.66	\$37.75	\$29.91	-	-	-	-	-	-	8,12,13
* <b>LABORER:</b>	<b>8/31/15</b>			<b>8/29/16</b>			<b>9/4/17</b>			<b>9/3/18</b>			
Driller	\$52.86	\$35.35	\$17.51	\$54.76	\$36.35	\$18.41	\$56.66	\$37.40	\$19.26	\$58.66	\$38.40	\$20.26	1,13
Guniting Operator or Shotcrete Operator	\$52.36	\$34.85	\$17.51	\$54.26	\$35.85	\$18.41	\$56.16	\$36.90	\$19.26	\$58.16	\$37.90	\$20.26	1,13
High Scaler (Working Suspended)	\$52.36	\$34.85	\$17.51	\$54.26	\$35.85	\$18.41	\$56.16	\$36.90	\$19.26	\$58.16	\$37.90	\$20.26	13
Laborer I	\$51.86	\$34.35	\$17.51	\$53.76	\$35.35	\$18.41	\$55.66	\$36.40	\$19.26	\$57.66	\$37.40	\$20.26	1,13
Laborer II	\$49.26	\$31.75	\$17.51	\$51.16	\$32.75	\$18.41	\$53.06	\$33.80	\$19.26	\$55.06	\$34.80	\$20.26	1,13
Light/Final Clean-up (Janitorial) Laborer	\$39.09	\$25.75	\$13.34	\$41.04	\$26.75	\$14.29	\$42.94	\$27.80	\$15.14	\$44.92	\$28.80	\$16.12	1,13
Mason Tender/Hod Carrier	\$52.36	\$34.85	\$17.51	\$54.26	\$35.85	\$18.41	\$56.16	\$36.90	\$19.26	\$58.16	\$37.90	\$20.26	1,13
Powder Blaster	\$52.86	\$35.35	\$17.51	\$54.76	\$36.35	\$18.41	\$56.66	\$37.40	\$19.26	\$58.66	\$38.40	\$20.26	1,13
Window Washer (Outside) (On bosun's chair, cable-suspended scaffold or work platform)	\$51.36	\$33.85	\$17.51	\$53.26	\$34.85	\$18.41	\$55.16	\$35.90	\$19.26	\$57.16	\$36.90	\$20.26	13
<b>LANDSCAPER:</b>	<b>9/1/14</b>												
Landscape & Irrigation Laborer A	\$33.31	\$23.20	\$10.11	-	-	-	-	-	-	-	-	-	
Landscape & Irrigation Laborer B	\$33.81	\$23.70	\$10.11	-	-	-	-	-	-	-	-	-	
Landscape & Irrigation Maintenance Laborer	\$29.81	\$19.70	\$10.11	-	-	-	-	-	-	-	-	-	
* <b>LATHER</b>	<b>9/21/15</b>			<b>8/29/16</b>			<b>9/4/17</b>			<b>9/3/18</b>			
	\$65.11	\$44.15	\$20.96	\$67.11	\$45.90	\$21.21	\$69.16	\$47.70	\$21.46	\$71.41	\$49.70	\$21.71	12,13
* <b>MASON; Bricklayer;</b>	<b>9/16/13</b>												
Cement Blocklayer; Stone Mason; Precast Sill Setter	\$60.32	\$36.85	\$23.47	-	-	-	-	-	-	-	-	-	2,13
Pointer-Caulker-Weatherproofer	\$60.57	\$37.10	\$23.47	-	-	-	-	-	-	-	-	-	2,13
* <b>PAINTER:</b>	<b>9/21/15</b>			<b>1/1/16</b>									
Painter; Spray Painter; Sandblaster or Waterblaster	\$62.02	\$34.85	\$27.17	\$62.42	\$34.85	\$27.57	-	-	-	-	-	-	12
* <b>PLASTERER:</b>	<b>9/21/15</b>			<b>8/29/16</b>			<b>9/4/17</b>			<b>9/3/18</b>			
	\$64.87	\$39.04	\$25.83	\$66.63	\$39.79	\$26.84	\$68.42	\$40.54	\$27.88	\$70.07	\$41.34	\$28.73	2,12,13
* <b>PLUMBER: (Note: 2 increases per year starting in 2016)</b>	<b>7/5/15</b>			<b>1/3/16</b>			<b>1/1/17</b>			<b>1/7/18</b>			
Plumber; Pipefitter; Refrigeration Fitter; Heating & Air Conditioning Fitter; Sprinkler Fitter; Steamfitter	\$64.31	\$39.85	\$24.46	\$65.08	\$40.35	\$24.73	\$66.60	\$41.35	\$25.25	\$68.12	\$42.35	\$25.77	9,13
Plumber; Pipefitter; Refrigeration Fitter; Heating & Air Conditioning Fitter; Sprinkler Fitter; Steamfitter	-	-	-	\$65.83	\$40.85	\$24.98	\$67.35	\$41.85	\$25.50	\$68.87	\$42.85	\$26.02	9,13

WAGE RATE SCHEDULE BULLETIN NO. 486

Classification	Current			2016			2017			2018			Remarks See Pg 6-8
	Prevailing Wage Total	Basic Hourly Rate	Fringe Hourly Rate										
<b>* ROOFER:</b>	<b>9/21/15</b>			<b>9/4/16</b>									
Shingle, Tile, Built-up Roofing	\$56.38	\$38.85	\$17.53	\$57.38	\$39.85	\$17.53	-	-	-	-	-	-	12
Coal Tar Pitch	\$95.23	\$77.70	\$17.53	\$97.23	\$79.70	\$17.53	-	-	-	-	-	-	12
<b>SANDBLASTER OR WATERBLASTER:</b>													
Use wages of craft to which sand or water blasting is incidental.													
<b>* SHEETMETAL WORKER (Note: 2 increases per year)</b>	<b>9/21/15</b>			<b>2/28/16</b>			<b>2/26/17</b>			<b>3/4/18</b>			
	\$63.54	\$39.40	\$24.14	\$64.68	\$39.99	\$24.69	\$67.20	\$41.29	\$25.91	\$69.23	\$42.20	\$27.03	13
				<b>8/28/16</b>			<b>9/3/17</b>			<b>9/2/18</b>			
				\$65.91	\$40.59	\$25.32	\$68.33	\$41.80	\$26.53	\$69.99	\$42.55	\$27.44	13
<b>* TAPER</b>	<b>9/21/15</b>			<b>1/1/16</b>			<b>1/1/17</b>						
	\$62.00	\$41.00	\$21.00	\$63.80	\$41.50	\$22.30	\$65.90	\$42.00	\$23.90	-	-	-	
<b>* TERMITE TREATER</b>	<b>9/21/15</b>												
	\$18.99	\$14.74	\$4.25	-	-	-	-	-	-	-	-	-	
<b>* TERRAZZO:</b>	<b>9/16/13</b>												
Terrazzo Setter	\$60.57	\$37.10	\$23.47	-	-	-	-	-	-	-	-	-	2,13
Terrazzo Base Grinder	\$58.76	\$35.29	\$23.47	-	-	-	-	-	-	-	-	-	2,13
Certified Terrazzo Floor Grinder and Tender	\$57.21	\$33.74	\$23.47	-	-	-	-	-	-	-	-	-	2,13
Terrazzo Floor Grinder	\$55.71	\$32.24	\$23.47	-	-	-	-	-	-	-	-	-	2,13
<b>* TILE SETTER:</b>	<b>9/16/13</b>												
Ceramic Hard Tile; Marble Setter	\$60.57	\$37.10	\$23.47	-	-	-	-	-	-	-	-	-	2,13
Certified Ceramic Tile & Marble Helper	\$57.21	\$33.74	\$23.47	-	-	-	-	-	-	-	-	-	2,13
<b>* TRUCK DRIVER:</b>	<b>9/21/15</b>												
Concrete Mixer	\$36.12	\$32.50	\$3.62	-	-	-	-	-	-	-	-	-	
Concrete Mixer/Booster	\$45.76	\$31.93	\$13.83	-	-	-	-	-	-	-	-	-	
Dump Truck, 8 cu. yds. & under (water level); Water Truck (up to & including 2,000 gallons)	\$68.35	\$38.99	\$29.36	-	-	-	-	-	-	-	-	-	13
Flatbed, Utility, etc.	\$68.08	\$38.72	\$29.36	-	-	-	-	-	-	-	-	-	13
End Dump, Unlicensed (Euclid, Mack, Caterpillar, or similar); Tractor Trailer (hauling equipment)	\$69.74	\$40.38	\$29.36	-	-	-	-	-	-	-	-	-	13
Semi-Trailer, Rock Cans, or Semi-Dump	\$69.31	\$39.95	\$29.36	-	-	-	-	-	-	-	-	-	13
Slip-in or Pup	\$69.63	\$40.27	\$29.36	-	-	-	-	-	-	-	-	-	13
Tandem Dump Truck, over 8 cu. yds. (water level); Water Truck (over 2,000 gallons)	\$68.66	\$39.30	\$29.36	-	-	-	-	-	-	-	-	-	13

WAGE RATE SCHEDULE BULLETIN NO. 486

Classification	Current			2016			2017			2018			Remarks See Pg 6-8
	Prevailing Wage Total	Basic Hourly Rate	Fringe Hourly Rate										
<b>* UNDERGROUND LABORER:</b>	<b>8/31/15</b>			<b>8/29/16</b>			<b>9/4/17</b>			<b>9/3/18</b>			
Worker in a raise, shaft, or tunnel.													
Group 1	\$52.46	\$34.95	\$17.51	\$54.36	\$35.95	\$18.41	\$56.26	\$37.00	\$19.26	\$58.26	\$38.00	\$20.26	13
Group 2	\$53.96	\$36.45	\$17.51	\$55.86	\$37.45	\$18.41	\$57.76	\$38.50	\$19.26	\$59.76	\$39.50	\$20.26	13
Group 3	\$54.46	\$36.95	\$17.51	\$56.36	\$37.95	\$18.41	\$58.26	\$39.00	\$19.26	\$60.26	\$40.00	\$20.26	13
Group 4	\$55.46	\$37.95	\$17.51	\$57.36	\$38.95	\$18.41	\$59.26	\$40.00	\$19.26	\$61.26	\$41.00	\$20.26	13
Group 5	\$55.71	\$38.20	\$17.51	\$57.61	\$39.20	\$18.41	\$59.51	\$40.25	\$19.26	\$61.51	\$41.25	\$20.26	13
Group 6	\$55.81	\$38.30	\$17.51	\$57.71	\$39.30	\$18.41	\$59.61	\$40.35	\$19.26	\$61.61	\$41.35	\$20.26	13
Group 7	\$56.06	\$38.55	\$17.51	\$57.96	\$39.55	\$18.41	\$59.86	\$40.60	\$19.26	\$61.86	\$41.60	\$20.26	13
Group 8	\$56.51	\$39.00	\$17.51	\$58.41	\$40.00	\$18.41	\$60.31	\$41.05	\$19.26	\$62.31	\$42.05	\$20.26	13
<b>* WATER FRONT CONSTRUCTION (DREDGING):</b>	<b>9/21/15</b>												
CLAMSHELL OR DIPPER DREDGES:													
Clamshell or Dipper Operator	\$70.80	\$41.44	\$29.36	-	-	-	-	-	-	-	-	-	11,13
Mechanic; Welder; Watch Engineer	\$70.14	\$40.78	\$29.36	-	-	-	-	-	-	-	-	-	13
Deckmate; Bargemate	\$69.74	\$40.38	\$29.36	-	-	-	-	-	-	-	-	-	13
Fire Person; Oiler; Deckhand; Barge Worker	\$68.08	\$38.72	\$29.36	-	-	-	-	-	-	-	-	-	13
HYDRAULIC SUCTION DREDGES:													
Lever Operator	\$70.44	\$41.08	\$29.36	-	-	-	-	-	-	-	-	-	13
Mechanic; Welder	\$70.14	\$40.78	\$29.36	-	-	-	-	-	-	-	-	-	13
Watch Engineer (steam or electric)	\$70.29	\$40.93	\$29.36	-	-	-	-	-	-	-	-	-	13
Dozer Operator	\$70.08	\$40.72	\$29.36	-	-	-	-	-	-	-	-	-	13
Deckmate	\$69.74	\$40.38	\$29.36	-	-	-	-	-	-	-	-	-	13
Winch Operator (stern winch on dredge)	\$69.63	\$40.27	\$29.36	-	-	-	-	-	-	-	-	-	13
Fire Person; Oiler; Deckhand (can operate anchor scow under direction of deckmate); Levee Operator	\$68.08	\$38.72	\$29.36	-	-	-	-	-	-	-	-	-	13
DERRICKS:													
Operator: Derrick, Piledriver, Crane	\$70.80	\$41.44	\$29.36	-	-	-	-	-	-	-	-	-	13
Deckmate; Saurman Type Dragline (up to & including 5 yds.)	\$69.74	\$40.38	\$29.36	-	-	-	-	-	-	-	-	-	13
Saurman Type Dragline (over 5 cu. yds.)	\$70.14	\$40.78	\$29.36	-	-	-	-	-	-	-	-	-	13
Fire Person; Oiler; Deckhand	\$68.08	\$38.72	\$29.36	-	-	-	-	-	-	-	-	-	13
BOAT OPERATORS:													
Master Boat Operator	\$70.44	\$41.08	\$29.36	-	-	-	-	-	-	-	-	-	13
Boat Operator	\$70.29	\$40.93	\$29.36	-	-	-	-	-	-	-	-	-	13
Boat Deckhand	\$68.08	\$38.72	\$29.36	-	-	-	-	-	-	-	-	-	13
<b>* WATER WELL DRILLER:</b>	<b>9/21/15</b>												
Water Well Driller	\$38.47	\$31.00	\$7.47	-	-	-	-	-	-	-	-	-	
Water Well Driller Helper	\$24.37	\$18.00	\$6.37	-	-	-	-	-	-	-	-	-	
<b>WELDER:</b>													
Use wages of craft to which welding is incidental, except for Chain-Link Fence Erector. See remark.													10

Comments: Overtime must be paid at one and one-half times the basic hourly rate plus the hourly cost of required fringe benefits.

\* Indicates a wage, fringe benefit, remark, or title change from the previous bulletin.

