DEPARTMENT OF HAWAIIAN HOME LANDS
STATE OF HAWAII

MARCH 12, 2012

ADDENDUM NO. 1

TO
PLANS, BID FORM, SPECIFICATIONS, CONTRACT AND BOND

FOR

LALAMILO HOUSING PHASE 2A, INCREMENT 1, (PART I) AND
LALAMILO HOUSING PHASE 2A, KAWAIHAE ROAD IMPROVEMENTS
AT SOUTH KOHALA DISTRIBUTION ROAD (PART II)
(IFB-12-HHL-008)

WAIMEA, SOUTH KOHALA, ISLAND OF HAWAII, HAWAII

TAX MAP KEY: 3-6-6-01: 10 & 77

NOTICE TO ALL PROSPECTIVE BIDDERS

This addendum is hereby made a part of the PLANS, BID FORM, SPECIFICATIONS, CONTRACT AND BOND for the LALAMILO HOUSING PHASE 2A, INCREMENT 1 (PART I) AND LALAMILO HOUSING PHASE 2A, KAWAIHAE ROAD IMPROVEMENTS AT SOUTH KOHALA DISTRIBTION ROAD (PART II), WAIMEA, SOUTH KOHALA, ISLAND OF HAWAII, HAWAII, and it shall amend the said contract documents as detailed within this Addendum document.

APPROVED:

_____ Date March 12, 2012
Albert "Alapaki" Nahale-A, Chairman
Hawaiian Homes Commission

Please detach, execute, and return immediately, the receipt below, to the Department of Hawaiian Home Lands, P. O. Box 1879, Honolulu, HI 96805, or transmit facsimile to (808) 620-9299.

Receipt of Addendum No. 1 for the LALAMILO HOUSING PHASE 2A, INCREMENT 1 (PART I) AND LALAMILO HOUSING KAWAIHAE ROAD IMPROVEMENTS AT SOUTH KOHALA DISTRIBUTION ROAD (PART II), WAIMEA, SOUTH KOHALA, ISLAND OF HAWAII, HAWAII, is hereby acknowledged.

Signed_____ Title_____

Firm_____ Date_____

ADDENDUM NO. 1
March 12, 2012

To Plans, Bid Form, Specifications, Contract and Bond Documents

for

Lalamilo Housing Phase 2A, Increment 1, (Part I) and
Lalamilo Housing Phase 2A, Kawaihae Road Improvements at
South Kohala Distribution Road (Part II)

Waimea, South Kohala, Hawaii

IFB No.: IFB-12-HHL-008

ITEM NO. 1 PRE-BID MEETING MINUTES AND REPLIES TO QUESTIONS.

1. A non-mandatory Pre-bid meeting was held at the Department of Hawaiian Home Lands – West Hawaii District Office on February 28, 2012 including a site visit. Attached are the meeting minutes and the meeting attendance sheet.

ITEM NO. 2 TABLE OF CONTENTS

1. Remove the "Table of Contents" and replace with the attached ADDENDUM NO. 2 (March 9, 2012). The following changes are as fllows:
   a. In section "STATE OF HAWAII SPECIAL CONDITIONS", change page numbers from "1-30" to **"1-29"**.
   b. In section "CONTRACTOR'S SUBMITTAL", change "OFFER FORM" to **"BID OFEER FORM"** and page numbers from "1" to **"1-2"**. In section "BID FORM", change page numbers from "1-64" to **"1-65"**.

ITEM NO. 3 SPECIAL CONDITIONS

1. Delete SC-03, SC-05, SC-08, SC-26, SC-32, SC-33, SC-42, SC-43 & SC-46 from the Special Conditions, and replace with the revisions to Special Conditions Addendum No. 1 (March 12, 2012).

ITEM NO. 4 CONTRACTOR'S SUBMITTAL – BID OFEER FORM & BID FORM

1. Delete the Offer Form and Bid Form in its entirety and replace with the attached Addendum No. 1 (March 12, 2012) Bid Offer Form and Bid Form.

ITEM NO. 5 TECHNICAL SPECIFICATIONS

1. Delete "Section 02210 – Site Earthwork" in its entirety and replace with the revisions to Section 02210 – Site Earthwork Addendum No. 1 (March 12, 2012).
2. Delete "Section 02577 – Pavement Markers, Striping and Markings" in its entirety and replace with the revisions to Section 02577 – Pavement Markers, Striping and Markings Addendum No. 1 (March 12, 2012).

ITEM NO. 6 CONSTRUCTION DRAWINGS

1. Delete Drawings (below), and replace with the revised Drawings **"ADDENDUM NO. 1"** dated (March 8, 2012) and incorporate HELCO Standard Drawings:

Drawing No.	Sheet No.	Description
Lalamilo Housing Phase 2A, Increment 1		
C-11	**12**	**Erosion Control Plan**
		Revised silt/dust fence detail.
C-12	**13**	**Demolition Plan**
		Revised callout "EXISTING CHAIN-LINK FENCE" to "EXISTING BARBED WIRE FENCE"
C-15	**16**	**Plan and Profile Road "B" STA. 0+00 to 11+00**
		Removed GSP work
C-22	**23**	**Plan and Profile South Kohala Distribution Road STA. 0+00 to 9+00**
		Revised curb data, removed guard rail and GSP work, and revised notes.
E-1	**1**	**Electrical Symbols, Maps, Notes**
		Added note "h" under "Notes for Construction" to point out that the contractor should
		refer to HELCo drawings for construction of HELCo facilities.
E-3	**2**	**HELCO Notes**
		Revised notes to show current HELCo contact information.
E-8	**3**	**Typical Duct Section I**
		(Sheet)
		Added note 6 under "Notes" to point out that the contractor should refer to HELCo
		drawings for construction of HELCo facilities.
Lalamilo Housing Phase 2A Kawaihae Road Improvements at South Kohala Distribution Road		
E-4	**4**	**Street Light Details**
		Added DPW Street Lighting Notes.
		Revised street light arm length for existing and fiberglass poles.
HELCO	**5**	**HELCO Drawing 10-E-464**
DWG		(Plan)
		Added HELCo drawings. 4 Sheets total.

LALAMILO HOUSING PHASE 2A, INCREMENT 1
AND
LALAMILO HOUSING PHASE 2A,
KAWAIHAE ROAD IMPROVEMENTS AT SOUTH KOHALA DISTRIBUTION ROAD
Pre-Bid Conference Meeting Minutes
Tuesday, February 28, 2012, 11:00 a.m. to 12:00 Noon
Department of Hawaiian Home Lands West Hawaii District Office

1. **Introductions:**
   a. Department of Hawaiian Home Lands
   b. Community Planning and Engineering, Inc.
   c. Scientific Consultant Services, Inc.
   d. USA Corps of Engineers
   e. Sandwich Isles Communications

2. **Scope of Work:**
   Construct the infrastructure for DHHL Lalamilo Phase 2A, which consists of 83 residential lots. The project will also construct the Kawaihae Road Improvements at South Kohala Distribution Road (SKDR) project. Scope of work includes grading; constructing roadways; and installing Sandwich Isles Communication facilities, drainage, water facilities, and other utilities.