REMARKS

1. Carpenter, Laborer (excluding High Scaler, Window Washer): \$.50 per hour shall be added to the regular straight-time rate for height pay for each hour while working from a bosun's chair and/or from a cable-suspended scaffold or work platform which is free swinging (not attached to building) for each hour worked on said rig.
2. Cement Finisher, Mason, Plasterer, Terrazzo, Tile Setter: \$1.00 per hour shall be added to the regular straight-time rate for height pay for each hour while working from a bosun's chair and/or from a cable-suspended scaffold or work platform which is free swinging (not attached to building) for each hour worked on said rig.
3. Diver (Other than Aqua Lung), Stand-By Diver (Other than Aqua Lung):
  - A. On any dive exceeding 50 feet, the diver shall, in addition, be paid the following amount of "depth money":
 

50 feet to 100 feet	\$1.50 per foot in excess of 50 feet
100 feet to 150 feet	\$100.00 plus \$2.00 per foot in excess of 100 feet
150 feet to 200 feet	\$200.00 plus \$3.00 per foot in excess of 150 feet
  - B. When it is necessary for a Diver to enter any pipe, tunnel or other enclosure, the said Diver shall, in addition to the hourly rate, receive a premium in accordance with the following schedule for distance traveled from the entrance of the pipe, tunnel or other enclosure:
    - 1) When able to stand erect, but in which there is no vertical ascent:
 

5 feet to 50 feet	\$5.00 per day
50 feet to 100 feet	\$7.50 per day
100 feet to 150 feet	\$12.50 per day
Greater than 150 feet	The premium shall be increased an additional \$7.50 for each succeeding 50 feet.
    - 2) When unable to stand erect and in which there is no vertical ascent:
 

5 feet to 50 feet	\$5.00 per day
50 feet to 100 feet	\$7.50 per day
100 feet to 150 feet	\$12.50 per day
150 feet to 200 feet	\$36.75 per day
200 feet to 300 feet	\$1.00 per foot
300 feet to 450 feet	\$1.50 per foot
450 feet to 600 feet	\$2.50 per foot
4. Electrician:
  - A. One and one-half times the straight-time rate while working in a tunnel under construction; under water with aqualung equipment; in a completed tunnel which has only one entrance or exit providing access to safety and where no other personnel are working; or in an underground structure having no access to safety or where no other personnel are working.
  - B. Double the straight-time rate shall be paid for the following types of hazardous work regardless if fall prevention devices are used:
    - 1) While working from poles, trusses, stacks, towers, tanks, bosun's chairs, swinging or rolling scaffolds, supporting structures, and open platforms, over 70 feet from the ground where the employee is subject to a free fall; provided, however, that when work is performed on stacks, towers or permanent platforms where the employees are on a firm footing within an enclosure, a hazardous condition does not exist regardless of height;
    - 2) While working outside of a railing or enclosure, or temporary platforms extending outside of a building, or from scaffolding or ladder within an enclosure where an employee's footing is within one foot of the top of such railing, and the employee is subject to a free fall of over 70 feet;
    - 3) Working on buildings while leaning over the railing or edge of the building, and is subject to a free fall of 70 feet; or
    - 4) Two hours minimum hazardous pay per day shall be paid while climbing to a stack, tower or permanent platform which exceeds 70 feet from the ground but where the employee is on a firm footing within an enclosure.
  - C. Five percent per hour shall be added to the hourly wage for height pay while working above 9,000 feet elevation.

REMARKS

5. Equipment Operator:

- A. Operators and Assistants to Engineer (climbing a boom) of cranes (under 50 tons) with booms of eighty feet or more (including jib) or of cranes (under 50 tons) with leads of one hundred feet or more, shall receive additional premium according to the following schedule:

	Per Hour
Booms of 80 feet up to, or leads of 100 feet up to, but not including 130 feet	\$0.50
Booms and/or leads of 130 feet up to, but not including 180 feet	\$0.75
Booms and/or leads of 180 feet up to and including 250 feet	\$1.15
Booms and/or leads over 250 feet	\$1.50

Operators and Assistants to Engineer (climbing a boom) of cranes (50 tons and over) with booms of 180 feet or more (including jib) shall receive additional premium according to the following schedule:

	Per Hour
Booms of 180 feet up to and including 250 feet	\$1.25
Booms over 250 feet	\$1.75

Note: The boom shall be measured from the center of the heel pin to the center of the boom or jib point sheave.

- B. \$1.25 per hour shall be added to the hourly wage while operating a rig suspended by ropes or cables or to perform work on a Yo-Yo Cat.
  - C. In a raise or shaft, a premium of \$.40 per hour will be paid in addition to the regular straight time wage.  
 A raise is defined to be an underground excavation (lined or unlined) whose length exceeds its width and the inclination of the grade from the excavation is greater than 20 degrees from the horizontal.  
 A shaft is defined to be an excavation (lined or unlined) made from the surface of the earth, generally vertical in nature, but may decline up to 75 degrees from the vertical, and whose depth is greater than 15 feet and its largest horizontal dimension. Includes an underground silo.
  - D. In a tunnel, a premium of \$.30 per hour will be paid in addition to the regular straight time wages.  
 A tunnel is defined to be an underground excavation (lined or unlined) whose length exceeds its width and the inclination of the grade from the excavation is no greater than 20 degrees from the horizontal.
6. Glazier: Effective 9/16/13 - \$1.00 per hour shall be added to the hourly wage for height pay for exterior glazing work performed in a walking/working surface with an unprotected side or edge 10 feet or more above a lower level which requires protection from fall hazards by guardrail systems, safety net systems, personal fall arrest systems, position devise systems, fall restraint systems, perimeter safety cables or controlled decking zones.
  7. Insulator: Six percent per hour shall be added to the hourly wage for hazardous pay while working from a boatswain chair, staging or free standing scaffolding erected from the ground up or mezzanine floor subject to a free fall and skyclimber suspended from a permanent structure and when working above 40 feet.
  8. Ironworker: \$.50 per hour shall be added to the hourly wage while working in tunnels or coffer dams. \$1.00 per hour shall be added to the hourly wage while working under or covered with water (submerged), or on the summits of Mauna Kea, Mauna Loa or Haleakala.
  9. Plumber: One and one-half times the straight-time rate for height pay while working from OSHA approved trusses, stacks, towers, tanks, bosun's chair, swinging or rolling scaffolding, supporting structures or on open platforms where the employee is subject to a direct fall of 40 feet or more. Provided, however, that when said work is performed where the employee is on a firm footing within an enclosure, a hazardous condition does not exist regardless of height. \$1.00 per hour shall be added to the straight-time rate while working with flame cutting or any type of welding equipment on any galvanized material or product for at least an hour.
  10. Chain-Link Fence Erector: \$1.00 per hour shall be added to the hourly wage while performing welding services.
  11. Water Front Construction: Clamshell or Dipper Operator: \$.50 per hour shall be added to the straight-time rate while working with boom (including jib) over 130 feet.
  12. Possible wage/fringe option increases:  
 Carpenter, Drywall and Lather: Effective 9/4/17 - \$0.20; 9/3/18 - \$0.25  
 Cement Finisher, Plasterer: 8/29/16 - \$0.30; 9/4/17 - \$0.30; 9/3/18 - \$0.30  
 Ironworker: Effective 9/1/16 - \$1.00  
 Painter: Effective WRS 487 - \$0.25  
 Roofer: Effective 9/4/16 - \$0.40

REMARKS

13. Overtime/Holiday must be paid at one and one-half times the basic hourly rate plus the hourly cost of required fringe, with the following exceptions:

A. Two times the basic hourly rate plus the hourly cost of required fringe.

**Asphalt Paving:** Sunday, New Year's Day, Martin Luther King Day, President's Day, Memorial Day, Kamehameha Day, Fourth of July, Labor Day, Veterans' Day, Thanksgiving Day and Christmas Day.

**Boilermaker:** Sunday, New Year's Day, President's Day, Memorial Day, Kamehameha Day, July 4th, Labor Day, Veteran's Day, Thanksgiving Day and Christmas Day.

**Diver:** Sunday, New Year's Day, Presidents' Day, Memorial Day, Kamehameha Day, Fourth of July, Labor Day, Veterans' Day, Thanksgiving Day and Christmas Day.

**Electrician:** Sunday, New Year's Day, Presidents' Day, Memorial Day, Kamehameha Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas Day.

**Elevator Constructor:** Saturday, Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day and Christmas Day.

**Equipment Operator:** Sunday, New Year's Day, Presidents' Day, Memorial Day, Kamehameha Day, Fourth of July, Labor Day, Veterans' Day, Thanksgiving Day and Christmas Day.

**Floor Layer:** Labor Day.

**Glaziers:** Sunday.

**Helicopter Work:** Sunday, New Year's Day, Presidents' Day, Memorial Day, Kamehameha Day, Fourth of July, Labor Day, Veterans' Day, Thanksgiving Day and Christmas Day.

**Ironworker:** Sunday, New Year's Day, Presidents' Day, Memorial Day, Kamehameha Day, Fourth of July, Labor Day, Veteran's Day, Thanksgiving Day, Christmas Day.

**Plumber:** Sunday, New Year's Day, President's Day, Memorial Day, Kamehameha Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day and Christmas Day.

**Sheetmetal Worker:** Sunday, New Year's Day, Martin Luther King Day, President's Day, Memorial Day, Kamehameha Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day and Christmas Day.

**Telecommunication:** Sunday, New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day.

**Truck Driver, except Concrete Mixer & Concrete Mixer/Booster:** Sunday, New Year's Day, Presidents' Day, Memorial Day, Kamehameha Day, Fourth of July, Labor Day, Veterans' Day, Thanksgiving Day and Christmas Day.

**Water Front Construction (Dredging):** Sunday, New Year's Day, Presidents' Day, Memorial Day, Kamehameha Day, Fourth of July, Labor Day, Veterans' Day, Thanksgiving Day and Christmas Day.

B. Three times the basic hourly wage plus the hourly cost of required fringe on Labor Day.

- Carpenter
- Cement Finisher
- Chain Link Fence Erector
- Drywall
- Insulator
- Laborer
- Lather
- Mason
- Plasterer
- Terrazzo
- Tile Setter
- Underground Laborer

## Applicability

The Project or Program to which the construction work covered by this contract pertains is being assisted by the United States of America and the following Federal Labor Standards Provisions are included in this Contract pursuant to the provisions applicable to such Federal assistance.

**A. 1. (i) Minimum Wages.** All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section I(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 CFR 5.5(a)(1)(iv); also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under 29 CFR 5.5(a)(1)(ii) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible, place where it can be easily seen by the workers.

**(ii) (a)** Any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. HUD shall approve an additional classification and wage rate and fringe benefits therefor only when the following criteria have been met:

**(1)** The work to be performed by the classification requested is not performed by a classification in the wage determination; and

**(2)** The classification is utilized in the area by the construction industry; and

**(3)** The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

**(b)** If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and HUD or its designee agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by HUD or its designee to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB control number 1215-0140.)

**(c)** In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and HUD or its designee do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), HUD or its designee shall refer the questions, including the views of all interested parties and the recommendation of HUD or its designee, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

**(d)** The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(ii)(b) or (c) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

**(iii)** Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

**(iv)** If the contractor does not make payments to a trustee or other third person, the contractor may consider as part

of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

**2. Withholding.** HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee or helper, employed or working on the site of the work, all or part of the wages required by the contract, HUD or its designee may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased. HUD or its designee may, after written notice to the contractor, disburse such amounts withheld for and on account of the contractor or subcontractor to the respective employees to whom they are due. The Comptroller General shall make such disbursements in the case of direct Davis-Bacon Act contracts.

**3. (i) Payrolls and basic records.** Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in Section 1(b)(2)(B) of the Davis-bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5 (a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been

communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs. (Approved by the Office of Management and Budget under OMB Control Numbers 1215-0140 and 1215-0017.)

**(ii) (a)** The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant sponsor, or owner, as the case may be, for transmission to HUD or its designee. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i) except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <http://www.dol.gov/esa/whd/forms/wh347instr.htm> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant sponsor, or owner, as the case may be, for transmission to HUD or its designee, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this subparagraph for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to HUD or its designee. (Approved by the Office of Management and Budget under OMB Control Number 1215-0149.)

**(b)** Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

**(1)** That the payroll for the payroll period contains the information required to be provided under 29 CFR 5.5 (a)(3)(ii), the appropriate information is being maintained under 29 CFR 5.5(a)(3)(i), and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR Part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(c) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by subparagraph A.3.(ii)(b).

(d) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under subparagraph A.3.(i) available for inspection, copying, or transcription by authorized representatives of HUD or its designee or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, HUD or its designee may, after written notice to the contractor, sponsor, applicant or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

#### 4. Apprentices and Trainees.

(i) **Apprentices.** Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who

is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) **Trainees.** Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by

the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

**(iii) Equal employment opportunity.** The utilization of apprentices, trainees and journeymen under 29 CFR Part 5 shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

**5. Compliance with Copeland Act requirements.** The contractor shall comply with the requirements of 29 CFR Part 3 which are incorporated by reference in this contract

**6. Subcontracts.** The contractor or subcontractor will insert in any subcontracts the clauses contained in subparagraphs 1 through 11 in this paragraph A and such other clauses as HUD or its designee may by appropriate instructions require, and a copy of the applicable prevailing wage decision, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this paragraph.

**7. Contract termination; debarment.** A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

**8. Compliance with Davis-Bacon and Related Act Requirements.** All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract

**9. Disputes concerning labor standards.** Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and HUD or its designee, the U.S. Department of Labor, or the employees or their representatives.

**10. (i) Certification of Eligibility.** By entering into this contract the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be

awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

**(ii)** No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

**(iii)** The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001. Additionally, U.S. Criminal Code, Section 1 01 0, Title 18, U.S.C., "Federal Housing Administration transactions", provides in part: "Whoever, for the purpose of . . . influencing in any way the action of such Administration..... makes, utters or publishes any statement knowing the same to be false..... shall be fined not more than \$5,000 or imprisoned not more than two years, or both."

**11. Complaints, Proceedings, or Testimony by Employees.** No laborer or mechanic to whom the wage, salary, or other labor standards provisions of this Contract are applicable shall be discharged or in any other manner discriminated against by the Contractor or any subcontractor because such employee has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or relating to the labor standards applicable under this Contract to his employer.

**B. Contract Work Hours and Safety Standards Act.** The provisions of this paragraph B are applicable where the amount of the prime contract exceeds \$100,000. As used in this paragraph, the terms "laborers" and "mechanics" include watchmen and guards.

**(1) Overtime requirements.** No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which the individual is employed on such work to work in excess of 40 hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of 40 hours in such workweek.

**(2) Violation; liability for unpaid wages; liquidated damages.** In the event of any violation of the clause set forth in subparagraph (1) of this paragraph, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in subparagraph (1) of this paragraph, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of 40 hours without payment of the overtime wages required by the clause set forth in subparagraph (1) of this paragraph.

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**(3) Withholding for unpaid wages and liquidated damages.** HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contract, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act which is held by the same prime contractor such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in subparagraph (2) of this paragraph.

**(4) Subcontracts.** The contractor or subcontractor shall insert in any subcontracts the clauses set forth in subparagraph (1) through (4) of this paragraph and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in subparagraphs (1) through (4) of this paragraph.

**C. Health and Safety.** The provisions of this paragraph C are applicable where the amount of the prime contract exceeds \$100,000.

**(1)** No laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health and safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation.

**(2)** The Contractor shall comply with all regulations issued by the Secretary of Labor pursuant to Title 29 Part 1926 and failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act, (Public Law 91-54, 83 Stat 96). 40 USC 3701 et seq.

**(3)** The contractor shall include the provisions of this paragraph in every subcontract so that such provisions will be binding on each subcontractor. The contractor shall take such action with respect to any subcontractor as the Secretary of Housing and Urban Development or the Secretary of Labor shall direct as a means of enforcing such provisions.

General Decision Number: HI140001 09/12/2014 HI1

Superseded General Decision Number: HI20130001

State: Hawaii

Construction Types: Building, Heavy (Heavy and Dredging), Highway and Residential

Counties: Hawaii Statewide.

BUILDING CONSTRUCTION PROJECTS; RESIDENTIAL CONSTRUCTION PROJECTS (consisting of single family homes and apartments up to and including 4 stories); HEAVY AND HIGHWAY CONSTRUCTION PROJECTS AND DREDGING

Modification Number	Publication Date
0	01/03/2014
1	02/07/2014
2	03/14/2014
3	04/18/2014
4	05/02/2014
5	06/13/2014
6	06/27/2014
7	07/11/2014
8	07/18/2014
9	07/25/2014
10	09/05/2014
11	09/12/2014

ASBE0132-001 08/29/2010

	Rates	Fringes
Asbestos Workers/Insulator Includes application of all insulating materials, protective coverings, coatings and finishes to all types of mechanical systems. Also the application of firestopping material for wall openings and penetrations in walls, floors, ceilings and curtain walls.....	\$ 36.65	22.24

BOIL0627-005 01/01/2013

	Rates	Fringes
BOILERMAKER.....	\$ 35.20	27.35

BRHI0001-001 09/03/2012

	Rates	Fringes
BRICKLAYER		
Bricklayers and Stonemasons.....	\$ 35.35	22.92
Pointers, Caulkers and Weatherproofers.....	\$ 35.60	22.92

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BRHI0001-002 09/02/2013

	Rates	Fringes
Tile, Marble & Terrazzo Worker		
Terrazzo Base Grinders.....	\$ 35.29	23.22
Terrazzo Floor Grinders and Tenders.....	\$ 32.24	23.22
Tile, Marble and Terrazzo Workers.....	\$ 37.10	23.22

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CARP0745-001 09/01/2014

	Rates	Fringes
Carpenters:		
Carpenters; Hardwood Floor Layers; Patent Scaffold Erectors (14 ft. and over); Piledrivers; Pneumatic Nailers; Wood Shinglers and Transit and/or Layout Man.....	\$ 42.25	20.71
Millwrights and Machine Erectors.....	\$ 42.50	20.71
Power Saw Operators (2 h.p. and over).....	\$ 42.40	20.71

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CARP0745-002 09/01/2014

	Rates	Fringes
Drywall and Acoustical Workers and Lathers.....	\$ 42.50	20.71

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ELEC1186-001 08/24/2014

	Rates	Fringes
Electricians:		
Cable Splicers.....	\$ 46.53	27.74
Electricians.....	\$ 42.30	26.45
Telecommunication worker....	\$ 23.20	17%+6.35

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ELEC1186-002 08/24/2014

Rates	Fringes
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Line Construction:

Cable Splicers.....	\$ 46.53	27.74
Groundmen/Truck Drivers.....	\$ 31.73	23.21
Heavy Equipment Operators...	\$ 38.07	25.15
Linemen.....	\$ 42.30	26.45
Telecommunication worker....	\$ 23.20	17%+\$6.35

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ELEV0126-001 01/01/2014

Rates Fringes

ELEVATOR MECHANIC.....	\$ 52.10	26.785
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a. VACATION: Employer contributes 8% of basic hourly rate for 5 years service and 6% of basic hourly rate for 6 months to 5 years service as vacation pay credit.

b. PAID HOLIDAYS: New Year's Day, Memorial Day, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day, the Friday after Thanksgiving Day and Christmas Day.

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ENGI0003-002 09/01/2014

Rates Fringes

Diver (Aqua Lung) (Scuba)		
Diver (Aqua Lung) (Scuba) (over a depth of 30 feet)...	\$ 61.50	27.06
Diver (Aqua Lung) (Scuba) (up to a depth of 30 feet)...	\$ 52.13	27.06
Stand-by Diver (Aqua Lung) (Scuba).....	\$ 42.75	27.06
Diver (Other than Aqua Lung)		
Diver (Other than Aqua Lung).....	\$ 61.50	27.06
Diver Tender (Other than Aqua Lung).....	\$ 39.72	27.06
Stand-by Diver (Other than Aqua Lung).....	\$ 42.75	27.06
Helicopter Work		
Airborne Hoist Operator for Helicopter.....	\$ 41.30	27.06
Co-Pilot of Helicopter.....	\$ 41.44	27.06
Pilot of Helicopter.....	\$ 41.61	27.06
Power equipment operator - tunnel work		
GROUP 1.....	\$ 37.74	27.06
GROUP 2.....	\$ 37.85	27.06
GROUP 3.....	\$ 38.02	27.06
GROUP 4.....	\$ 38.29	27.06
GROUP 5.....	\$ 38.60	27.06
GROUP 6.....	\$ 39.25	27.06
GROUP 7.....	\$ 39.57	27.06
GROUP 8.....	\$ 39.68	27.06
GROUP 9.....	\$ 39.79	27.06
GROUP 9A.....	\$ 40.02	27.06

GROUP 10.....	\$ 40.08	27.06
GROUP 10A.....	\$ 40.23	27.06
GROUP 11.....	\$ 40.38	27.06
GROUP 12.....	\$ 40.74	27.06
GROUP 12A.....	\$ 41.10	27.06
Power equipment operators:		
GROUP 1.....	\$ 37.44	27.06
GROUP 2.....	\$ 37.55	27.06
GROUP 3.....	\$ 37.72	27.06
GROUP 4.....	\$ 37.99	27.06
GROUP 5.....	\$ 38.30	27.06
GROUP 6.....	\$ 38.95	27.06
GROUP 7.....	\$ 39.27	27.06
GROUP 8.....	\$ 39.38	27.06
GROUP 9.....	\$ 39.49	27.06
GROUP 9A.....	\$ 39.72	27.06
GROUP 10.....	\$ 39.78	27.06
GROUP 10A.....	\$ 39.93	27.06
GROUP 11.....	\$ 40.08	27.06
GROUP 12.....	\$ 40.44	27.06
GROUP 12A.....	\$ 40.80	27.06
GROUP 13.....	\$ 37.72	27.06
GROUP 13A.....	\$ 37.99	27.06
GROUP 13B.....	\$ 38.30	27.06
GROUP 13C.....	\$ 38.95	27.06
GROUP 13D.....	\$ 39.27	27.06
GROUP 13E.....	\$ 39.38	27.06

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Fork Lift (up to and including 10 tons); Partsman (heavy duty repair shop parts room when needed).

GROUP 2: Conveyor Operator (Handling building material); Hydraulic Monitor; Mixer Box Operator (Concrete Plant).

GROUP 3: Brakeman; Deckhand; Fireman; Oiler; Oiler/Gradechecker; Signalman; Switchman; Highline Cableway Signalman; Bargeman; Bunkerman; Concrete Curing Machine (self-propelled, automatically applied unit on streets, highways, airports and canals); Leveeman; Roller (5 tons and under); Tugger Hoist.

GROUP 4: Boom Truck or dual purpose "A" Frame Truck (5 tons or less); Concrete Placing Boom (Building Construction); Dinky Operator; Elevator Operator; Hoist and/or Winch (one drum); Straddle Truck (Ross Carrier, Hyster and similar).

GROUP 5: Asphalt Plant Fireman; Compressors, Pumps, Generators and Welding Machines ("Bank" of 9 or more, individually or collectively); Concrete Pumps or Pumpcrete Guns; Lubrication and Service Engineer (Grease Rack); Screedman.

GROUP 6: Boom Truck or Dual Purpose "A"Frame Truck (over 5 tons); Combination Loader/Backhoe (up to and including 3/4 cu. yd.); Concrete Batch Plants (wet or dry); Concrete

Cutter, Groover and/or Grinder (self-propelled unit on streets, highways, airports, and canals); Conveyor or Concrete Pump (Truck or Equipment Mounted); Drilling Machinery (not to apply to waterliners, wagon drills or jack hammers); Fork Lift (over 10 tons); Loader (up to and including 3 and 1/2 cu. yds); Lull High Lift (under 40 feet); Lubrication and Service Engineer (Mobile); Maginnis Internal Full Slab Vibrator (on airports, highways, canals and warehouses); Man or Material Hoist; Mechanical Concrete Finisher (Large Clary, Johnson Bidwell, Bridge Deck and similar); Mobile Truck Crane Driver; Portable Shotblast Concrete Cleaning Machine; Portable Boring Machine (under streets, highways, etc.); Portable Crusher; Power Jumbo Operator (setting slip forms, etc., in tunnels); Rollers (over 5 tons); Self-propelled Compactor (single engine); Self-propelled Pavement Breaker; Skidsteer Loader with attachments; Slip Form Pumps (Power driven by hydraulic, electric, air, gas, etc., lifting device for concrete forms); Small Rubber Tired Tractors; Trencher (up to and including 6 feet); Underbridge Personnel Aerial Platform (50 feet of platform or less).

GROUP 7: Crusher Plant Engineer, Dozer (D-4, Case 450, John Deere 450, and similar); Dual Drum Mixer, Extend Lift; Hoist and/or Winch (2 drums); Loader (over 3 and 1/2 cu. yds. up to and including 6 yards.); Mechanical Finisher or Spreader Machine (asphalt), (Barber Greene and similar) (Screedman required); Mine or Shaft Hoist; Mobile Concrete Mixer (over 5 tons); Pipe Bending Machine (pipelines only); Pipe Cleaning Machine (tractor propelled and supported); Pipe Wrapping Machine (tractor propelled and supported); Roller Operator (Asphalt); Self-Propelled Elevating Grade Plane; Slusher Operator; Tractor (with boom) (D-6, or similar); Trencher (over 6 feet and less than 200 h.p.); Water Tanker (pulled by Euclids, T-Pulls, DW-10, 20 or 21, or similar); Winchman (Stern Winch on Dredge).

GROUP 8: Asphalt Plant Operator; Barge Mate (Seagoing); Cast-in-Place Pipe Laying Machine; Concrete Batch Plant (multiple units); Conveyor Operator (tunnel); Deckmate; Dozer (D-6 and similar); Finishing Machine Operator (airports and highways); Gradesetter; Kolman Loader (and similar); Mucking Machine (Crawler-type); Mucking Machine (Conveyor-type); No-Joint Pipe Laying Machine; Portable Crushing and Screening Plant; Power Blade Operator (under 12); Saurman Type Dragline (up to and including 5 yds.); Stationary Pipe Wrapping, Cleaning and Bending Machine; Surface Heater and Planer Operator, Tractor (D-6 and similar); Tri-Batch Paver; Tunnel Badger; Tunnel Mole and/or Boring Machine Operator Underbridge Personnel Aerial Platform (over 50 feet of platform).

GROUP 9: Combination Mixer and Compressor (gunite); Do-Mor Loader and Adams Elegrader; Dozer (D-7 or equal); Wheel and/or Ladder Trencher (over 6 feet and 200 to 749 h.p.).

GROUP 9A: Dozer (D-8 and similar); Gradesetter (when required

by the Contractor to work from drawings, plans or specifications without the direct supervision of a foreman or superintendent); Push Cat; Scrapers (up to and including 20 cu. yds); Self-propelled Compactor with Dozer; Self-Propelled, Rubber-Tired Earthmoving Equipment (up to and including 20 cu. yds) (621 Band and similar); Sheep's Foot; Tractor (D-8 and similar); Tractors with boom (larger than D-6, and similar).

GROUP 10: Chicago Boom; Cold Planers; Heavy Duty Repairman or Welder; Hoist and/or Winch (3 drums); Hydraulic Skooper (Koehring and similar); Loader (over 6 cu. yds. up to and including 12 cu. yds.); Saurman type Dragline (over 5 cu. yds.); Self-propelled, rubber-tired Earthmoving Equipment (over 20 cu. yds. up to and including 31 cu. yds.) (637D and similar); Soil Stabilizer (P & H or equal); Sub-Grader (Gurries or other automatic type); Tractors (D-9 or equivalent, all attachments); Tractor (Tandem Scraper); Watch Engineer.

GROUP 10A: Boat Operator; Cable-operated Crawler Crane (up to and including 25 tons); Cable-operated Power Shovel, Clamshell, Dragline and Backhoe (up to and including 1 cu. yd.); Dozer D9-L; Dozer (D-10, HD41 and similar) (all attachments); Gradall (up to and including 1 cu. yd.); Hydraulic Backhoe (over 3/4 cu. yds. up to and including 2 cu. yds.); Mobile Truck Crane Operator (up to and including 25 tons) (Mobile Truck Crane Driver Required); Self-propelled Boom Type Lifting Device (Center Mount) (up to and including 25 tons) (Grove, Drott, P&H, Pettibone and similar); Trencher (over 6 feet and 750 h.p. or more); Watch Engineer (steam or electric).

GROUP 11: Automatic Slip Form Paver (concrete or asphalt); Band Wagon (in conjunction with Wheel Excavator); Cable-operated Crawler Cranes (over 25 tons but less than 50 tons); Cable-operated Power Shovel, Clamshell, Dragline and Backhoe (over 1 cu. yd. up to 7 cu. yds.); Gradall (over 1 cu. yds. up to 7 cu. yds.); DW-10, 20, etc. (Tandem); Earthmoving Machines (multiple propulsion power units and 2 or more Scrapers) (up to and including 35 cu. yds., "struck" m.r.c.); Highline Cableway; Hydraulic Backhoe (over 2 cu. yds. up to and including 4 cu. yds.); Leverman; Lift Slab Machine; Loader (over 12 cu. yds); Master Boat Operator; Mobile Truck Crane Operator (over 25 tons but less than 50 tons); (Mobile Truck Crane Driver required); Pre-stress Wire Wrapping Machine; Self-propelled Boom-type Lifting Device (Center Mount) (over 25 tons m.r.c); Self-propelled Compactor (with multiple-propulsion power units); Single Engine Rubber Tired Earthmoving Machine (with Tandem Scraper); Tandem Cats; Trencher (pulling attached shield).

GROUP 12: Clamshell or Dipper Operator; Derricks; Drill Rigs; Multi-Propulsion Earthmoving Machines (2 or more Scrapers) (over 35 cu. yds "struck"m.r.c.); Operators (Derricks, Piledrivers and Cranes); Power Shovels and Draglines (7 cu.

yds. m.r.c. and over); Self-propelled rubber-tired Earthmoving equipment (over 31 cu. yds.) (657B and similar); Wheel Excavator (up to and including 750 cu. yds. per hour); Wheel Excavator (over 750 cu. yds. per hour).

GROUP 12A: Dozer (D-11 or similar or larger); Hydraulic Excavators (over 4 cu. yds.); Lifting cranes (50 tons and over); Pioneering Dozer/Backhoe (initial clearing and excavation for the purpose of providing access for other equipment where the terrain worked involves 1-to-1 slopes that are 50 feet in height or depth, the scope of this work does not include normal clearing and grubbing on usual hilly terrain nor the excavation work once the access is provided); Power Blade Operator (Cat 12 or equivalent or over); Straddle Lifts (over 50 tons); Tower Crane, Mobile; Traveling Truss Cranes; Universal, Liebherr, Linden, and similar types of Tower Cranes (in the erection, dismantling, and moving of equipment there shall be an additional Operating Engineer or Heavy Duty Repairman); Yo-Yo Cat or Dozer.

GROUP 13: Truck Driver (Utility, Flatbed, etc.)

GROUP 13A: Dump Truck, 8 cu.yds. and under (water level); Water Truck (up to and including 2,000 gallons).

GROUP 13B: Water Truck (over 2,000 gallons); Tandem Dump Truck, over 8 cu. yds. (water level).

GROUP 13C: Truck Driver (Semi-trailer. Rock Cans, Semi-Dump or Roll-Offs).

GROUP 13D: Truck Driver (Slip-In or Pup).

GROUP 13E: End Dumps, Unlicensed (Euclid, Mack, Caterpillar or similar); Tractor Trailer (Hauling Equipment); Tandem Trucks hooked up to Trailer (Hauling Equipment)

BOOMS AND/OR LEADS (HOURLY PREMIUMS):

The Operator of a crane (under 50 tons) with a boom of 80 feet or more (including jib), or of a crane (under 50 tons) with leads of 100 feet or more, shall receive a per hour premium for each hour worked on said crane (under 50 tons) in accordance with the following schedule:

Booms of 80 feet up to but not including 130 feet or Leads of 100 feet up to but not including 130 feet	0.50
Booms and/or Leads of 130 feet up to but not including 180 feet	0.75
Booms and/or Leads of 180 feet up to and including 250 feet	1.15
Booms and/or Leads over 250 feet	1.50

The Operator of a crane (50 tons and over) with a boom of 180 feet or more (including jib) shall receive a per hour premium for each hour worked on said crane (50 tons and over) in accordance with the following schedule:

Booms of 180 feet up to and including 250 feet	1.25
Booms over 250 feet	1.75

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ENGI0003-004 09/01/2014

	Rates	Fringes
Dredging: (Boat Operators)		
Boat Deckhand.....	\$ 37.72	27.06
Boat Operator.....	\$ 39.93	27.06
Master Boat Operator.....	\$ 40.08	27.06
Dredging: (Clamshell or Dipper Dredging)		
GROUP 1.....	\$ 40.44	27.06
GROUP 2.....	\$ 39.78	27.06
GROUP 3.....	\$ 39.38	27.06
GROUP 4.....	\$ 37.72	27.06
Dredging: (Derricks)		
GROUP 1.....	\$ 40.44	27.06
GROUP 2.....	\$ 39.78	27.06
GROUP 3.....	\$ 39.38	27.06
GROUP 4.....	\$ 37.72	27.06
Dredging: (Hydraulic Suction Dredges)		
GROUP 1.....	\$ 40.08	27.06
GROUP 2.....	\$ 39.93	27.06
GROUP 3.....	\$ 39.78	27.06
GROUP 4.....	\$ 39.72	27.06
GROUP 5.....	\$ 37.88	26.76
Group 5.....	\$ 39.38	27.06
GROUP 6.....	\$ 37.77	26.76
Group 6.....	\$ 39.27	27.06
GROUP 7.....	\$ 36.22	26.76
Group 7.....	\$ 37.72	27.06

CLAMSHELL OR DIPPER DREDGING CLASSIFICATIONS

- GROUP 1: Clamshell or Dipper Operator.
- GROUP 2: Mechanic or Welder; Watch Engineer.
- GROUP 3: Barge Mate; Deckmate.
- GROUP 4: Bargeman; Deckhand; Fireman; Oiler.