3. **General Requirements:**
   a. General Excise Tax exempt
   b. Subject to Dept. of Labor and Industrial Relations prevailing wages and salaries, and Federal wage standards.
   c. Section 103D-310 HRS – Furnish current (not older than six months):
      i. Form A-6 Tax Clearance Certificate (from Contractor and Sub-contractors. (Must submit with bid.)
      ii. Certificate of Compliance from Dept. of Labor and Industrial Relations. (Submit upon award.)
      iii. Certificate of Good Standing from Dept. of Commerce and Consumer Affairs. (Submit upon award.)

4. **Special Conditions**
   a. SC-03: Completion Schedule and Liquidated Damages
      i. Time to complete: 274 calendar days Time to complete will be extended to 1 year (365 calendar days)
      ii. Liquidated damages: $750 per calendar day
   b. SC-22: Substitution Requests:Due March 12, 2012, 2:00 p.m.
   c. SC-08: Coordination with other parties (DWS, HELCO, DOT, County, SIC, USACOE)
   d. SC-32: Archaeological Sites. Coordinate with SCS – Glenn Escott. Archaeological sites may be encountered during the construction. The

contractor must immediately cease all work if a potential archaeological site is encountered.

e. SC-46: Burial Site 21920: Contractor is required to maintain a 20-foot buffer, The cut-slope outside the buffer zone during the initial phase of grading shall not be steeper than 2H:1V. There is no cost to the General Contractor for Archaeological services. SCS stated that monitoring will be per NAGPRA - Section 106 procedures. Cultural practitioner will be onsite to perform and take care of reburial. Upon completion of the initial phase of grading, the burial structure will be disassembled by hand and stored at a nearby location. The Contractor shall then mass-grade the remaining site. Transfer and temporary storage of burial site shall not be for more than 2 weeks and contractor needs to mass grade the preservation lot to finish grade within the allotted 2-week period. The Burial Council was consulted. Also, the cultural and linear descendants were consulted and they proposed the burial procedures.

e. SC-40: Telecommunication System (SIC): SIC is not required to accept low bid and may exercise the option to use another contractor if they choose to do so.

e. SC-42: Unapproved Construction Plans: Construction Plans are approved, except for the current electrical plans in the IFB. An addendum will be issued to attach HELCO's applicable Standard Details to the current IFB electrical plans in the IFB documents. The IFB electrical plans will used for the non-component HELCO facilities, i.e. street lights and electrical facility locations and alignments. The Contractor shall reference both the IFB electrical plans and HELCO's Standard Details for the project.

f. SC-44: Cattle Ranching: The project site is still under lease for cattle ranching. The contractor shall coordinate construction with Rancher Mr. Fred Rice.

g. SC-45: Bond to work within State Right of Way: The Contractor shall provide separate bond and obtain a State DOT Permit to work within the Kawaihae Road State DOT Right of Way, i.e. Kawaihae Road Improvements at SKDR .

h. Unexploded Ordnances. The Contractor shall coordinate excavation work with the U.S. Army Corps of Engineers (USACOE). A Pre-Con Safety Briefing will be conducted by USACOE. USACOE will provide oversight and coordination.

i. Coordination with ongoing Lalamilo Offsite Water System 16-Inch and 12-Inch Transmission Mains project.

5. Proposal

Hawaii Products Preference

i. SC-30: SPO-38 due March 12, 2012, 2:00 p.m.

6. **Site Access**

Construction access will be from the South Kohala Distribution Road. This change will be addressed in the addendum.

7. **Engineer Comments**

a. Requests for clarifications received.

i. Specification Section 02577 Paragraph 2.02B Adhesive for Pavement Markers. Request to use state-approved bituminous adhesive in lieu of epoxy. State-approved bituminous adhesive in lieu of epoxy is acceptable. Change will be made as an addendum.

ii. Request for CADD files. DHHL does not release CADD files for bidding purposes.

b. Addenda contemplated

8. **Deadlines**

a. Substitution Requests – Monday, March 12, 2012, 2:00 p.m.

b. Hawaii Products Preference Requests SPO-38 - Monday, March 12, 2012, 200 p.m.

c. Intent to Bid – Wednesday, March 14, 2012, 4:30 p.m.

d. Standard of Qualification Questionnaire- Friday, March 23, 2012, 4:30 p.m. Attention to Jeffrey Fujimoto

e. Bid submittal/opening – Tuesday, March 27, 2012, 2:00 p.m. Deliver to DHHL Hale Kalanianaole Building, 91-5420 Kapolei Parkway, Attn: Jeffrey Fujimoto

f. Request For Information – Wednesday, March 14, 2012, 2:00 p.m. Attn: Jeffrey Fujimoto

9. **Site Inspection: Following Pre-Bid Meeting**

10. **Questions and Answers: Send all future Requests for Information (RFIs) in writing to Jeffrey Fujimoto by March 14, 2012, 2:00pm. E-mail is acceptable.**

11. **The Meeting was adjourned at 11:55 a.m.**

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DHHL Contact: Jeffrey Fujimoto
Telephone: 620-9274
Fax: 620-9299
e-mail: Jeffrey.Y.Fujimoto@hawaii.gov

Q & A:

1. **Q: How will contract be awarded?**
   A: Contract will be awarded to the overall low bid including SIC work. SIC portion of the work does not have to be bid based on Prevailing Wages (no Certified Payrolls) as Certified Payrolls are not required. SIC will execute separate contract for SIC work. SIC maintains right to award to other than General Contractor.

2. **Q: Does the Hawaii Products Preference apply to this contract?**
   A: DHHL to clarify. Project is a State-Funded only project (not a "Federal" project). Hawaii Products Preference does apply to this contract.

3. **Q: What is the estimated start date?**
   A: Early June. DHHL to confirm. The tentative start of construction date is currently scheduled for June 4, 2012.

4. **Q: What are the NPDES requirements?**
   A: DHHL submitted the NPDES application form to the State Department of Health (DOH) Clean Water Branch on February 21, 2012. DHHL anticipates the NGPC (Notice of General Permit) letter with the Contractor's conditions before the NTP.

5. **Q: On page 44 of Specs, Bid Items 24 (Allowance for Relocation of HELCO overhead pole line) and 25 (allowance for Relocation of HTCO overhead pole Line). Will the Allowance Item Amounts be provided by DHHL?**
   A: Yes. Allowance is $20,000 for each item. This will be shown in the addendum.

6. **Q: Bid Form, page 6. Drainage System. Where should the contractor figure the cost for excavation/backfill? It is shown both in Item 22 and the Drainage Pipes (Items 23 and 24)**
   A: The excavation/backfill description will be removed from Item 23 and changed in the addendum.

7. **Q: (similar to previous question) – Will there be a separate item for trench exc/backfill for the Electrical?**
   A: No. Line item for conduits consists of excavation, conduit, spacers, couplings, appurtenances, concrete jacket (if specified), and backfill.