HYDRAULIC SUCTION DREDGING CLASSIFICATIONS

- GROUP 1: Leverman.
- GROUP 2: Watch Engineer (steam or electric).
- GROUP 3: Mechanic or Welder.
- GROUP 4: Dozer Operator.
- GROUP 5: Deckmate.
- GROUP 6: Winchman (Stern Winch on Dredge)

GROUP 7: Deckhand (can operate anchor scow under direction of Deckmate); Fireman; Leveeman; Oiler.

DERRICK CLASSIFICATIONS

GROUP 1: Operators (Derricks, Piledrivers and Cranes).

GROUP 2: Saurman Type Dragline (over 5 cubic yards).

GROUP 3: Deckmate; Saurman Type Dragline (up to and including 5 yards).

GROUP 4: Deckhand, Fireman, Oiler.

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ENGI0003-044 09/02/2013

	Rates	Fringes
Power Equipment Operators (PAVING)		
(10) Cold Planer.....	\$ 38.25	26.98
(10) Loader (2 1/2 cu. yds. and under).....	\$ 37.42	26.98
(10) Soil Stabilizer.....	\$ 38.25	26.98
(11) Loader (over 2 1/2 cu. yds. to and including 5 cu. yds.).....	\$ 37.74	26.98
(3) Roller Operator (five tons and under).....	\$ 36.19	26.98
(5) Screed Person.....	\$ 37.42	26.98
(6) Combination Loader/Backhoe (up to 3/4 cu.yd.).....	\$ 35.48	26.98
(6) Concrete Saws and/or Grinder (self-propelled unit on streets, highways, airports and canals).....	\$ 37.42	26.98
(6) Roller Operator (over five tons).....	\$ 37.62	26.98
(7) Combination Loader/Backhoe (over 3/4 cu.yd.).....	\$ 36.46	26.98
(8) Asphalt Plant Operator..	\$ 37.89	26.98
Asphalt Concrete Material Transfer.....	\$ 37.42	26.98
Asphalt Raker.....	\$ 36.46	26.98
Asphalt Spreader Operator...	\$ 37.94	26.98
Grader.....	\$ 38.25	26.98
Laborer, Hand Roller.....	\$ 35.96	26.98

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IRON0625-001 09/01/2013

	Rates	Fringes
Ironworkers:.....	\$ 34.75	28.41
a. Employees will be paid \$.50 per hour more while working in tunnels and coffer dams; \$1.00 per hour more when required to work under or are covered with water (submerged) and when they are required to work on the summit of Mauna Kea, Mauna Loa or		

Haleakala.

LABO0368-001 09/02/2013

	Rates	Fringes
Laborers:		
Driller.....	\$ 33.30	15.96
Final Clean Up.....	\$ 23.70	11.77
Gunite Operator & High		
Scaler.....	\$ 32.80	15.96
Laborer I.....	\$ 32.30	15.96
Laborer II.....	\$ 29.70	15.96
Powderman.....	\$ 33.30	15.96
Window Washer (bosun chair).	\$ 31.80	15.96

LABORERS CLASSIFICATIONS

Laborer I: Asbestos Removal Worker (EPA certified workers); Asphalt Laborer, Ironer, Raker, Luteman, and Handroller, and all types of Asphalt Spreader Boxes; Asphalt Shoveler; Assembly and Installation of Multiplates, Liner Plates, Rings, Mesh, Mats; Batching Plant (portable and temporary); Boring Machine Operator (under streets and sidewalks); Buggymobile; Burning, Welding, Signalling, Choke Setting, and Rigging in connection with Laborers' work (except demolition); Chainsaw, Faller, Logloader, and Bucker; Compactors (Jackson Jumping Jack and similar); Concrete Bucket Dumpman; Concrete Chipping; Concrete Chuteman/Hoseman (pouring concrete) (the handling of the chute from ready-mix trucks for such jobs as walls, slabs, decks, floors, foundations, footings, curbs, gutters, and sidewalks); Concrete Core Cutter (Walls, Floors, and Ceiling); Concrete Grinding or Sanding; Concrete: Hooking on, signaling, dumping of concrete for treme work over water on caissons, pilings, abutments, etc.; Concrete: Mixing, handling, conveying, pouring, vibrating, otherwise placing of concrete or aggregates or by any other process; Concrete: Operation of motorized wheelbarrows or buggies or machines of similar character, whether run by gas, diesel, or electric power; Concrete Placement Machine Operator: operation of Somero Hammerhead, Copperheads, or similar machines; Concrete Pump Machine (laying, coupling, uncoupling of all connections and cleaning of equipment); Concrete and/or Asphalt Saw (Walking or Handtype) (cutting walls or flatwork) (scoring old or new concrete and/or asphalt) (cutting for expansion joints) (streets and ways for laying of pipe, cable or conduit for all purposes); Concrete Shovelers/Laborers (Wet or Dry); Concrete Screeding for Rough Strike-Off: Rodding or striking-off, by hand or mechanical means prior to finishing; Concrete Vibrator Operator; Coring Holes: Walls, footings, piers or other obstructions for passage of pipes or conduits for any purpose and the pouring of concrete to secure the hole; Curbing (Concrete and Asphalt); Curing of Concrete (impervious membrane and form oiler) mortar and other materials by any mode or method; Cut Granite Curb Setter

(setting, leveling and grouting of all precast concrete or stone curbs); Cutting and Burning Torch (demolition); Dri Pak-It Machine; Falling, bucking, yarding, loading or burning of all trees or timber on construction site; Forklift (9 ft. and under); Grating and Grill work for drains or other purposes; Green Cutter of concrete or aggregate in any form, by hand, mechanical means, grindstone or air and/or water; Grout: Spreading for any purpose; Guinea Chaser (Grade Checker) for general utility trenches, sitework, and excavation; Headerboard Man (Asphalt or Concrete); Heat Welder of Plastic (Laborers' AGC certified workers) (when work involves waterproofing for waterpools, artificial lakes and reservoir, or heat welding for sewer pipes); Heavy Highway Laborer (Rigging, signaling, handling, and installation of pre-cast catch basins, manholes, curbs and gutters); High Pressure Nozzleman - Hydraulic Monitor (over 100# pressure); Installation of lightweight backfill; Jackhammer Operator; Jacking of slip forms: All semi and unskilled work connected therewithin; Laying of all multi-cell conduit or multi-purpose pipe; Lead base paint abatement laborers (EPA certified workers); Magnesite and Mastic Workers (Wet or Dry) (including mixer operator); Mason Tender, Mortar Man; Mortar Mixer (Block, Brick, Masonry, and Plastering); Nozzleman (Sandblasting and/or Water Blasting): handling, placing and operation of nozzle; Operation, Manual or Hydraulic jacking of shields and the use of such other mechanical equipment as may be necessary; Pavement Breakers; Paving, curbing and surfacing of streets, ways, courts, under and overpasses, bridges, approaches, slope walls, and all other labor connected therewith; Pilecutters; Pipe Assessment in place, bolting and lining up of sectional metal or other pipe including corrugated pipe; Pipelayer performing all services in the laying and installation of pipe from the point of receiving pipe in the ditch until completion of operation, including any and all forms of tubular material, whether pipe, metallic or non-metallic, conduit, and any other stationary-type of tubular device used for conveying of any substance or element, whether water, sewage, solid, gas, air, or other product whatsoever and without regard to the nature of material from which tubular material is fabricated; No-joint pipe and stripping of same, Pipewrapper, Caulker, Bander, Kettlemen, and men applying asphalt, Laykold, treating Creosote and similar-type materials (6-inch) pipe and over); Piping: resurfacing and paving of all ditches in preparation for laying of all pipes; Pipe laying of lateral sewer pipe from main or side sewer to buildings or structure (except Contractor may direct work be done under proper supervision); Pipe laying, leveling and marking of the joint used for main or side sewers and storm sewers; Laying of all clay, terra cotta, ironstone, vitrified concrete or other pipe for drainage; Placing and setting of water mains, gas mains and all pipe including removal of skids; Plaster Mortar Mixer/Pump; Pneumatic Impact Wrench; Portable Sawmill Operation: Choker setters, off bearers, and lumber handlers connected with clearing; Posthole

Digger (Hand Held, Gas, Air and Electric); Power Broom Sweepers (Small); Preparation and Compaction of roadbeds for railroad track laying, highway construction, and the preparation of trenches, footings, etc., for cross-country transmission by pipelines, electrical transmission or underground lines or cables (by mechanical means); Raising of structure by manual or hydraulic jacks or other methods and resetting of structure in new locations, including all concrete work; Ramming or compaction; Riprap, Stonepaver, and Rock Slinger (includes placement of stacked concrete, wet or dry and loading, unloading, signaling, slinging and setting of other similar materials); Rotary Scarifier (including multiple head concrete chipping Scarifier); Salamander Heater, Drying of plaster, concrete mortar or other aggregate; Scaffold Erector Leadman; Scaffolds: (Swing and hanging) including maintenance thereof; Scaler; Septic Tank/Cesspool and Drain Fields Digger and Installer; Shredder/Chipper (tree branches, brush, etc.); Stripping and Setting Forms; Stripping of Forms: Other than panel forms which are to be re-used in their original form, and stripping of forms on all flat arch work; Tampers (Barko, Wacker, and similar type); Tank Scaler and Cleaners; Tarman; Tree Climbers and Trimmers; Trencher (includes hand-held, Davis T-66 and similar type); Trucks (flatbed up to and including 2 1/2 tons when used in connection with on-site Laborers' work; Trucks (Refuse and Garbage Disposal) (from job site to dump); Vibra-Screed (Bull Float in connection with Laborers' work); Well Points, Installation of or any other dewatering system.

Laborer II: Air Blasting; Appliance Handling (job site) (after delivery and unloading in storage area); Asphalt Plant Laborer; Backfilling, Grading and all other labor connected therewith; Boring Machine; Bridge Laborer; Burning of all debris (crates, boxes, packaging waste materials); Chainman, Rodmen, and Grade Markers; Cleaning and Clearing of all debris; Cleaning, clearing, grading and/or removal for streets, highways, roadways, aprons, runways, sidewalks, parking areas, airports, approaches, and other similar installations; Cleaning or reconditioning of streets, ways, sewers and waterlines, all maintenance work and work of an unskilled and semi-skilled nature; Cleanup of Grounds and Buildings (other than "Light Clean-Up") (Janitorial Laborer); Clean-up of right-of-way; Clearing and slashing of brush or trees by hand or mechanical cutting; Concrete Bucket Tender (Groundman) hooking and unhooking of bucket; Concrete Forms; moving, cleaning, oiling and carrying to the next point of erection of all forms; Concrete Products Plant Laborers; Conveyor Tender (conveying of building materials); Cribbers, Shorer, Lagging, Sheeting, and Trench Jacking and Bracing, Hand-Guided Lagging Hammer Whaling Bracing; Crushed Stone Yards and Gravel and Sand Pit Laborers and all other similar plants; Demolition, Wrecking and Salvage Laborers: Wrecking and dismantling of buildings and all structures, with use of cutting or wrecking tools, burning or cutting, breaking away, cleaning and removal of all masonry, wood or

metal fixtures for salvage or scrap, All hooking, unhooking, signaling of materials for salvage or scrap removed by crane or derrick; Digging under streets, roadways, aprons or other paved surfaces; Chuck Tender, Outside Nipper; Dry-packing of concrete (plugging and filling of she-bolt holes); Excavation, Preparation of street ways and bridges; Fence and/or Guardrail Erector: Dismantling and/or re-installation of all fence; Finegrader; Firewatcher; Flagman (Coning, preparing, establishing and removing portable roadway barricade devices); Signal Men on all construction work defined herein, including Traffic Control Signal Men at construction site; Garbage and Debris Handlers and Cleaners; Gas, Pneumatic, and Electric Tools, not listed Group 1 (except Rototiller); General Clean-up: sweeping, cleaning, washdown, wiping of construction facility, and equipment (other than "Light Clean-up" [Janitorial] Laborer); General Excavation and Grading (all labor connected therewith); Digging of trenches, ditches and manholes and the leveling, grading and other preparation prior to laying pipe or conduit for any purpose; Excavations and foundations for buildings, piers, foundations and holes, and all other construction; General Laborer; Ground and Soil Treatment Work (Pest Control); Junk Yard Laborers (same as Salvage Yard); Landscape Nursery Laborers; Laser Beam "Target Man" in connection with Laborers' work; Layout Person for Plastic (when work involves waterproofing for waterponds, artificial lakes and reservoirs); Limbers, Brush Loaders, and Pilers; Loading, Unloading, carrying, distributing and handling of all rods and material for use in reinforcing concrete construction (except when a derrick or outrigger operated by other than hand power is used); Loading, unloading, sorting, stockpiling, handling and distribution of water mains, gas mains and all pipes; Loading and unloading of all materials, fixtures, furnishings and appliances from point of delivery to stockpile to point of installation; hooking and signalling from truck, conveyance or stockpile; Material Yard Laborers; Pipelayer Tender; Pipewrapper, Caulker, Bander, Kettlemen, and men applying asphalt, Laykold, Creosote, and similar-type materials (pipe under 6 inches); Plasterer Laborer (including Hod Carrier); Preparation, construction and maintenance of roadbeds and sub-grade for all paving, including excavation, dumping, and spreading of sub-grade material; Prestressed or precast concrete slabs, walls, or sections: all loading, unloading, stockpiling, hooking on of such slabs, walls or sections; Quarry Laborers; Railroad, Streetcar, and Rail Transit Maintenance and Repair; Removal of surplus material; Roustabout; Rubbish Trucks in connection with Building Construction Projects (excluding clearing, grubbing, and excavating); Salvage Yard: All work connected with cutting, cleaning, storing, stockpiling or handling of materials, all cleanup, removal of debris, burning, back-filling and landscaping of the site; Sandblasting (Pot Tender): Hoses and pots or markers; Scaffolds: Erection, planking and removal of all scaffolds used for support for lathers,

plasters, brick layers, masons, and other construction trades crafts; Scaffolds: (Specially designed by carpenters) laborers shall tend said carpenter on erection and dismantling thereof, preparation for foundation or mudsills, maintenance; Scraping of floors; Screeds: Handling of all screeds to be reused; handling, dismantling and conveyance of screeds; Setting, leveling and securing or bracing of metal or other road forms and expansion joints; Sheeting Piling/trench shoring (handling and placing of skip sheet or wood plank trench shoring); Ship Scalers; Sign Erector (subdivision traffic, regulatory, and street-name signs); Sloper; Slurry Seal Crews (Mixer Operator, Applicator, Squeegee Man, Shuttle Man, Top Man); Snapping of wall ties and removal of tie rods; Soil Test operations of semi and unskilled labor such as filling sand bags; Striper (Asphalt, Concrete or other Paved Surfaces); Tagging and Signaling of all building materials into high-rise units; Tool Room Attendant (Job Site); Traffic Delineating Device Applicator; Underpinning, lagging, bracing, propping and shoring, loading, signaling, right-of-way clearance along the route of movement, The clearance of new site, excavation of foundation when moving a house or structure from old site to new site; Utilities employees; Water Man; Waterscape/Hardscape Laborers; Wire Mesh Pulling (all concrete pouring operations); Wrecking, stripping, dismantling and handling concrete forms an false work.

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 LABO0368-002 09/01/2014

	Rates	Fringes
Landscape & Irrigation Laborers		
GROUP 1.....	\$ 23.20	10.11
GROUP 2.....	\$ 23.70	10.11
GROUP 3.....	\$ 19.70	10.11

LABORERS CLASSIFICATIONS

GROUP 1: Installation of non-potable permanent or temporary irrigation water systems performed for the purposes of Landscaping and Irrigation architectural horticultural work; the installation of drinking fountains and permanent or temporary irrigation systems using potable water for Landscaping and Irrigation architectural horticultural purposes only. This work includes (a) the installation of all heads, risers, valves, valve boxes, vacuum breakers (pressure and non-pressure), low voltage electrical lines and, provided such work involves electrical wiring that will carry 24 volts or less, the installation of sensors, master control panels, display boards, junction boxes, conductors, including all other components for controllers, (b) and metallic (copper, brass, galvanized, or similar) pipe, as well as PVC or other plastic pipe including all work incidental thereto, i.e., unloading, handling and

distribution of all pipes fittings, tools, materials and equipment, (c) all soldering work in connection with the above whether done by torch, soldering iron, or other means; (d) tie-in to main lines, thrust blocks (both precast and poured in place), pipe hangers and supports incidental to installation of the entire irrigation system, (e) making of pressure tests, start-up testing, flushing, purging, water balancing, placing into operation all irrigation equipment, fixtures and appurtenances installed under this agreement, and (f) the fabrication, replacement, repair and servicing of landscaping and irrigation systems. Operation of hand-held gas, air, electric, or self-powered tools and equipment used in the performance of Landscape and Irrigation work in connection with architectural horticulture; Choke-setting, signaling, and rigging for equipment operators on job-site in the performance of such Landscaping and Irrigation work; Concrete work (wet or dry) performed in connection with such Landscaping and Irrigation work. This work shall also include the setting of rock, stone, or riprap in connection with such Landscape, Waterscape, Rockscape, and Irrigation work; Grubbing, pick and shovel excavation, and hand rolling or tamping in connection with the performance of such Landscaping and Irrigation work; Sprigging, handseeding, and planting of trees, shrubs, ground covers, and other plantings and the performance of all types of gardening and horticultural work relating to said planting; Operation of flat bed trucks (up to and including 2 1/2 tons)..:

GROUP 2. Layout of irrigation and other non-potable irrigation water systems and the layout of drinking fountains and other potable irrigation water systems in connection with such Landscaping and Irrigation work. This includes the layout of all heads, risers, valves, valve boxes, vacuum breakers, low voltage electrical lines, hydraulic and electrical controllers, and metallic (coppers, brass, galvanized, or similar) pipe, as well as PVC or other plastic pipe. This work also includes the reading and interpretation of plans and specifications in connection with the layout of Landscaping, Rockscape, Waterscape, and Irrigation work; Operation of Hydro-Mulching machines (sprayman and driver), Drillers, Trenchers (riding type, Davis T-66, and similar) and fork lifts used in connection with the performance of such Landscaping and Irrigation work; Tree climbers and chain saw tree trimmers, Sporadic operation (when used in connection with Landscaping, Rockscape, Waterscape, and Irrigation work) of Skid-Steer Loaders (Bobcat and similar), Cranes (Bantam, Grove, and similar), Hoptos, Backhoes, Loaders, Rollers, and Dozers (Case, John Deere, and similar), Water Trucks, Trucks requiring a State of Hawaii Public Utilities Commission Type 5 and/or type 7 license, sit-down type and "gang" mowers, and other self-propelled, sit-down operated machines not listed under Landscape & Irrigation Maintenance Laborer; Chemical spraying using self-propelled power spraying equipment (200 gallon capacity or more).

GROUP 3: Maintenance of trees, shrubs, ground covers, lawns and other planted areas, including the replanting of trees, shrubs, ground covers, and other plantings that did not "take" or which are damaged; provided, however, that re-planting that requires the use of equipment, machinery, or power tools shall be paid for at the rate of pay specified under Landscape and Irrigation Laborer, Group 1; Raking, mowing, trimming, and runing, including the use of "weed eaters", hedge trimmers, vacuums, blowers, and other hand-held gas, air, electric, or self-powered tools, and the operation of lawn mowers (Note: The operation of sit-down type and "gang" mowers shall be paid for at the rate of pay specified under Landscape & Irrigation Laborer, Group 2); Guywiring, staking, propping, and supporting trees; Fertilizing, Chemical spraying using spray equipment with less than 200 gallon capacity, Maintaining irrigation and sprinkler systems, including the staking, clamping, and adjustment of risers, and the adjustment and/or replacement of sprinkler heads, (Note: the cleaning and gluing of pipe and fittings shall be paid for at the rate of pay specified under Landscape & Irrigation Laborer(Group 1); Watering by hand or sprinkler system and the peformance of other types of gardening, yardman, and horticultural-related work.

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LAB00368-003 09/02/2013

	Rates	Fringes
Underground Laborer		
GROUP 1.....	\$ 32.90	15.96
GROUP 2.....	\$ 34.40	15.96
GROUP 3.....	\$ 34.90	15.96
GROUP 4.....	\$ 35.90	15.96
GROUP 5.....	\$ 36.25	15.96
GROUP 6.....	\$ 36.50	15.96
GROUP 7.....	\$ 36.95	15.96

GROUP 1: Watchmen; Change House Attendant.

GROUP 2: Swamper; Brakeman; Bull Gang-Muckers, Trackmen; Dumpmen (any method); Concrete Crew (includes rodding and spreading); Grout Crew; Reboundmen

GROUP 3: Chucktenders and Cabletenders; Powderman (Prime House); Vibratorman, Pavement Breakers

GROUP 4: Miners - Tunnel (including top and bottom man on shaft and raise work); Timberman, Retimberman (wood or steel or substitute materials thereof); Blasters, Drillers, Powderman (in heading); Microtunnel Laborer; Headman; Cherry Pickerman (where car is lifted); Nipper; Grout Gunmen; Grout Pumpman & Potman; Gunite, Shotcrete Gunmen & Potmen; Concrete Finisher (in tunnel); Concrete Screed Man; Bit Grinder; Steel Form Raisers & Setters; High Pressure Nozzleman; Nozzleman (on slick line); Sandblaster-Potman

(combination work assignment interchangeable); Tugger

GROUP 5: Shaft Work & Raise (below actual or excavated ground level); Diamond Driller; Gunitite or Shotcrete Nozzleman; Rodman; Groundman

GROUP 6: Shifter

GROUP 7: Shifter (Shaft Work & Raiser)

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PAIN1791-001 07/01/2014

	Rates	Fringes
Painters:		
Brush.....	\$ 34.35	26.20
Sandblaster; Spray.....	\$ 34.35	26.20

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PAIN1889-001 07/01/2014

	Rates	Fringes
Glaziers.....	\$ 34.10	27.29

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PAIN1926-001 02/24/2013

	Rates	Fringes
Soft Floor Layers.....	\$ 29.14	22.91

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PAIN1944-001 01/01/2014

	Rates	Fringes
Taper.....	\$ 40.00	20.45

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PLAS0630-001 09/03/2012

	Rates	Fringes
PLASTERER.....	\$ 36.14	22.92

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PLAS0630-002 09/03/2012

	Rates	Fringes
Cement Masons:		
Cement Masons.....	\$ 35.30	22.72
Trowel Machine Operators....	\$ 35.45	22.72

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PLUM0675-001 07/06/2014

	Rates	Fringes
Plumber, Pipefitter, Steamfitter & Sprinkler Fitter....	\$ 38.85	24.11

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\* ROOF0221-001 09/07/2014

	Rates	Fringes
Roofers (Including Built Up, Composition and Single Ply).....	\$ 38.10	17.13

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SHEE0293-001 09/01/2013

	Rates	Fringes
Sheet metal worker.....	\$ 37.25	22.73

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SUHI1997-002 09/15/1997

	Rates	Fringes
Drapery Installer.....	\$ 13.60	1.20
FENCE ERECTOR (Chain Link Fence).....	\$ 9.33	1.65

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WELDERS - Receive rate prescribed for craft performing  
operation to which welding is incidental.

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Unlisted classifications needed for work not included within  
the scope of the classifications listed may be added after  
award only as provided in the labor standards contract clauses  
(29CFR 5.5 (a) (1) (ii)).

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The body of each wage determination lists the classification  
and wage rates that have been found to be prevailing for the  
cited type(s) of construction in the area covered by the wage  
determination. The classifications are listed in alphabetical  
order of "identifiers" that indicate whether the particular  
rate is union or non-union.

Union Identifiers

An identifier enclosed in dotted lines beginning with  
characters other than "SU" denotes that the union  
classification and rate have found to be prevailing for that  
classification. Example: PLUM0198-005 07/01/2011. The first  
four letters , PLUM, indicate the international union and the  
four-digit number, 0198, that follows indicates the local union  
number or district council number where applicable , i.e.,  
Plumbers Local 0198. The next number, 005 in the example, is

an internal number used in processing the wage determination. The date, 07/01/2011, following these characters is the effective date of the most current negotiated rate/collective bargaining agreement which would be July 1, 2011 in the above example.

Union prevailing wage rates will be updated to reflect any changes in the collective bargaining agreements governing the rates.

0000/9999: weighted union wage rates will be published annually each January.

Non-Union Identifiers

Classifications listed under an "SU" identifier were derived from survey data by computing average rates and are not union rates; however, the data used in computing these rates may include both union and non-union data. Example: SULA2004-007 5/13/2010. SU indicates the rates are not union majority rates, LA indicates the State of Louisiana; 2004 is the year of the survey; and 007 is an internal number used in producing the wage determination. A 1993 or later date, 5/13/2010, indicates the classifications and rates under that identifier were issued as a General Wage Determination on that date.

Survey wage rates will remain in effect and will not change until a new survey is conducted.

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WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- \* an existing published wage determination
- \* a survey underlying a wage determination
- \* a Wage and Hour Division letter setting forth a position on a wage determination matter
- \* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations  
Wage and Hour Division  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

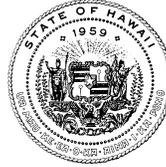
3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION



**STATE OF HAWAII  
DEPARTMENT OF LABOR AND INDUSTRIAL RELATIONS**

**List of Construction Trades in Registered Apprenticeship Programs**

Apprenticeship programs for the following construction trades were approved and registered by the State Department of Labor and Industrial Relations in accordance with Chapter 372, Hawaii Revised Statutes, and Title 12, Chapter 30, Hawaii Administrative Rules. Union and non-union programs are listed separately. The minimum requirements are not exclusive as a program sponsor may add other requirements in their selection procedures.

Trade	Sponsor	Union	Non-Union	Date of Approval/Registration	No. of Hours of On-the-Job Training	Minimum Requirements	Contact Information
<b>Boilermaker</b>	<b>Western State Area Joint Apprenticeship Committee  (International Brotherhood of Boilermakers, Iron Ship Builders, Blacksmith, Forgers, and Helpers and Subordinate, Lodge No. 627, AFL-CIO, and the Western States Joint Apprenticeship Committee, and  Association of Boilermaker Employers)</b>	x		03/18/1991	6,000	<ul style="list-style-type: none"> <li>• At least 18 years old</li> <li>• High school graduate or GED equivalent</li> </ul>	Business Manager  Address: 1414 Dillingham Blvd, Room 205 Honolulu, HI 96817  Phone: (808) 848-7744 Fax: (808) 848-0311
<b>Bricklayer-Mason</b>	<b>Joint Apprenticeship Committee for Bricklayer-Mason  (Masonry Contractors Association of Hawaii and Other Signatory Employers and  Local 1 of Hawaii of the Bricklayers and Allied Craftsmen International Union, AFL-CIO)</b>	x		02/10/64	8,000	<ul style="list-style-type: none"> <li>• At least 16 years old</li> <li>• Physically able to perform duties of the trade</li> </ul>	Director of Training or Training Coordinator  Address: 2251 N. School Street Honolulu, HI 96819  Phone: (808) 845-5949 Fax: (808) 847-7068 Website: <a href="http://www.opcmia.org/">http://www.opcmia.org/</a>

Trade	Sponsor	Union	Non-Union	Date of Approval/Registration	No. of Hours of On-the-Job Training	Minimum Requirements	Contact Information
Carpenter	<p>Carpenters Joint Apprenticeship Committee aka Hawaii Carpenters Apprenticeship and Training Program</p> <p>(General Contractors Association of Hawaii and Building Industry Labor Association and Other Signatory Contractors and the United Brotherhood of Carpenters and Joiners of America, Local 745 AFL-CIO)</p>	x		04/01/64	8,000	<ul style="list-style-type: none"> <li>At least 17 years old</li> <li>High school diploma or equivalent education, or equivalent work experience</li> <li>Pass basic math test</li> <li>Complete questionnaire</li> <li>Able to lift 75 lbs.</li> </ul>	<p>Director of Training</p> <p>Address: 1311 Houghtailing Street Room 201 Honolulu, HI 96817</p> <p>Phone: (808) 848-0794 Ext. 5 Fax: (808) 841-5961 (808) 841-0300 Website: <a href="http://www.carpenters.org/">http://www.carpenters.org/</a></p>
Carpenter	Associated Builders and Contractors Apprenticeship Committee		x	02/08/90	8,000	<ul style="list-style-type: none"> <li>At least 18 years old</li> <li>High school diploma or GED</li> <li>Full-time employee of a member company for a period of not less than six continuous weeks</li> <li>Legally able to work</li> <li>Physically able to perform duties of the trade</li> </ul>	<p>Director of Training</p> <p>Address: 1375 Dillingham Blvd. Suite 200 Honolulu, HI 96817</p> <p>Phone: (808) 845-4887 Fax: (808) 847-7876 Website: <a href="http://www.abchawaii.org/">http://www.abchawaii.org/</a></p>
Cement Finisher	<p>Joint Apprenticeship Committee for Cement Finishers</p> <p>(Operative Plasterers and Cement Finishers International Association, Local 630, AFL-CIO, and Local 1 of the International Union of Bricklayers and Allied Craftsmen, AFL-CIO)</p>	x		04/01/61	8,000	<ul style="list-style-type: none"> <li>At least 16 years old</li> <li>Physically able to perform duties of the trade</li> </ul>	<p>Director of Training or Training Coordinator</p> <p>Address: 2251 N. School Street Honolulu, HI 96819</p> <p>Phone: (808) 845-5949 Fax: (808) 847-7068 Website: <a href="http://www.opcmia.org/">http://www.opcmia.org/</a></p>
Construction Craft Laborer	<p>Hawaii Laborers' Joint Apprenticeship Committee</p> <p>(International Union of North America, Local 368, and Signatory Contractors Association)</p>	x		02/11/00	4,000	<ul style="list-style-type: none"> <li>At least 18 years old</li> <li>High school diploma or GED</li> <li>Driver's license</li> <li>Successfully complete Pre-Construction Apprentice Evaluation Course</li> </ul>	<p>Apprenticeship Coordinator</p> <p>Address: 96-138 Farrington Hwy. Pearl City, HI 96782</p> <p>Phone: (808) 455-7979 Fax: (808) 456-8689 Website: <a href="http://www.liuna.org/">http://www.liuna.org/</a></p>