8. **Q: Are the Vertical Curve Plan/Profile elevations based on center of road or top of curb?**
   A: Top of Finish Curb Grade. Please note that there is a callout label, "Finish Grade at Centerline Waterline" on the profiles which provide guidance to the minimum 2-foot waterline cover.

9. **Q: Can the missing quantities on page 9 of the bid form be provided?**
   A: Yes, these will be provided by addendum.

10. **Q: Will the 16" Transmission Main be turned over to DWS before this project starts? And if so, will the project need to be priced to include DWS taps for the service laterals (and the fire hydrants)?**
    A: Yes, the line is supposed to be turned over, with the Transmission Main project.

11. **Q: Does the Sub Contractor submit the A-6 to the General Contractor?**
    A: Yes, and it shall be included in the bid.

12. **Q: Will the contractor bear the cost of the Archaeological monitoring work?**
    A: No, DHHL will bear the cost of the Archaeological monitoring work.

13. **Q: Is there an estimate of the amount of existing ordnances?**
    A: USACOE: Most areas are cleared but trash areas are not cleared. The USACOE will provide safety briefings to the contractor.

14. **Q: What types of handholes/pull boxes will be required for the SIC facilities?**
    A: Per SIC, all 3'x5' boxes come from Hawaii Precast. 3x5 hand holes are two piece (bottom and cover). Covers are metal, two lid hinged covers, traffic rated. Grounding shall consist of copper clad steel rod placed outside of handhole, with #6 bare wire connected to ground lug on outside of handhole.

    30"x48" pullboxes shall be armor cast, polymer concrete (part #2 spec shown in plans). Cover is traffic rated and consists of supporting beam for extra support. Grounding not required in these handholes.

15. **Q: Is the USACOE Stream Diversion permit required?**
    A: No.

LALAMILO PHASE 2A, INCREMENT 1 AND KAWAIHAE ROAD IMPROVEMENTS AT SOUTH KOHALA DISTRIBUTION ROAD
PRE-BID CONFERENCE
SIGN-IN SHEET
February 28, 2012 / 11:00 a.m., DHHL West Hawaii District Office

NAME	Organization	Phone	E-mail Address
1. Jeffrey Fujimoto	DHHL, Land Development Division	620-9274	jeffrey.y.fujimoto@hawaii.gov
2. Richard Santo	CPE	531-4252	rsanto@cpe-hawaii.com
3. Anson Murayama	"	"	amurayama@cpe-hawaii.com
4. GLENN ESCOTT	SUENTEC CONSULTANTS	938-0968	ggescott@yahoo.com
5. Angela Hu	Helco	896-8291	angela.hu@helcohi.com
6. DARYL IGA	HELCO	896-8203	DARYL.IGA@HELCOHI.com
7. Deron Spencer	Isemoto Contracting Co., Ltd.	329-8051	deron@iickona.com
8. KEITH PERRY	EARTHWORKS PACIFIC	808 639-2722	KEITH@EARTHWORKSPACIFIC.com
9. Hugh Willocks	Willocks Const Corp	982 9099	hughw@willocksHawaii.com
10. Gilbert Aquinaldo	Big Island Electrical Service LLC	965-5554 960-7346	bigislandelectrical@hawaii.rr.com
11. Alex Leonard	Nan Inc	292-8157	aleonard@nanhawaii.com
12. Robbie Brown	NAN INC.	345-2378	RobbieKBrown@GMAIL.com
13. GERALD YAMADA	GW CONSTRUCTION	966-4582	gerald@gwconstruction.net
14. Maka Andrade	Ludwig Construction	982-4444	maka@ludwigconstructionhi.com
15. MYLES MIZOKAMI	NAN INC.	291-9484	mmizokami@nanhawaii.com
16. KEVIN MARKHAM	GOODFELLOW BROS., INC.	887-6511	jimf@goodfellowbros.com
17. HARMON SLAPPY	USACE	769-7372	harmon.l.slappy@usace.army.mil
18. Brian N. Chase	Enviromet Inc.	357 5681	BChase@Enrimet inc.com
19.			
20.			

LALAMILO PHASE 2A, INCREMENT 1 AND KAWAIHAE ROAD IMPROVEMENTS AT SOUTH KOHALA DISTRIBUTION ROAD
PRE-BID CONFERENCE
SIGN-IN SHEET
February 28, 2012 / 11:00 a.m., DHHL West Hawaii District Office

NAME	Organization	Phone	E-mail Address
1. Sandra Pfund	DHHL	620-9271	sandra.s.pfund@hawaii.gov
2. JAMES LANGSTON	MID-STATE CONSULTANTS, INC. (SIC)	585-6188	JLANGSTON@HSCON.COM
3. Rodney Kaylupahi	Sandwich Isles Comm.	540-5751	rodneyk@sandwichisles.com
4. James Vasconcellos	COH DEM Solid Waste	640-5102	Jvasconcellos@hawaiicounty.gov
5. CHUCK ECKMAN	SSFM	987-7466	CECKMAN@SSFM.COM
6. Rochelle Reyes	SSFM	990-1277	rreyes@ssfm.com
7. Dan Lanterman	SSFM	756-0608	dlanterman@ssfm.com
8. TERIN GLOOR	C.O.H.	961-8058	TGLOOR@HAWAIICOUNTY.GOV
9. LIZI OLSON	Jas. W. Glover LTD	935-0871	Cecilyu@gloverltd.com
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ADDITIONAL QUESTIONS

Email dated February 23, 2012.

Question:

Specification Section 02577 paragraph 2.02B Adhesive for Pavement Markers. Request to use state-approved bituminous adhesive in lieu of epoxy.

Response:

Bituminous or epoxy adhesive is acceptable as confirmed with County DPW Traffic Branch and is also referenced in the State Standard specs.
Since the project spec calls only for epoxy adhesive, we will provide the revised specs for bituminous adhesive in Addendum No. 1 after the Pre-Bid Meeting.
Revision under Addendum No. 1.
"A bituminous adhesive conforming to the specifications of Section 755.03 of the State's Standard Specifications for Road and Bridge Construction (2005) may be used in lieu of the epoxy adhesives."

Email dated February 29, 2010.

Question:

Based on the NTB (Notice to Bidders) page 1 of 2 on the 4th paragraph it states to be eligible to submit a bid the Bidder and/or his subcontractors must possess all required state of Hawaii licenses. Who is classified as the Bidder? My interpretation and definition of a bidder based on Webster's new world Dictionary is a person who bids and definition of a bid is to offer (a certain amount) as the price or fee that one will pay or accept where I will be a Electrical subcontractor submitting a bid proposal for the Underground Electrical item no 92 thru 135 bid form pages 22 thru 37 To the Prime General Contractor bidding for the project. I feel that it was mandatory to attend the pre-bid conference yesterday dated February 28, 2012 in order to submit a bid as I would be classified as a bidder to the Prime General Contractor for the Electrical Underground work.