Trade	Sponsor	Union	Non-Union	Date of Approval/Registration	No. of Hours of On-the-Job Training	Minimum Requirements	Contact Information
Construction Equipment Operator	Hawaii Joint Apprenticeship Committee for Operating Engineers  (General Contractors Labor Association and the Building Industry Labor Association and International Union of Operating Engineers, Local Union #3, AFL-CIO)	x		11/14/67	6,000	<ul style="list-style-type: none"> <li>At least 18 years old</li> <li>High school diploma or GED or C-based test</li> <li>Physically able to perform duties of the trade</li> <li>School transcripts</li> <li>Driver's license</li> <li>Current State DOT PUC physical</li> <li>Pass industry or general knowledge test</li> <li>Have reliable transportation</li> </ul>	<p>State Administrator</p> <p>Address: P.O. Box 428 Kahuku, HI 96731-0428</p> <p>Phone: (808) 232-2001 Fax: (808) 232-2217 Website: <a href="http://oe3.org/training/">http://oe3.org/training/</a></p>
Drywall	Carpenters Joint Apprenticeship Committee aka Hawaii Carpenters Apprenticeship and Training Program  (General Contractors Association of Hawaii and Building Industry Labor Association and Other Signatory Contractors and the United Brotherhood of Carpenters and Joiners of America, Local 745, AFL-CIO)	x		04/06/88	8,000	<ul style="list-style-type: none"> <li>At least 17 years old</li> <li>High school diploma or GED</li> <li>Complete questionnaire</li> <li>Pass industry test (8th grade math)</li> <li>Able to lift 100 lbs.</li> </ul>	<p>Director of Training</p> <p>Address: 1311 Houghtailing Street Room 201 Honolulu, HI 96817</p> <p>Phone: (808) 848-0794 Ext. 5 Fax: (808) 848-5961 (808) 841-0300 Website: <a href="http://www.carpenters.org/">http://www.carpenters.org/</a></p>
Electrical Wireperson	PECA-HEW Joint Apprenticeship Committee  (Pacific Electrical Contractors Association and the Hawaii Electrical Workers Division of Laborers International, Local 368)	x		11/20/91	10,000	<ul style="list-style-type: none"> <li>At least 16 years old</li> <li>High school diploma or GED</li> <li>Pass color code test</li> <li>Transcript of high school or post high school courses</li> <li>Pass one-year high school Algebra 1 (not pre-Algebra) or higher</li> </ul>	<p>Training Coordinator</p> <p>Address: 1130 Nimitz Highway Suite 204 Honolulu, HI 96817</p> <p>Phone: (808) 845-1986 Fax: (808) 847-7829 Website: N/A</p>

Trade	Sponsor	Union	Non-Union	Date of Approval/Registration	No. of Hours of On-the-Job Training	Minimum Requirements	Contact Information
Electrician	Associated Builders and Contractors Apprenticeship Committee		x	02/08/90	10,000	<ul style="list-style-type: none"> <li>• At least 18 years old</li> <li>• High school diploma or GED</li> <li>• Full-time employee of a member company for a period of not less than six continuous weeks</li> <li>• Legally able to work</li> <li>• Physically able to perform duties of the trade</li> <li>• Pass eye examination for color blindness</li> <li>• Completed one-year high school algebra (not pre-algebra)</li> </ul>	<p>Director of Training</p> <p>Address: 1375 Dillingham Blvd. Suite 200 Honolulu, HI 96817</p> <p>Phone: (808) 845-4887 Fax: (808) 847-7876 Website: <a href="http://www.abchawaii.org/">http://www.abchawaii.org/</a></p>
(Electrician) Wireperson	Hawaii Electricians Joint Apprenticeship Committee  (International Brotherhood of Electrical Workers (IBEW) Local 1186, AFL-CIO, and Signatory Employers)	x		04/08/47	10,000	<ul style="list-style-type: none"> <li>• At least 18 years old</li> <li>• High school diploma or GED</li> <li>• Complete the National Joint Apprenticeship and Training Committee Math Course or one-year high school Algebra 1</li> <li>• Transcript of high school or post high school courses</li> <li>• Pass industry aptitude test to qualify for oral interview</li> <li>• Application fee (non-refundable)</li> </ul>	<p>Apprenticeship or Training Coordinator</p> <p>Address: 1935 Hau Street Room 301 Honolulu, HI 96819</p> <p>Phone: (808) 847-0629 Fax: (808) 843-8818 Website: <a href="http://www.njatc.org/">http://www.njatc.org/</a></p>
Elevator Constructor	International Union of Elevator Constructors Local 126 Joint Apprenticeship Committee  (International Union of Elevator Constructors, Local 126 and Signatory Employers)	x		03/27/03	6,800	<ul style="list-style-type: none"> <li>• At least 18 years old</li> <li>• High school diploma or GED</li> <li>• School transcripts</li> <li>• Pass aptitude test (math, reading)</li> <li>• Pass medical exam</li> <li>• Physically able to perform duties of the trade</li> </ul>	<p>Business Representative</p> <p>Address: 707 Alakea Street Room 314 Honolulu, HI 96813</p> <p>Phone: (808) 536-8653 Fax: (808) 537-3779 Website: <a href="http://iuec.org/">http://iuec.org/</a></p>

Trade	Sponsor	Union	Non-Union	Date of Approval/Registration	No. of Hours of On-the-Job Training	Minimum Requirements	Contact Information
Fire Sprinkler Fitter	Honolulu Joint Apprenticeship and Training Committee for the Plumbing and Pipefitting Industry <i>aka</i> JATC of UA Plumbers and Fitters, Local 675, AFL-CIO, and PAMCAH  (Plumbing and Mechanical Contractors Association of Hawaii and United Association of Plumbers and Pipefitters Local 675, AFL-CIO)	x		10/19/92	10,000	<ul style="list-style-type: none"> <li>At least 17 years old</li> <li>High school diploma or GED</li> <li>School transcripts</li> <li>Pass placement evaluation with minimum score of 70%</li> <li>Driver's license</li> </ul>	<p>Training Coordinator</p> <p>Address: 97-731 B Kamehameha Hwy. Pearl City, HI 96782</p> <p>Phone: (808) 456-0585 Fax: (808) 456-7131 Website: <a href="http://www.ua.org/">http://www.ua.org/</a></p>
Floor Layer	Joint Apprenticeship and Training Committee for Floor Layers  (Hawaii Floor Covering Association and Carpet, Linoleum, and Soft Tile Union Local 1926, AFL-CIO)	x		02/17/66	8,000	<ul style="list-style-type: none"> <li>At least 17 years old</li> <li>Driver's license</li> <li>Pass color vision test</li> </ul>	<p>Training Coordinator</p> <p>Address: 2240 Young Street Honolulu, HI 96826</p> <p>Phone: (808) 942-3988 Fax: (808) 946-6667 Website: <a href="http://www.iupat.org/">http://www.iupat.org/</a></p>
Glazier	Joint Apprenticeship Committee for Glaziers, Architectural Metal and Glassworkers Industry <i>aka</i> Glaziers, Architectural Metal and Glassworkers JATC  (Glass/Metal Contractors Association of Hawaii and Other Signatory Contractors and the Glaziers, Architectural Metal and Glassworkers Union Local 1889, AFL-CIO)	x		04/01/01	10,000	<ul style="list-style-type: none"> <li>At least 16 years old</li> <li>High school diploma or GED</li> <li>Driver's license</li> <li>Physically able to perform duties of the trade</li> </ul>	<p>Training Coordinator</p> <p>Address: 2240 Young Street Honolulu, HI 96826</p> <p>Phone: (808) 946-3329 (808) 943-0757 Fax: (808) 946-8736 Website: <a href="http://www.iupat.org/">http://www.iupat.org/</a></p>
Heat and Frost Asbestos Insulator	Honolulu Joint Apprenticeship Committee for the Heat and Frost Asbestos Insulator Trade  (Heat and Frost Insulators and Asbestos Workers, Local 132, and Signatory Participating Employers)	x		07/23/71	10,000	<ul style="list-style-type: none"> <li>At least 16 years old</li> <li>High school diploma or GED</li> <li>Physically able to perform duties of the trade</li> </ul>	<p>Training Coordinator</p> <p>Address: 1019 Lauia Street Bay #4 Kapolei, HI 96707</p> <p>Phone: (808) 521-6405 Fax: (808) 523-9861 Website: <a href="http://www.insulators.org/">http://www.insulators.org/</a></p>

Trade	Sponsor	Union	Non-Union	Date of Approval/Registration	No. of Hours of On-the-Job Training	Minimum Requirements	Contact Information
Heavy Duty Repairman and Welder	Hawaii Joint Apprenticeship Committee for Operating Engineers  (General Contractors Labor Association and the Building Industry Labor Association and International Union of Operating Engineers, Local Union #3, AFL-CIO)	x		11/14/67	8,000	<ul style="list-style-type: none"> <li>At least 18 years old</li> <li>High school diploma or GED or C-based test</li> <li>Physically able to perform duties of the trade</li> <li>School transcripts</li> <li>Driver's license</li> <li>Current State DOT PUC physical</li> <li>Pass industry or general knowledge test</li> <li>Have reliable transportation</li> </ul>	<p>State Administrator</p> <p>Address: P.O. Box 428 Kahuku, HI 96731-0428</p> <p>Phone: (808) 232-2001 Fax: (808) 232-2217 Website: <a href="http://oe3.org/training/">http://oe3.org/training/</a></p>
Ironworker Shop Fabricator / Welder	Hawaii Shopmen's Local 803 Joint Apprenticeship and Training Committee  (International Association of Bridge, Structural and Ornamental Ironworkers, Local 803, AFL-CIO, and Participating Employers)	x		12/31/63	8,000	<ul style="list-style-type: none"> <li>At least 18 years old</li> <li>High school diploma or GED</li> <li>Physically able to perform duties of the trade</li> <li>Must be sponsored by employer who is signatory to the Shopmen's Local 803 collective bargaining agreement</li> </ul>	<p>Training Coordinator</p> <p>Address: 94-497 Ukee Street Waipahu, HI 96797</p> <p>Phone: (808) 671-4344 Fax: (808) 676-1144 Website: <a href="http://www.ironworkers.org/">http://www.ironworkers.org/</a></p>
Ironworker (Reinforcing)	Joint Apprenticeship Committee for Ironworker (Reinforcing) aka Ironworkers Joint Apprenticeship Committee (Reinforcing)  (International Association of Bridge, Structural and Ornamental Ironworkers, Local 625, AFL-CIO and Participating Employers)	x		06/26/53	6,000	<ul style="list-style-type: none"> <li>At least 16 years old</li> <li>Physically able to perform duties of the trade</li> </ul>	<p>Training Coordinator</p> <p>Address: 94-497 Ukee Street Waipahu, HI 96797</p> <p>Phone: (808) 671-8225 Fax: (808) 676-1144 Website: <a href="http://www.ironworkers.org/">http://www.ironworkers.org/</a></p>

Trade	Sponsor	Union	Non-Union	Date of Approval/Registration	No. of Hours of On-the-Job Training	Minimum Requirements	Contact Information
Ironworker (Structural)	<p>Joint Apprenticeship Committee for Ironworker (Structural) aka Ironworkers Joint Apprenticeship Committee (Structural)</p> <p>(International Association of Bridge, Structural and Ornamental Ironworkers, Local 625, AFL-CIO and Participating Employers)</p>	x		03/01/61	6,000	<ul style="list-style-type: none"> <li>At least 16 years old</li> <li>Physically able to perform duties of the trade</li> </ul>	<p>Training Coordinator</p> <p>Address: 94-497 Ukee Street Waipahu, HI 96797</p> <p>Phone: (808) 671-8225 Fax: (808) 676-1144 Website: <a href="http://www.ironworkers.org/">http://www.ironworkers.org/</a></p>
Painter	<p>Joint Apprenticeship and Training Committee for Painters</p> <p>(Painting and Decorating Contractors of Hawaii (PDCA) and the International Union of Painters and Allied Trades (IUPAT) Local 1791, AFL-CIO)</p>	x		09/01/61	8,000	<ul style="list-style-type: none"> <li>At least 16 years old</li> <li>High school diploma or GED</li> <li>Driver's license</li> <li>Physically able to perform the duties of the trade</li> <li>Pass color code vision test</li> </ul>	<p>Training Coordinator</p> <p>Address: 2240 Young Street Honolulu, HI 96826</p> <p>Phone: (808) 947-6606 Fax: (808) 942-0195 Websites: <a href="http://www.dc50.org/">http://www.dc50.org/</a> <a href="http://www.iupat.org/">http://www.iupat.org/</a></p>
Painter	<p>Associated Builders and Contractors Apprenticeship Committee</p>		x	05/02/90	8,000	<ul style="list-style-type: none"> <li>At least 18 years old</li> <li>Full-time employee of a member company for a period of not less than six continuous weeks</li> <li>Legally able to work</li> <li>Physically able to perform duties of the trade</li> <li>Pass physical examination if required by Committee</li> </ul>	<p>Director of Training</p> <p>Address: 1375 Dillingham Blvd. Suite 200 Honolulu, HI 96817</p> <p>Phone: (808) 845-4887 Fax: (808) 847-7876 Website: <a href="http://www.abchawaii.org/">http://www.abchawaii.org/</a></p>
Painter	<p>Color Dynamics, Inc.</p>		x	12/01/89	8,000	<ul style="list-style-type: none"> <li>At least 16 years old</li> <li>Physically fit to perform duties of the trade</li> <li>Must not be color blind</li> </ul>	<p>President</p> <p>Address: 816 Gulick Avenue Honolulu, HI 96819</p> <p>Phone: (808) 848-7000 Fax: (808) 842-0800 Website: <a href="http://www.colordynamics.com">http://www.colordynamics.com</a></p>

Trade	Sponsor	Union	Non-Union	Date of Approval/Registration	No. of Hours of On-the-Job Training	Minimum Requirements	Contact Information
Painter	Kawika's Painting		x	10/01/84	8,000	<ul style="list-style-type: none"> <li>At least 16 years old</li> <li>Physically fit to perform duties of the trade</li> <li>Must not be color blind</li> </ul>	<p>President</p> <p>Address: 2147 Eluwene Street Honolulu, HI 96819</p> <p>Phone: (808) 848-0003 Fax: (808) 842-1908 Website: <a href="http://www.kawikaspainting.com">http://www.kawikaspainting.com</a></p>
Paving Equipment Operator	Hawaii Joint Apprenticeship Committee for Operating Engineers  (General Contractors Labor Association and the Building Industry Labor Association and International Union of Operating Engineers, Local Union #3, AFL-CIO)	x		04/29/10	4,000	<ul style="list-style-type: none"> <li>At least 18 years old</li> <li>High school diploma or GED or C-based test</li> <li>Physically able to perform duties of the trade</li> <li>School transcripts</li> <li>Driver's license</li> <li>Current State DOT PUC physical</li> <li>Pass industry or general knowledge test</li> <li>Have reliable transportation</li> </ul>	<p>State Administrator</p> <p>Address: P.O. Box 428 Kahuku, HI 96731-0428</p> <p>Phone: (808) 232-2001 Fax: (808) 232-2217 Website: <a href="http://oe3.org/training/">http://oe3.org/training/</a></p>
Plasterer	Joint Apprenticeship Committee for Plasterers  (Pacific Bureau for Lathing and Plastering and the Operative Plasterers and Cement Finishers Association of the U.S. and Canada, Local 630, AFL-CIO)	x		06/30/59	8,000	<ul style="list-style-type: none"> <li>At least 16 years old</li> <li>Physically able to perform duties of the trade</li> </ul>	<p>Director of Training</p> <p>Address: 2251 N. School Street Honolulu, HI 96819</p> <p>Phone: (808) 845-5949 Fax: (808) 847-7068 Website: <a href="http://www.opcmia.org/">http://www.opcmia.org/</a></p>
Plumber	Honolulu Joint Apprenticeship and Training Committee for the Plumbing and Pipefitting Industry <i>aka</i> JATC of UA Plumbers and Fitters, Local 675, AFL-CIO, and PAMCAH  (Plumbing and Mechanical Contractors Association of Hawaii and United Association of Plumbers and Pipefitters Local 675, AFL-CIO)	x		11/14/52	10,000	<ul style="list-style-type: none"> <li>At least 17 years old</li> <li>High school diploma or GED</li> <li>School transcripts</li> <li>Pass placement evaluation with a minimum score of 70%</li> <li>Driver's license</li> </ul>	<p>Training Coordinator</p> <p>Address: 97-731 B Kamehameha Hwy. Pearl City, HI 96782</p> <p>Phone: (808) 456-0585 Fax: (808) 456-7131 Website: <a href="http://www.ua.org/">http://www.ua.org/</a></p>

Trade	Sponsor	Union	Non-Union	Date of Approval/Registration	No. of Hours of On-the-Job Training	Minimum Requirements	Contact Information
Plumber	Associated Builders and Contractors Apprenticeship Committee		x	02/02/99	10,000	<ul style="list-style-type: none"> <li>At least 18 years old</li> <li>Full-time employee of a member company for a period of not less than six continuous weeks</li> <li>Legally able to work</li> <li>Physically able to perform duties of the trade</li> <li>Pass physical examination if required by Committee</li> </ul>	<p>Director of Training</p> <p>Address: 1375 Dillingham Blvd. Suite 200 Honolulu, HI 96817</p> <p>Phone: (808) 845-4887</p> <p>Fax: (808) 847-7876</p> <p>Website: <a href="http://www.abchawaii.org/">http://www.abchawaii.org/</a></p>
Pointer-Caulker-Weatherproofer	<p>Joint Apprenticeship Committee for Pointer-Caulker-Weatherproofer</p> <p>(Pointing, Caulking and Weatherproofing Contractors and the International Union of Bricklayers and Allied Crafts, Local 1, AFL-CIO)</p>	x		08/23/95	6,000	<ul style="list-style-type: none"> <li>At least 16 years old</li> <li>Physically able to perform duties of the trade</li> </ul>	<p>Director of Training or Training Coordinator</p> <p>Address: 2251 N. School Street Honolulu, HI 96819</p> <p>Phone: (808) 845-5949</p> <p>Fax: (808) 847-7068</p> <p>Website: <a href="http://www.opcmia.org/">http://www.opcmia.org/</a></p>
Refrigeration Air-Conditioning	<p>Honolulu Joint Apprenticeship and Training Committee for the Plumbing and Pipefitting Industry aka JATC of UA Plumbers and Fitters, Local 675, AFL-CIO, and PAMCAH</p> <p>(Plumbing and Mechanical Contractors Association of Hawaii and United Association of Plumbers and Pipefitters Local 675, AFL-CIO)</p>	x		09/04/62	10,000	<ul style="list-style-type: none"> <li>At least 17 years old</li> <li>High school diploma or GED</li> <li>School transcripts</li> <li>Pass placement evaluation with a minimum score of 70%</li> <li>Driver's license</li> </ul>	<p>Training Coordinator</p> <p>Address: 97-731 B Kamehameha Hwy. Pearl City, HI 96782</p> <p>Phone: (808) 456-0585</p> <p>Fax: (808) 456-7131</p> <p>Website: <a href="http://www.ua.org/">http://www.ua.org/</a></p>
Roofer	<p>Joint Apprenticeship and Training Committee for Roofers</p> <p>(United Union of Roofers, Waterproofers and Allied Workers, AFL-CIO, Local 221, and All Participating Employers)</p>	x		01/13/68	8,000	<ul style="list-style-type: none"> <li>At least 16 years old</li> <li>High school diploma or GED</li> <li>Driver's license</li> <li>Physically able to perform duties of the trade</li> <li>Able to lift 100 lbs.</li> </ul>	<p>Training Director</p> <p>Address: 2045 Kamehameha IV Rd. Room 203 Honolulu, HI 96819</p> <p>Phone: (808) 847-5757</p> <p>Fax: (808) 848-8707</p> <p>Website: <a href="http://www.unionroofers.com">http://www.unionroofers.com</a></p>

Trade	Sponsor	Union	Non-Union	Date of Approval/Registration	No. of Hours of On-the-Job Training	Minimum Requirements	Contact Information
Roofer	Associated Builders and Contractors Apprenticeship Committee		x	01/09/96	7,000	<ul style="list-style-type: none"> <li>At least 18 years old</li> <li>Full-time employee of a member company for a period of not less than six continuous weeks</li> <li>Legally able to work</li> <li>Physically able to perform duties of the trade</li> <li>Pass physical examination if required by Committee</li> </ul>	<p>Director of Training</p> <p>Address: 1375 Dillingham Blvd. Suite 200 Honolulu, HI 96817</p> <p>Phone: (808) 845-4887</p> <p>Fax: (808) 847-7876</p> <p>Website: <a href="http://www.abchawaii.org/">http://www.abchawaii.org/</a></p>
Sheet Metal Worker	Hawaii Joint Apprenticeship Committee for the Sheet Metal Industry  (Sheet Metal Contractor's Association and Sheet Metal Workers' International Association, Local 293)	x		01/02/58	10,000	<ul style="list-style-type: none"> <li>At least 18 years old</li> <li>High school diploma or GED</li> <li>Driver's license</li> </ul>	<p>Apprenticeship Coordinator</p> <p>Address: 1405 North King Street Room 403 Honolulu, HI 96817</p> <p>Phone: (808) 841-6106</p> <p>Fax: (808) 841-1842</p> <p>Website: <a href="http://www.smwia.org/">http://www.smwia.org/</a></p>
Steamfitter/Welder	Honolulu Joint Apprenticeship and Training Committee for the Plumbing and Pipefitting Industry <i>aka</i> JATC of UA Plumbers and Fitters, Local 675, AFL-CIO, and PAMCAH  (Plumbing and Mechanical Contractors Association of Hawaii and United Association of Plumbers and Pipefitters Local 675, AFL-CIO)	x		02/05/02	10,000	<ul style="list-style-type: none"> <li>At least 17 years old</li> <li>High school diploma or GED</li> <li>School transcripts</li> <li>Pass placement evaluation with a minimum score of 70%</li> <li>Driver's license</li> </ul>	<p>Training Coordinator</p> <p>Address: 97-731 B Kamehameha Hwy. Pearl City, HI 96782</p> <p>Phone: (808) 456-0585</p> <p>Fax: (808) 456-7131</p> <p>Website: <a href="http://www.ua.org/">http://www.ua.org/</a></p>
Stone Mason	Joint Apprenticeship Committee for Stone Mason Industry  (Masonry Contractors Association of Hawaii and Local 1 of Hawaii of the Bricklayers and Allied Craftsmen International Union, AFL-CIO, and Other Signatory Employers)	x		02/10/64	8,000	<ul style="list-style-type: none"> <li>At least 16 years old</li> <li>Physically able to perform duties of the trade</li> </ul>	<p>Director of Training or Training Coordinator</p> <p>Address: 2251 N. School Street Honolulu, HI 96819</p> <p>Phone: (808) 845-5949</p> <p>Fax: (808) 847-7068</p> <p>Website: <a href="http://www.opcmia.org/">http://www.opcmia.org/</a></p>

Trade	Sponsor	Union	Non-Union	Date of Approval/Registration	No. of Hours of On-the-Job Training	Minimum Requirements	Contact Information
Taper	<p>Joint Apprenticeship Committee for Tapers</p> <p>(Gypsum Drywall Contractors Association of Hawaii and the International Brotherhood of Painters and Allied Trades Tapers Local Union 1944, AFL-CIO)</p>	x		09/01/67	8,000	<ul style="list-style-type: none"> <li>At least 16 years old</li> <li>Physically able to perform duties of the trade</li> </ul>	<p>Chairman</p> <p>Address: 2240 Young Street Honolulu, HI 96826</p> <p>Phone: (808) 946-6621 Fax: (808) 946-6623 Website: <a href="http://www.dc50.org/">http://www.dc50.org/</a></p>
Telecommunication / CATV Installer Technician	<p>Hawaii Electricians Joint Apprenticeship Committee</p> <p>aka Joint Apprenticeship Committee for Telecommunications</p> <p>(International Brotherhood of Electrical Workers Local Union 1186, AFL-CIO, and Signatory Employers)</p>	x		09/16/98	6,000	<ul style="list-style-type: none"> <li>At least 16 years old</li> <li>High school diploma or equivalent or GED</li> <li>High school transcript</li> <li>Pass color code test</li> <li>Physically fit to perform duties of the trade</li> <li>One-year satisfactory completion of high school algebra (not Pre-Algebra)</li> </ul>	<p>Apprenticeship or Training Coordinator</p> <p>Address: 1935 Hau Street Room 301 Honolulu, HI 96819</p> <p>Phone: (808) 847-0629 Fax: (808) 843-8818 Website: <a href="http://www.njatc.org/">http://www.njatc.org/</a></p>
Tile Setter	<p>Joint Apprenticeship Committee for Tile Setters</p> <p>(Tile, Marble and Terrazo Contractors Association of Hawaii and Local 1 of Hawaii of the Bricklayers, and Allied Craftsmen International Union of America, AFL-CIO)</p>	x		06/24/58	8,000	<ul style="list-style-type: none"> <li>At least 16 years old</li> <li>Physically able to perform duties of the trade</li> </ul>	<p>Director of Training or Training Coordinator</p> <p>Address: 2251 N. School Street Honolulu, HI 96819</p> <p>Phone: (808) 845-5949 Fax: (808) 847-7068 Website: <a href="http://www.opcmia.org/">http://www.opcmia.org/</a></p>

Trade	Sponsor	Union	Non-Union	Date of Approval/Registration	No. of Hours of On-the-Job Training	Minimum Requirements	Contact Information
Truck Operator and Driver	<p>Hawaii Joint Apprenticeship Committee for Operating Engineers</p> <p>(General Contractors Labor Association and the Building Industry Labor Association and International Union of Operating Engineers, Local Union #3, AFL-CIO)</p>	x		03/01/91	2,000	<ul style="list-style-type: none"> <li>● At least 18 years old</li> <li>● High school diploma or GED or C-based test</li> <li>● Physically able to perform duties of the trade</li> <li>● School transcripts</li> <li>● Driver's license</li> <li>● Current State DOT PUC physical</li> <li>● Pass industry or general knowledge test</li> <li>● Have reliable transportation</li> </ul>	<p style="text-align: right;">State Administrator</p> <p>Address: P.O. Box 428 Kahuku, HI 96731-0428</p> <p>Phone: (808) 232-2001 Fax: (808) 232-2217 Website: <a href="http://oe3.org/training/">http://oe3.org/training/</a></p>

APPRENTICE SCHEDULE BULLETIN NO. 485 FEBRUARY 16, 2015

Rates are applicable only to apprentices who are parties to agreements registered with the Department of Labor and where the journeyworker to apprentice ratio is met.

Apprentice Classifications	Interval Hrs	BASIC HOURLY RATE										FRINGE BENEFIT HOURLY RATE	Remarks See Pg 9
		1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total	
* BOILERMAKER	1000	\$23.93	\$25.64	\$27.34	\$29.05	\$30.76	\$32.47					\$29.45	
CARPENTER													
Indentured Prior to 9/1/02	1000	\$16.90										\$12.12	1
"	1000		\$19.01	\$21.13	\$25.35	\$29.58	\$33.80	\$38.03	\$40.14			\$20.71	1
Indentured After 9/1/02	1000	\$16.90										\$8.12	1
"	1000		\$19.01									\$12.01	1
"	1000			\$21.13	\$25.35							\$14.51	1
"	1000					\$29.58	\$33.80					\$16.51	1
"	1000							\$38.03	\$40.14			\$18.51	1
* CEMENT FINISHER													
Indentured Prior to 9/1/03	1000	\$18.65										\$7.77	2
"	1000		\$20.52	\$22.38	\$26.11	\$27.98	\$29.84	\$31.71	\$33.57			\$24.52	2
Indentured On or After 9/1/03	1000	\$18.65	\$20.52	\$22.38	\$26.11	\$27.98	\$29.84	\$31.71	\$33.57			\$11.96	2
<b>(Effective 8/31/15)</b>													
* CEMENT FINISHER													
Indentured Prior to 9/1/03	1000	\$18.95										\$8.37	2
"	1000		\$20.85	\$22.74	\$26.53	\$28.43	\$30.32	\$32.22	\$34.11			\$25.58	2
Indentured On or After 9/1/03	1000	\$18.95	\$20.85	\$22.74	\$26.53	\$28.43	\$30.32	\$32.22	\$34.11			\$13.02	2
* CONSTRUCTION CRAFT LABORER (LABORER I)													
Indentured On or After 9/3/02	1000	\$16.65										\$6.05	1
"	1000		\$19.98	\$23.31	\$26.64							\$12.35	1
<b>(Effective 8/31/15)</b>													
* CONSTRUCTION CRAFT LABORER (LABORER I)													
Indentured On or After 9/3/02	1000	\$17.18										\$6.55	1
"	1000		\$20.61	\$24.05	\$27.48							\$12.95	1
CONSTRUCTION EQUIPMENT OPERATOR													
Indentured On or After 9/1/02	1000	\$19.86										\$6.85	3
"	1000		\$21.85									\$16.76	3
"	1000			\$23.83								\$17.66	3
"	1000				\$27.80							\$19.47	3
"	1000					\$31.78						\$21.26	3
"	1000						\$35.75					\$23.07	3

APPRENTICE SCHEDULE BULLETIN NO. 485 FEBRUARY 16, 2015

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Apprentice Classifications	Interval Hrs	BASIC HOURLY RATE										FRINGE BENEFIT HOURLY RATE	Remarks See Pg 9
		1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total	
DRYWALL INSTALLER	1000	\$17.00										\$12.12	
Indentured Prior to 9/1/02	1000		\$19.13	\$21.25	\$25.50	\$29.75	\$34.00	\$38.25	\$40.38			\$20.71	
"	1000	\$17.00										\$8.12	
Indentured After 9/1/02	1000		\$19.13									\$12.01	
"	1000			\$21.25	\$25.50							\$14.51	
"	1000					\$29.75	\$34.00					\$16.51	
"	1000							\$38.25	\$40.38			\$18.51	
ELECTRICIAN (WIRE & LINE INSTALLER)	1000	\$14.81										\$9.51	
"	1000		\$16.92									\$9.82	
"	1000			\$19.04								\$15.94	4
"	1000				\$21.15							\$16.90	4
"	1000					\$23.27						\$17.85	4
"	1000						\$25.38					\$18.81	4
"	1000							\$27.50				\$19.77	4
"	1000								\$29.61			\$20.71	4
"	1000									\$33.84		\$22.63	4
"	1000										\$38.07	\$24.54	4
<b>(Effective 2/22/15)</b>													
ELECTRICIAN (WIRE & LINE INSTALLER)	1000	\$14.93										\$9.78	
"	1000		\$17.06									\$10.09	
"	1000			\$19.19								\$16.25	4
"	1000				\$21.33							\$17.20	4
"	1000					\$23.46						\$18.16	4
"	1000						\$25.59					\$19.12	4
"	1000							\$27.72				\$20.09	4
"	1000								\$29.86			\$21.04	4
"	1000									\$34.12		\$22.95	4
"	1000										\$38.39	\$24.89	4
<b>(Effective 8/23/15)</b>													
* ELECTRICIAN (WIRE & LINE INSTALLER)	1000	\$15.07										\$10.10	
"	1000		\$17.22									\$10.42	
"	1000			\$19.37								\$16.59	4
"	1000				\$21.53							\$17.57	4
"	1000					\$23.68						\$18.53	4
"	1000						\$25.83					\$19.49	4
"	1000							\$27.98				\$20.47	4
"	1000								\$30.14			\$21.44	4
"	1000									\$34.44		\$23.36	4
"	1000										\$38.75	\$25.30	4