Response:

The Department of Hawaiian Home Lands (DHHL) Interim General Conditions, which are included in the IFB, and the Hawaii Revised Statutes 2011 Cumulative Supplement define the term "Bidder" to be a person who has the capability in all respects to **fully** perform the Contract requirements and has submitted a proposal in response to the invitation to Bid. The Contract is a written agreement between the Contractor and DHHL by which the Contractor is bound to complete the specified work within the contract time. The bid proposal must conform in all material respects to the invitation for bids. The Bidder's proposal is for the work specified under the Contract within the time prescribed. The Contractor is any person having a Contract with the Governmental body (i.e. DHHL). The Subcontractor is a person who enters into an agreement with the Contractor to perform a portion of the work for the Contractor. The Subcontractor enters into the agreement with the Contractor and not with DHHL.

Therefore the term Bidder refers to the Contractor and not to the Subcontractor. Attendance to the Pre-Bid Conference is mandatory requirement for interested potential "Bidders" who have the

capability in all respects to fully perform the Contract requirements (i.e. the entire Contract scope of work, and not just a portion of the scope), and will enter into a Contract with the Government body.

Question:

Based on the NTB (notice to bidders) page 2 of 2 3rd paragraph it states all potential interested bidders, offerors, subcontractors and union representatives "are invited to attend". Attendance by potential interested bidders is mandatory. Who is classified as a bidder? My interpretation and definition of a bidder based on Webster's new world dictionary is a person who bids and the definition of a bid is to offer (a certain amount) as the price or fee that one will pay or accept. I feel that I interpreted it that I'm a potential interested bidder as an Sub electrical contractor bidding on the Electrical Underground work from item no 92 thru 135 on the bid form pages 22 thru 37 which is a substantial work to be preformed by a "qualified bidder" who attended the pre-bid meeting and attended the site visit, based on the potential interested bidders is "Mandatory" which if no other electrical Sub contractor attended they are not qualified to bid where the majority of people attended the meeting was the prime General contractors where the sub contractors submit their "bid" to. My firm should not be over looked as not an interested bidder for the electrical work because it is a major part of the project. My interpretation as a potential bidder is we are bidding on the electrical work.

Response:

See Question above.

Question:

For the SIC (sandwich Isle Communication) what is the quantity, size and type of ground rods to install in the hand holes and man holes if needed.

Response:

Size and type of ground rod should be per symbol list on E-1 and SIC notes on E-4. Quantity is per proposal.

Question:

The CATV power supply foundation can the electrical contractor provide the foundation due to it being part of our scope of work.

Response:

Yes, CATV Power Supply foundation should be constructed by the contractor under line item 42.

Question:

The HELCO Transformer pad can the electrical contractor provide the foundation due to it being a part of our scope of work.

Response:

Yes, HELCO transformer pad should be constructed by the contractor under line item 20.

Question:

When installing the sic (sandwich isle communication) conduits and hand hole and man hole etc that it does not have to be under certified payroll, since it is based on state prevailing wage bulletin 478 I think that it should be prevailing wage based.

Response:

SIC portion of the work does not have to be bid based on Prevailing Wages (no Certified Payrolls) as Certified Payrolls are not required.

Question:

What is the duration of this project and what is the intercepted start date.

Response:

The Contractor shall complete all work within 365 calendar days. The tentative start of construction date is currently scheduled for early June 4, 2012.

Email dated March 07, 2012.

Question:

According to Part 1A, under Road Construction, you have the following listed for Bid Items 2, 3, and 4: (see Bid Form). However, per the typical sections on Plan Sheet C-13, there is asphalt treated base under every paved section of roadway (2-inch and 2-1/2-inch). Please revise the bid quantities for these areas.

Response:

The quantities for bid items 2, 3 and 4 have been revised.

Bid Form Revision under Addendum No. 1.

2.	2,937	Sq. Yds., Hot Mix Asphalt Concrete Pavement, County Mix No. IV (2" minimum thickness).			
			Per Sq. Yd.	$_____	$_____
3.	16,706	Sq. Yds., Hot Mix Asphalt Concrete Pavement County Mix No. IV (2-1/2" minimum thickness).			
			Per Sq. Yd.	$_____	$_____
4.	19,643	Sq. Yds., Asphalt Concrete Base Course (4" minimum thickness).			
			Per Sq. Yd.	$_____	$_____

Question:

Also, in Part IIA - is there a reason that the measure for Asphalt Treated Base in this section (Bid Item 4) is measured in CY, while in the previous section the Asphalt Treated Base is measured in SY?

Response:

Bid Form 11A Bid Item 4 has been revised to measure the quantity in SY. Please note the depth of ATB varies between travel lane and shoulder sections.

Bid Form Revision under Addendum No. 1.

4a.	779	Sq. Yds., Asphalt Concrete Base Course (8" minimum thickness).		
		Per Sq. Yd.	$_____	$_____

Email dated March 09, 2012.

Question:

For the dust fencing shown on Sheet C-11 will substituting metal pipe of a suitable grade, diameter and schedule in lieu of 4x6 wood posts be acceptable? The metal pipe fences tend to perform better and cost less for this area of application in Waimea. Eliminating the dust fence would be preferable making dust control fully the contractor's responsibility. The dust fences in the Waimea area typically do not perform their intended function very well and typically become a tattered eye sore to all.

Response:

Metal posts are acceptable in lieu of the wooden 2x6. The dust fence is still required, and dust control will remain fully the contractor's responsibility.

Question:

Will a copy of the State Procurement Certificate of Vendor Compliance be acceptable in lieu of Form A-6 Tax Clearance Certificate for subcontractors?

Response:

Yes. This is preferred.

Question:

What method will be used to measure the infiltration rate for the testing of drywell flow capacity? There are many subjective methods, however one objective method for the purpose of bid will be the most fair approach?

Response:

There are no approved standard methods. The Contractor shall submit proposed infiltration rate test method to DHHL and Geotechnical Engineer prior to drywell testing. No method will be provided.

Question:

Per typical Drywell section on sheet S-2, can the drilling of the 36" diameter shaft be changed to a unit price item. There is no way for the contractor to predict how much additional drilling will be required to meet percolation; making this a very subject item and providing the greatest advantage to the bidder who chooses to put the least amount in their bid. There needs to be a fixed amount for the basis of bid to make this a fair opportunity for all bidders.

Response:

No line item will be provided. Per percolation tests in the soil report all drywells were designed to meet capacity. However shall the drywell be built according to the plans and specs and not meet the required capacity, the drilling of the 36" diameter holes will be handled as a field change. Please price accordingly.

Question:

Proposal form calls for 72" Diameter Drywell for bid Items 50-55 but the details show a 5' inside diameter. Please confirm Details are correct.

Response:

Details are correct. Bid Form items have been revised.
Bid Form Revision under Addendum No. 1.

50.	0	~~Each, 72" Diameter Drywell, 18.00' to 18.99' Deep, including Drywell Cover, 12" Thick Washed Crushed Stone (2 1/2" to 3") all around Drywell, Drywell Base, and Excavation.~~		
		Each	$ _____	$ _____
51.	2	Each, 60" Diameter Drywell, 20.00' to 20.99' Deep, including Drywell Cover, 12" Thick Washed Crushed Stone (2 1/2" to 3") all around Drywell, Drywell Base, and Excavation.		
		Each	$ _____	$ _____
52.	8	Each, 60" Diameter Drywell, 21.00' to 21.99' Deep, including Drywell Cover, 12" Thick Washed Crushed Stone (2 1/2" to 3") all around Drywell, Drywell Base, and Excavation.		
		Each	$ _____	$ _____
53.	1	Each, 60" Diameter Drywell, 22.00' to 22.99' Deep, including Drywell Cover, 12" Thick Washed Crushed Stone (2 1/2" to 3") all around Drywell, Drywell Base, and Excavation.		
		Each	$ _____	$ _____
54.	7	Each, 60" Diameter Drywell, 24.00' to 24.99' Deep, including Drywell Cover, 12" Thick Washed Crushed Stone (2 1/2" to 3") all around Drywell, Drywell Base, and Excavation.		
		Each	$ _____	$ _____
55.	1	Each, 60" Diameter Drywell, 27.00' to 27.99' Deep, including Drywell Cover, 12" Thick Washed Crushed Stone (2 1/2" to 3") all around Drywell, Drywell Base, and Excavation.		
		Each	$ _____	$ _____

Question:

For bid items 25 to 47 of Part I.A the quantities I am taking off from the plans are not correlating to the bid schedule. I have attached the takeoff I have done the top elevations are approximate. Just comparing quantities of similar drainage structures without looking at heights I have the following discrepancies.

Description	QTY Bid Schedule	QTY GBI Takeoff
Type A Catch Basin	8	1
Type B Catch Basin	11	15
Special Type A Catch Basin w/Drywell	13	13
Shallow Drain Manhole	9	7
Drain Inlet w/Drywell	4	6
Drain Inlet	0	2
Drywells	22	19

Response:

Bid Form Items have been revised. Please see Bid Form under Addendum No. 1 for changes.

Question:

Bid item 90 of Part I.A. calls for Chemical Stabilization. Does DHHL have a specification of acceptable products to be utilized? There is such a wide range of products and performance variations on the market that the bidder who selects the cheapest and poorest performing product will have an unfair advantage. A very specific set of performance criteria needs to be selected and presented in the specifications to make sure this is an objective opportunity for all bidders.

Response:

The Contractor shall provide DHHL and the Engineer with a submittal of the specifications for the chemical stabilization before application.

Question:

Bid Item 81. Calls for a connection to existing 16" low pressure at Road "H" please clarify where this connection is. There is a second connection at the beginning of Road "B" to the existing 8" low pressure that does not have a bid item.

Response:

Bid Form items have been revised to eliminate low pressure connection at Road "H" and include connection at Road "B".

Bid Form Revision under Addendum No. 1.

81	L.S.	Connection to existing mains including removal of 8" cap and concrete block, inclusive of furnishing and installing of all materials and appurtenances (excluding excavation and trenching work), materials to cut and plug existing main, raising existing valve box frame and cover to match new finished grade, all in accordance to the plans and specification. Connection to existing high pressure 8" D.I. stub-out at Sta. 0+23 o/s 10.5' Right, Road "B", as shown on the plans.

Lump Sum $_____

Question:

Bid item 26 for Part II.B on Sheet 45 of the bid form describes SIC as Direct Bury. Details on Sheet E-1 of the Lalamilo Housing Phase 2A Kawaihae Road Improvements at South Kohala Distribution Road Plans show concrete encased please verify that the SIC will be concrete encased.

Response:

Bid form item has been revised to reflect concrete encasement.

Bid Form Revision under Addendum No. 1.

26.	90	**Lin. Ft., Furnish and Install Two 4-Inch Concrete Encased SIC Conduits (Tel/CATV) - UD(1x2-4"). Work shall consist of excavation and providing 4" diameter conduits, with spacers, couplings, appurtenances and concrete jacket, backfilled per SIC requirements, complete and in place.

Per Lin. Ft. $_____ $_____

Frank J. Camacho

From: Richard Y. Santo
Sent: Thursday, February 23, 2012 1:03 PM
To: Frank J. Camacho
Subject: FW: Lalamilo Housing IFB No. IFB-12-HHL-008

Richard Y. Santo, P.E.
Project Manager
Community Planning and Engineering, Inc.
1100 Alakea Street, 6th Floor
Honolulu, HI 96813
Phone: (808) 531-4252 ext 1036
Cell: (808) 388-9237
Fax: (808) 526-2476
rsanto@cpe-hawaii.com

From: Jeffrey.Y.Fujimoto@hawaii.gov [mailto:Jeffrey.Y.Fujimoto@hawaii.gov]
Sent: Thursday, February 23, 2012 1:02 PM
To: Richard Y. Santo
Subject: Fw: Lalamilo Housing IFB No. IFB-12-HHL-008

Hi Richard,

Please prepare response to the RFI below.

Thanks,

Jeffrey Y. Fujimoto
Department of Hawaiian Home Lands
Land Development Division
91-5420 Kapolei Parkway, Room 124 I
Kapolei, Hawaii 96707
Phone: 808-620-9274, Fax: 808-620-9299
E-mail: jeffrey.y.fujimoto@hawaii.gov

----- Forwarded by Jeffrey Y Fujimoto/DHHL/StateHiUS on 02/23/2012 01:03 PM -----

From: "Glenn Asato" <g-asatoptg@hawaii.rr.com>
To: <Jeffrey.Y.Fujimoto@hawaii.gov>

Date: 02/23/2012 10:13 AM
Subject: Lalamilo Housing IFB No. IFB-12-HHL-008

Request for Information

Specification
Section 02577 paragraph 2.02B Adhesive for Pavement Markers
Request to use state-approved bituminous adhesive in lieu of epoxy.

Thank you for your consideration.