APPRENTICE SCHEDULE BULLETIN NO. 485 FEBRUARY 16, 2015

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Apprentice Classifications	Interval Hrs	BASIC HOURLY RATE										FRINGE BENEFIT HOURLY RATE	Remarks See Pg 9
		1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total	
* ELEVATOR CONSTRUCTOR	850	\$26.54										-	
"	850		\$29.19									\$28.385	
"	1700			\$34.50	\$37.15	\$42.46						\$28.385	
FLOOR LAYER													
Indentured After 2/27/94	1000	\$12.09	\$13.60									\$15.17	
" "	1000			\$15.12	\$16.63							\$20.17	
" "	1000					\$18.14	\$19.65	\$22.67	\$25.70			\$24.17	
<b>(Effective 3/1/15)</b>													
* FLOOR LAYER													
Indentured After 2/27/94	1000	\$12.46	\$14.02									\$16.75	
" "	1000			\$15.58	\$17.13							\$21.75	
" "	1000					\$18.69	\$20.25	\$23.36	\$26.48			\$25.75	
GLAZIER													
Indentured Prior to 7/1/99	1000	\$18.76										\$25.31	5
"	1000		\$20.46									\$25.53	5
"	1000			\$23.87								\$25.97	5
"	1000				\$25.58							\$26.19	5
"	1000					\$27.28						\$26.41	5
"	1000						\$28.99					\$26.63	5
"	1000							\$30.69				\$26.85	5
"	1000								\$32.40			\$27.07	5
Indentured On or After 7/1/99	1000	\$15.35										\$24.87	5
"	1000		\$17.05									\$25.09	5
"	1000			\$18.76								\$25.31	5
"	1000				\$20.46							\$25.53	5
"	1000					\$23.87						\$25.97	5
"	1000						\$25.58					\$26.19	5
"	1000							\$27.28				\$26.41	5
"	1000								\$28.99			\$26.63	5
"	1000									\$30.69		\$26.85	5
"	1000										\$32.40	\$27.07	5

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Apprentice Classifications	Interval Hrs	BASIC HOURLY RATE										FRINGE BENEFIT HOURLY RATE	Remarks See Pg 9	
		1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total		
HEAVY DUTY REPAIRER & WELDER (EQUIP. OPR 9A)														
Indentured On or After 9/1/02	1000	\$19.86										\$6.85	3	
"	1000		\$21.85									\$16.76	3	
"	1000			\$23.83								\$17.66	3	
"	1000				\$27.80							\$19.47	3	
"	1000					\$31.78						\$21.26	3	
"	1000						\$33.76					\$22.17	3	
"	1000							\$35.75				\$23.07	3	
"	1000								\$37.73			\$23.97	3	
INSULATOR														
Hired After 5/3/95	2000	\$19.33										\$7.70	6	
"	2000		\$19.33									\$17.21	6	
"	2000			\$23.19								\$17.49	6	
"	2000				\$27.06							\$17.78	6	
"	2000					\$30.92						\$18.06	6	
<b>(Effective 8/30/15)</b>														
* INSULATOR														
Hired After 5/3/95	2000	\$19.83										\$7.70	6	
"	2000		\$19.83									\$17.06	6	
"	2000			\$23.79								\$17.34	6	
"	2000				\$27.76							\$17.63	6	
"	2000					\$31.72						\$17.91	6	
IRONWORKER (REINFORCING & STRUCTURAL)														
Indentured After 10/31/93	1000	\$17.88										\$23.97	7	
"	1000		\$19.66									\$24.47	7	
"	1000			\$21.45								\$24.97	7	
"	1000				\$25.03							\$25.98	7	
"	1000					\$28.60						\$26.99	7	
"	1000						\$32.18					\$28.00	7	
<b>(Effective 9/1/15)</b>														
* IRONWORKER (REINFORCING & STRUCTURAL)														
Indentured After 10/31/93	1000	\$18.38										\$23.97	7	
"	1000		\$20.21									\$24.47	7	
"	1000			\$22.05								\$24.97	7	
"	1000				\$25.73							\$25.98	7	
"	1000					\$29.40						\$26.99	7	
"	1000						\$33.08					\$28.00	7	

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Apprentice Classifications	Interval Hrs	BASIC HOURLY RATE										FRINGE BENEFIT HOURLY RATE	Remarks See Pg 9
		1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total	
MASON BRICKLAYER Indentured On or After 9/1/03	1000	\$18.43	\$20.27	\$22.11	\$25.80	\$27.64	\$29.48	\$31.32	\$33.17			\$10.87	2
STONE MASON Indentured On or After 9/1/03	1000	\$20.27	\$22.11	\$23.95	\$25.80	\$27.64	\$29.48	\$31.32	\$33.17			\$10.87	2
POINTER-CAULKER-WEATHERPROOFER Indentured On or After 9/1/03	1000	\$18.55	\$20.41	\$22.26	\$25.97	\$29.68	\$33.39					\$10.87	2
* PAINTER	1000	\$15.57										\$7.60	
"	1000		\$17.30	\$19.03	\$20.76	\$22.49						\$11.10	
"	1000						\$24.22					\$12.10	
"	1000							\$27.68	\$31.14			\$12.85	
<b>(Effective 7/1/15)</b>													
* PAINTER	1000	\$15.68										\$7.60	
"	1000		\$17.43	\$19.17	\$20.91	\$22.65						\$11.10	
"	1000						\$24.40					\$12.10	
"	1000							\$27.88	\$31.37			\$12.85	
PAVING EQUIPMENT OPERATOR	1000	\$21.13										\$6.85	
"	1000		\$26.89									\$17.21	
"	1000			\$30.74								\$20.04	
"	1000				\$34.58							\$23.81	
* PLASTERER Indentured On or After 9/1/03	1000	\$15.32	\$17.23	\$19.15	\$21.06	\$22.97	\$26.80	\$30.63	\$34.46			\$11.96	2
<b>(Effective 8/31/15)</b>													
* PLASTERER Indentured On or After 9/1/03	1000	\$15.62	\$17.57	\$19.52	\$21.47	\$23.42	\$27.33	\$31.23	\$35.14			\$13.02	2

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Apprentice Classifications	Interval Hrs	BASIC HOURLY RATE										FRINGE BENEFIT HOURLY RATE	Remarks See Pg 9	
		1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total		
PLUMBER: PLUMBER; FIRE SPRINKLER FITTER; REFRIGERATION AIR CONDITIONING; STEAMFITTER-WELDER														
Indentured Prior to 9/2/85	1000	\$13.77											\$18.20	8
"	1000		\$15.74										\$18.65	8
"	1000			\$17.71									\$19.12	8
"	1000				\$19.68								\$19.58	8
"	1000					\$21.64							\$20.05	8
"	1000						\$23.61						\$20.51	8
"	1000							\$25.58					\$20.97	8
"	1000								\$27.55				\$21.43	8
"	1000									\$29.51			\$21.90	8
"	1000										\$31.48		\$22.36	8
Indentured On or After 9/2/85	1000	\$15.82											\$4.06	8
"	1000		\$15.82										\$4.11	8
"	1000			\$18.69									\$5.42	8
"	1000				\$18.69								\$5.42	8
"	1000					\$21.64							\$6.10	8
"	1000						\$21.64						\$6.10	8
"	1000							\$25.58					\$6.90	8
"	1000								\$25.58				\$6.90	8
"	1000									\$29.51			\$7.52	8
"	1000										\$29.51		\$7.52	8

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Apprentice Classifications	Interval Hrs	BASIC HOURLY RATE										FRINGE BENEFIT HOURLY RATE	Remarks See Pg 9	
		1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total		
<b>(Effective 7/5/15)</b>														
* PLUMBER:														
PLUMBER; FIRE SPRINKLER FITTER; REFRIGERATION AIR CONDITIONING; STEAMFITTER-WELDER														
Indentured Prior to 9/2/85	1000	\$13.95											\$18.45	8
"	1000		\$15.94										\$18.90	8
"	1000			\$17.93									\$19.37	8
"	1000				\$19.93								\$19.83	8
"	1000					\$21.92							\$20.30	8
"	1000						\$23.91						\$20.76	8
"	1000							\$25.90					\$21.22	8
"	1000								\$27.90				\$21.68	8
"	1000									\$29.89			\$22.15	8
"	1000										\$31.88		\$22.61	8
Indentured On or After 9/2/85	1000	\$16.02											\$4.06	8
"	1000		\$16.02										\$4.11	8
"	1000			\$18.93									\$5.67	8
"	1000				\$18.93								\$5.67	8
"	1000					\$21.92							\$6.36	8
"	1000						\$21.92						\$6.36	8
"	1000							\$25.90					\$7.19	8
"	1000								\$25.90				\$7.19	8
"	1000									\$29.89			\$7.82	8
"	1000										\$29.89		\$7.82	8
<b>ROOFER</b>														
Indentured Prior to 11/1/98	1000	\$17.15	\$19.05	\$22.86									\$12.88	9
"	1000				\$26.67	\$30.48	\$34.29	\$36.20					\$17.13	9
Indentured On or After 11/1/98 and Prior to 11/4/12	1000	\$17.15	\$19.05	\$22.86									\$12.88	9
"	1000				\$26.67	\$30.48	\$32.39	\$34.29	\$36.20				\$17.13	9
Indentured On or After 11/4/12	2000	\$17.15	\$22.86										\$12.88	9
"	2000			\$30.48	\$34.29								\$17.13	9
<b>(Effective 9/6/15)</b>														
* ROOFER														
Indentured Prior to 11/1/98	1000	\$17.48	\$19.43	\$23.31									\$12.88	9
"	1000				\$27.20	\$31.08	\$34.97	\$36.91					\$17.13	9
Indentured On or After 11/1/98 and Prior to 11/4/12	1000	\$17.48	\$19.43	\$23.31									\$12.88	9
"	1000				\$27.20	\$31.08	\$33.02	\$34.97	\$36.91				\$17.13	9
Indentured On or After 11/4/12	2000	\$17.48	\$23.31										\$12.88	9
"	2000			\$31.08	\$34.97								\$17.13	9

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Apprentice Classifications	Interval Hrs	BASIC HOURLY RATE										FRINGE BENEFIT HOURLY RATE	Remarks See Pg 9	
		1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total		
SHEETMETAL WORKER	1000	\$15.36											\$11.21	
"	1000		\$17.28										\$11.38	
"	1000			\$19.20									\$18.70	
"	1000				\$21.12								\$19.16	
"	1000					\$23.04							\$19.63	
"	1000						\$24.96						\$20.10	
"	1000							\$26.88					\$20.58	
"	1000								\$28.80				\$21.05	
"	1000									\$30.72			\$21.52	
"	1000										\$32.64		\$21.99	
* TAPER	1000	\$16.40	\$18.45	\$20.50	\$22.55	\$24.60							\$7.25	
	1000						\$26.65						\$7.75	
	1000							\$30.75	\$34.85				\$10.10	
TELECOMMUNICATION WORKER (TECHNICIAN I / SPLICER)	1000	\$14.63											\$9.60	
"	1000		\$15.85										\$9.79	
"	1000			\$17.07									\$10.00	
"	1000				\$18.29								\$10.21	
"	1000					\$19.50							\$10.42	
"	1000						\$21.94						\$10.83	
TILE SETTER CERAMIC & HARD TILE														
Indentured Prior to 9/1/03	1000	\$18.55											\$7.12	2
"	1000		\$20.41	\$22.26	\$25.97	\$27.83	\$29.68	\$31.54	\$33.39				\$23.47	2
Indentured On or After 9/1/03	1000	\$18.55	\$20.41	\$22.26	\$25.97	\$27.83	\$29.68	\$31.54	\$33.39				\$10.87	2

\* Indicates a wage, fringe benefit, remark, or title change from the previous bulletin.

REMARKS:

1. Carpenter, Construction Craft Laborer: \$.50 per hour shall be added to the regular straight-time rate for height pay for each hour while working from a bosun's chair and/or from a cable-suspended scaffold or work platform which is free swinging (not attached to building) for each hour worked on said rig.
2. Cement Finisher, Mason, Plasterer, Tile Setter: \$1.00 per hour shall be added to the regular straight-time rate for height pay for each hour while working from a bosun's chair and/or from a cable-suspended scaffold or work platform which is free swinging (not attached to building) for each hour worked on said rig.
3. Construction Equipment Operator, Heavy Duty Repairer & Welder: \$1.25 per hour shall be added to the hourly wage while operating a rig suspended by ropes or cables or to perform work on a Yo-Yo Cat.
4. Electrician:
  - A. One and one-half times the straight-time rate while working in a tunnel under construction; under water with aqualung equipment; in a completed tunnel which has only one entrance or exit providing access to safety and where no other personnel are working; or in an underground structure having no access to safety or where no other personnel are working.
  - B. Double the straight-time rate shall be paid for the following types of hazardous work regardless if fall prevention devices are used:
    - 1) While working from poles, trusses, stacks, towers, tanks, bosun's chairs, swinging or rolling scaffolds, supporting structures, and open platforms, over 70 feet from the ground where the employee is subject to a free fall; provided, however, that when work is performed on stacks, towers or permanent platforms where the employees are on a firm footing within an enclosure, a hazardous condition does not exist regardless of height;
    - 2) While working outside of a railing or enclosure, or temporary platforms extending outside of a building, or from scaffolding or ladder within an enclosure where an employee's footing is within one foot of the top of such railing, and the employee is subject to a free fall of over 70 feet;
    - 3) Working on buildings while leaning over the railing or edge of the building, and is subject to a free fall of 70 feet; or
    - 4) Two hours minimum hazardous pay per day shall be paid while climbing to a stack, tower or permanent platform which exceeds 70 feet from the ground but where the employee is on a firm footing within an enclosure.
  - C. Five percent per hour shall be added to the hourly wage for height pay while working above 9,000 feet elevation.
5. Glazier: Effective 9/16/13 - \$1.00 per hour shall be added to the hourly wage for height pay for exterior glazing work performed in a walking/working surface with an unprotected side or edge 10 feet or more above a lower level which requires protection from fall hazards by guardrail systems, safety net systems, personal fall arrest systems, position devise systems, fall restraint systems, perimeter safety cables or controlled decking zones.
6. Insulator: Six percent per hour shall be added to the hourly wage for hazardous pay while working from a boatswain chair, staging or free standing scaffolding erected from ground up or mezzanine floor subject to a free fall and skylimber suspended from a permanent structure and when working above 40 feet.
7. Ironworker: \$.50 per hour shall be added to the hourly wage while working in tunnels or coffer dams. \$1.00 per hour shall be added to the hourly wage while working under or covered with water (submerged), or on the summits of Mauna Kea, Mauna Loa or Haleakala.
8. Plumber: One and one-half times the straight-time rate for height pay while working from OSHA approved trusses, stacks, towers, tanks, bosun's chair, swinging or rolling scaffolding, supporting structures or on open platforms where the employee is subject to a direct fall of 40 feet or more. Provided, however, that when said work is performed where the employee is on a firm footing within an enclosure, a hazardous condition does not exist regardless of height. \$1.00 per hour shall be added to the straight-time rate while working with flame cutting or any type of welding equipment on any galvanized material or product for at least an hour.
9. Roofer: When an apprentice has accumulated 2500 hours, \$4.25 will be added to his/her pension/annuity plan.  
The apprenticeship program for apprentices indentured on or after November 4, 2012, consists of four steps with 2,000 hours for each step.