Glenn Asato
Harry Asato Painting, Inc.
Tel 808-841-7055
Fax 808-848-7055

BIG ISLAND ELECTRICAL SERVICE, LLC
LICENSE NO. C-28739
PO BOX 1925, PAHOA, HI 96778
PH: (808) 965-5554
FAX: (808) 965-5501
BIGISLANDELECTRICAL@HAWAII.RR.COM

DATE: 2-29-2012
JOB NAME: LALAMILO HOUSING PHASE 2A, ICREMENT 1 ABD LALAMILO HOUSING PHASE 2A IFB NO.: IFB-12-HHL-008
JOB NO. IFB-12-HHL-008
PHASE #: 2A INCREMENT 1 AND 2A
CONTRACTOR: N/A

TO: JEFFERY. Y. FUJIMOTO

DHHL LAND DEVELOPMENT DIVISION

REQUEST FOR INFORMATION

THE FOLLOWING WAS NOTED:

1) BASED ON THE NTB (NOTICE TO BIDDERS) PAGE 1 OF 2 ON THE 4TH PARAGRAPH IT STATES TO BE ELIGIBLE TO SUBMIT A BID THE BIDDER AND/OR HIS SUBCONTRACTORS MUST POSSESS ALL REQUIRED STATE OF HAWAII LICENSES. WHO IS CLASSIFIED AS THE BIDDER? MY INTERPRETATION AND DEFINITION OF A BIDDER BASED ON WEBSTER'S NEW WORLD DICTIONARY IS A PERSON WHO BIDS AND DEFINITION OF A BID IS TO OFFER (A CERTAIN AMOUNT) AS THE PRICE OR FEE THAT ONE WILL PAY OR ACCEPT WHERE I WILL BE A ELECTRICAL SUBCONTRACTOR SUBMITTING A BID PROPOSAL FOR THE UNDERGROUND ELECTRICAL ITEM NO 92 THRU 135 BID FORM PAGES 22 THRU 37 TO THE PRIME GENERAL CONTRACTOR BIDDING FOR THE PROJECT. I FEEL THAT IT WAS MANDATORY TO ATTEND THE PRE-BID CONFERENCE YESTERDAY DATED FEBRUARY 28, 2012 IN ORDER TO SUBMIT A BID AS I WOULD BE CLASSIFIED AS A BIDDER TO THE PRIME GENERAL CONTRACTOR FOR THE ELECTRICAL UNDERGROUND WORK.
2) BASED ON THE NTB (NOTICE TO BIDDERS) PAGE 2 OF 2 3RD PARAGRAPH IT STATES ALL POTENTIAL INTERESTED BIDDERS, OFFERORS, SUBCONTRACTORS AND UNION REPRESENTATIVES "ARE INVITED TO ATTEND". ATTENDANCE BY POTENTIAL INTERESTED BIDDERS IS MANDATORY. WHO IS CLASSIFIED AS A BIDDER? MY INTERPRETATION AND DEFINITION OF A BIDDER BASED ON WEBSTER'S NEW WORLD DICTIONARY IS A PERSON WHO BIDS AND THE DEFINITION OF A BID IS TO OFFER (A CERTAIN AMOUNT) AS THE PRICE OR FEE THAT ONE WILL PAY OR ACCEPT. I FEEL THAT I INTERPRETED IT THAT I'M A POTENTIAL INTERESTED BIDDER AS AN SUB ELECTRICAL CONTRACTOR BIDDING ON THE ELECTRICAL UNDERGROUND WORK FROM ITEM NO 92 THRU 135 ON THE BID FORM PAGES 22 THRU 37 WHICH IS A SUBSTANTIAL WORK TO BE PREFORMED BY A "QUALIFIED BIDDER" WHO ATTENDED THE PRE-BID MEETING AND ATTENDED THE SITE VISIT, BASED ON THE POTENTIAL INTERESTED BIDDERS IS "MANDATORY" WHICH IF NO OTHER ELECTRICAL SUB

contractor attended they are not qualified to bid where the majority of people attended the meeting was the prime General contractors where the sub contractors submit their "bid" to. My firm should not be over looked as not an interested bidder for the electrical work because it is a major part of the project. My interpretation as a potential bidder is we are bidding on the electrical work.

3) For the SIC (sandwich Isle Communication) what is the quantity, size and type of ground rods to install in the hand holes and man holes if needed.
4) The catv power supply foundation can the electrical contractor provide the foundation due to it being part of our scope of work.
5) The helco Transformer pad can the electrical contractor provide the foundation due to it being a part of our scope of work.
6) When installing the sic (sandwich isle communication) conduits and hand hole and man hole etc that it does not have to be under certified payroll, since it is based on state prevailing wage bulletin 478 I think that it should be prevailing wage based
7) What is the duration of this project and what is the intercepted start date

Gilbert J. Aguinaldo/ Estimator
Electrical Contractor

Date

****PLEASE LET US KNOW THAT YOU HAVE RECEIVED THIS RFI, THANK YOU!

Frank J. Camacho

From: Jeffrey.Y.Fujimoto@hawaii.gov
Sent: Wednesday, March 07, 2012 7:41 AM
To: Frank J. Camacho
Cc: Richard Y. Santo; dlanterman@ssfm.com
Subject: Fw: Lalamilo Housing Phase 2A, Increment 1
Attachments: pic24552.gif; pic21173.gif; pic13874.gif; pic26625.gif

Good Morning Frank,

Please address the RFI below. We can include this in our Addendum No. 1. Sorry for the delay.

Jeffrey Y. Fujimoto
Department of Hawaiian Home Lands
Land Development Division
91-5420 Kapolei Parkway, Room 124 I
Kapolei, Hawaii 96707
Phone: 808-620-9274, Fax: 808-620-9299
E-mail: jeffrey.y.fujimoto@hawaii.gov

----- Forwarded by Jeffrey Y Fujimoto/DHHL/StateHiUS on 03/07/2012 07:40 AM -----

From: JAmes@gracepacificcorp.com
To: Jeffrey.y.Fujimoto@hawaii.gov
Date: 03/06/2012 09:58 AM
Subject: Lalamilo Housing Phase 2A, Increment 1

Aloha Jeffrey,

This is Jason Ames, with Grace Pacific Corporation. We are looking at this project as a subcontractor, and I have a question regarding some of the quantities listed on your bid form. According to Part 1A, under Road Construction, you have the following listed for Bid Items 2, 3, and 4:

(Embedded image moved to file: pic24552.gif)

However, per the typical sections on Plan Sheet C-13, there is asphalt treated base under every paved section of roadway (2-inch and 2-1/2-inch).

(Embedded image moved to file: pic21173.gif)

(Embedded image moved to file: pic13874.gif)
(Embedded image moved to file: pic26625.gif)

Please revise the bid quantities for these areas.

Also, in Part IIA - is there a reason that the measure for Asphalt Treated Base in this section (Bid Item 4) is measured in CY, while in the previous section the Asphalt Treated Base is measured in SY?

Please advise...

Aloha,

Jason

Jason Ames
Estimator
Grace Pacific Corporation
110 Puuhale Road
Honolulu, HI 96819
TEL: 808-845-3991 ext 245
FAX: 808-842-3203

Frank J. Camacho

From: Jeffrey.Y.Fujimoto@hawaii.gov
Sent: Friday, March 09, 2012 2:05 PM
To: Richard Y. Santo; Frank J. Camacho; dlanterman@ssfm.com
Subject: Fw: Lalamilo Housing Phase 2A
Attachments: GBI Drainage Takeoff.pdf; image001.jpg

To all,

Sorry for getting this to you so late. I was caught up in meetings this morning. Please see below for additional clarification items from Goodfellow Bros. We need to include this in our addendum. I made some comments to the first two items, shown in red.

Thanks,

Jeffrey Y. Fujimoto
Department of Hawaiian Home Lands
Land Development Division
91-5420 Kapolei Parkway, Room 124 I
Kapolei, Hawaii 96707
Phone: 808-620-9274, Fax: 808-620-9299
E-mail: jeffrey.y.fujimoto@hawaii.gov

----- Forwarded by Jeffrey Y Fujimoto/DHHL/StateHiUS on 03/09/2012 01:56 PM -----

From: Kevin Murakane <kevinm@goodfellowbros.com>
To: "Jeffrey.Y.Fujimoto@hawaii.gov" <Jeffrey.Y.Fujimoto@hawaii.gov>
Cc: Jim Foss <Jimf@goodfellowbros.com>
Date: 03/07/2012 07:35 PM
Subject: Lalamilo Housing Phase 2A

Jeffrey,

These are a few addition clarifications I had for the Lalamilo Housing Phase 2A Project.

1. For the dust fencing shown on Sheet C-11 will substituting metal pipe of a suitable grade, diameter and schedule in lieu of 4x6 wood posts be acceptable? The metal pipe fences tend to perform better and cost less for this area of application in Waimea. Eliminating the dust fence would be preferable making dust control fully the contractor's responsibility. The dust fences in the Waimea area typically do not perform their intended function very well and typically become a tattered eye sore to all. *(I would agree to replacing the wood posts with metal posts. We are using metal posts for our Kakaina project in Waimanalo, to avoid using kickers and to lessen the chance of snapping from high winds.) Not sure how we could eliminate the dust fence item, and make dust control fully the contractor's responsibility.)*
2. Will a copy of the State Procurement Certificate of Vendor Compliance be acceptable in lieu of Form A-6 Tax Clearance Certificate for subcontractors? *(Yes. This is preferable.)*
3. What method will be used to measure the infiltration rate for the testing of drywell flow capacity? There are many subjective methods, however one objective method for the purpose of bid will be the most fair approach?
4. Per typical Drywell section on sheet S-2, can the drilling of the 36" diameter shaft be changed to a unit price item. There is no way

for the contractor to predict how much additional drilling will be required to meet percolation; making this a very subject item and providing the greatest advantage to the bidder who chooses to put the least amount in their bid. There needs to be a fixed amount for the basis of bid to make this a fair opportunity for all bidders.
5. Proposal form calls for 72" Diameter Drywell for bid Items 50-55 but the details show a 5' inside diameter. Please confirm Details are correct.
6. For bid items 25 to 47 of Part I.A the quantities I am taking off from the plans are not correlating to the bid schedule. I have attached the takeoff I have done the top elevations are approximate. Just comparing quantities of similar drainage structures without looking at heights I have the following discrepancies

Description	QTY Bid Schedule	QTY GBI Takeoff
Type A Catch Basin	8	1
Type B Catch Basin	11	15
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Shallow Drain Manhole	9	7
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Drywells	22	19

7. Bid item 90 of Part I.A. calls for Chemical Stabilization. Does DHHL have a specification of acceptable products to be utilized? There is such a wide range of products and performance variations on the market that the bidder who selects the cheapest and poorest performing product will have an unfair advantage. A very specific set of performance criteria needs to be selected and presented in the specifications to make sure this is an objective opportunity for all bidders.
8. Bid Item 81. Calls for a connection to existing 16" low pressure at Road "H" please clarify where this connection is. There is a second connection at the beginning of Road "B" to the existing 8" low pressure that does not have a bid item.
9. Bid item 26 for Part II.B on Sheet 45 of the bid form describes SIC as Direct Bury. Details on Sheet E-1 of the Lalamilo Housing Phase 2A Kawaihae Road Improvements at South Kohala Distribution Road Plans show concrete encased please verify that the SIC will be concrete encased.

If you have any questions or require any further information please feel free to contact me at 808 960-3807.

Thanks,
Kevin Murakane
Goodfellow Bros., Inc.
P:808-887-6511
F:808-887-6522

TABLE OF CONTENTS

STATE OF HAWAII

SPECIAL CONDITIONS

SC-01: INTERCHANGEABLE TERMS

The following terms are one and the same:

a. "Contract" and "Agreement".
b. "Department of Hawaiian Home Lands" "DHHL" and "STATE".
c. "CONTRACTOR" and "Consultant".

SC-02 INSURANCE COVERAGE

The Contractor shall obtain separate insurance coverage for this project that complies with the requirements set forth in the DHHL Interim 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.

INSURANCE REQUIREMENTS are as follows:

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:

Coverage	Limit
General Liability Insurance (occurrence form)	Bodily Injury and Property Damage (combined single limit): $1,000,000 per occurrence and $2,000,000 aggregate Personal Injury: $1,000,000 per occurrence and $2,000,000 aggregate.
Automobile Insurance (covering all owned, non-owned and hired automobiles)	Bodily Injury: $1,000,000 per person and $1,000,000 per occurrence. Property Damage: $1,000,000 per accident or combined single limit of $2,000,000.
Workers Compensation (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 sub-Contractors.

a. The State of Hawaii, Department of Hawaiian Home Lands, its elected and appointed officials, officers, employees, and agents shall be named as additional insured with respect to operations, services or products provided to the State of Hawaii. CONTRACTOR agrees to provide to the DHHL, before the effective date of the Contract, certificate(s) of insurance necessary to evidence compliance with insurance

provisions of this Contract. CONTRACTOR shall keep such insurance in effect and the certificate(s) on deposit with DHHL during the entire term of this Contract. Upon request by the STATE, CONTRACTOR shall furnish a copy of the policy or policies.

b. Failure of CONTRACTOR to provide and keep in force such insurance shall be regarded as a material default under this Contract. The STATE shall be entitled to exercise any or all of the remedies provided in this Contract for default of CONTRACTOR.

c. The procuring of such required policy or policies of insurance shall not be construed to limit CONTRACTOR's liability under this Contract or to fulfill the indemnification provisions and requirements of this Contract. Notwithstanding said policy or policies of insurance, CONTRACTOR shall be obliged for the full and total amount of any damage, injury, or loss caused by negligence or neglect connected with this Contract.

d. CONTRACTOR shall immediately provide written notice to the contracting department or agency should any of the insurance policies evidenced on its Certificate of Insurance form be cancelled, limited in scope, or not renewed upon expiration.

e. DHHL is a self insured State agency. CONTRACTOR's insurance shall be primary. Any insurance maintained by the State of Hawaii shall apply in excess of, and shall not contribute with, insurance provided by CONTRACTOR.

f. The CONTRACTOR shall require all Subcontractors to have in full force and effect the same insurance coverage as required of the CONTRACTOR. Such insurance shall name the State of Hawaii, Department of Hawaiian Home Lands, its elected and appointed officials, officers, employees, and agents as additional insured with respect to operations, services or products provided to the State of Hawaii. The CONTRACTOR shall be responsible to enforce its Subcontractors' compliance with these insurance requirements and CONTRACTOR shall, upon request, provide the STATE a copy of the policy or policies of insurance for any Subcontractor.

SC-03: COMPLETION SCHEDULE AND LIQUIDATED DAMAGES

The Contractor shall complete all work as specified or indicated in the Contract Documents on or before **three hundred sixty-five (365)** 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, $750.00 per calendar day for each day that the project, in its entirety, remains incomplete.

STATE OF HAWAII

SPECIAL CONDITIONS

SC-04: PROCESS THROUGH CONSULTANT OF DHHL

Any and all submittals, reports, requests, claims and notices under the contract shall be processed through Land Development Division Project Manager, at Hale Kalanianaole, 91-5420 Kapolei Parkway, Kapolei, Hawaii 96707.

SC-05: SURVEYING SERVICES

The Contractor shall be responsible for all required surveys. Any surveying services shall be 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.

The Contractor shall do the engineering work, construction layout, and reference staking for the proper control and completion of structures, grading, paving, drainage and utilities required for the completion of the work.

The Contractor shall engage a Licensed Professional Land Surveyor (Hawaii) to perform all necessary construction stakeouts.

The Contractor shall furnish and properly set reference stakes, markers, and batterboards required for the construction operations. The Contractor shall be solely and completely responsible for the accuracy of the line and grade. The Contractor shall notify the Engineer of errors or discrepancies found in previous surveys and plans before proceeding with the work.

The Contractor shall verify the locations and grades of the existing structures and topographical features before construction starts.

The Contractor shall submit two (2) copies of data used in setting and referencing stakes and other layout markings used by the Contractor.

If the Contractor should discover any error during construction, whether in alignment or grade, he shall immediately notify the Surveyor and the Engineer.

The Contractor shall correct or replace deficient or inaccurate layout and construction work at no cost to the Department.

The Contractor shall verify all street survey monuments (horizontal and vertical alignment) in accordance with County of Hawaii requirements prior to final acceptance by the Engineer.

DHHL shall provide a subdivision file plan to enable the Contractor's surveyor to stake out the various work associated with the roads and proposed lots.

STATE OF HAWAII

SPECIAL CONDITIONS

The Contractor shall furnish necessary personnel, engineering equipment and supplies, transportation and materials necessary to complete this work. The Department will consider the requirements imposed by this subsection and done by the Contractor included in the total sum bid. The Department will engage the Consultant's surveyors to install the permanent property pins which will be performed when the project is substantially completed.

The Contractor's surveyor shall verify any existing property pins and shall inform the Engineer of any discrepancies.

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.

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 Department of Water Supply (DWS), Hawaiian Electric Light Company (HELCO), Department of Transportation (DOT), **County of Hawaii, Sandwich Isle Communications (SIC), United States Army Corps. Of Engineers (USACOE).** The Contractor will be working in areas where other contractors will be working on various other projects for DHHL, DOT, and County of Hawaii, and shall not interfere with or cause damage to the work of other contractors.

SC-09: CONTRACTOR'S LICENSING

It is each 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, the bidder must list subcontractors that hold the appropriate licenses in its proposal.

Proposals from Contractors that fail to comply with these requirements shall be rejected per DHHL Interim General Condition 3.2.

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: COMPLIANCE WITH COPELAND "ANTI-KICKBACK" ACT

The Contractor shall comply with the requirements of 29 CFR Part 3, which are hereby incorporated by reference in this contract.

SC-13: ENERGY EFFICIENCY

The Contractor shall comply with all standards and policies relating to energy efficiency which are contained in the energy conservation plan issued in compliance with the Energy Policy and Conservation Act (Pub. L. 94-163) for the State of Hawaii.

SC-14: REVISIONS TO DHHL INTERIM GENERAL CONDITIONS (DATED AUGUST 16, 2005)

Throughout the DHHL Interim General Conditions, replace the address: "1099 Alakea Street, Suite 2000, Honolulu, Hawaii 96813" with "Hale Kalanianaole, 91-5420 Kapolei Parkway, Kapolei, Hawaii, 96707."

STATE OF HAWAII

SPECIAL CONDITIONS

In addition, the following changes to the DHHL Interim General Conditions shall be in effect:

ARTICLE 2: PROPOSAL REQUIREMENTS AND CONDITIONS

In section 2.1.1.2, delete the second sentence, *"The words, 'INTENTION TO BID' must be clearly written or typed on the face of the envelope containing the written notice of intention to bid."*

Replace section 2.1.1.7 on page 11 in its entirety with the following:

2.1.1.7 The Chairman may, in accordance with Section 103D-310 Hawaii Revised Statutes, require the prospective Bidder to submit answers to questions contained in the STANDARD QUALIFICATION QUESTIONNAIRE FOR PROSPECTIVE BIDDERS ON PUBLIC WORKS CONTRACTS, on the form provided by the Department, 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 2:00 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 questionnaire must be received by the Department no later than 2:00 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.

In section 2.6.1, delete the third sentence, *"The face of the envelope containing the request must be clearly marked 'SUBSTITUTION REQUEST'"*.

Revise section 2.10 as follows:

DELIVERY OF PROPOSALS. The entire proposal shall be placed together with the bid security, in a sealed envelope ~~no smaller than 9-1/2" x 12" so marked as to indicate the identity of the project, the project number, the date of bid opening and the name and address of the Bidder and then~~ delivered as indicated in the Notice to Contractors. 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 words "SEALED BID" must be clearly written or typed on the face of the sealed envelope containing the proposal and bid security.~~ The time designated by the time stamping device in DHHL shall be official.

Replace section 2.14, titled "PROTESTS," on page 18 in its entirety with the following:

2.14 PROTESTS

2.14.1 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.

2.14.2 The Chairman is the Department's chief procurement officer to whom protests shall be addressed unless specified otherwise in the solicitation.

ARTICLE 3: AWARD AND EXECUTION OF CONTRACT

After Section 3.4.4 on page 21, insert the following new sections:

3.4.5 Responsibility of Offerors (§103D-310(c), HRS, and §3-122-112, HAR). Upon award of the contract under this solicitation, Offeror shall provide:

(a) An original tax clearance certificate from the Department of Taxation and the Internal Revenue Service, current within six months of issuance date;

(b) A certificate of compliance for Chapter 383 - Unemployment Insurance, Chapter 386 - Workers Compensation; Chapter 392 - Temporary Disability Insurance and Chapter 393 - Prepaid Health Care, from the Department of Labor and Industrial Relations, current within six months of issuance date ***(Form LIR #27)***; and

(c) A certificate of good standing from the Business Registration Division of the Department of Commerce and Consumer Affairs, within six months of issuance date.

3.4.5.1 Tax Clearance. Refer to Section 2.1.2.

3.4.5.2 Unemployment Insurance (HRS Chapter 383), Workers' Compensation (HRS Chapter 386), Temporary Disability Insurance (HRS Chapter 392), and Prepaid Health Care (HRS Chapter 393). Successful Offeror shall be required to submit an approved certificate of compliance issued by the Hawaii State Department of Labor and Industrial Relations (DLIR). The certificate is valid

for six (6) months from the date of issue and must be valid on the date it is received by the purchasing agency.

The certificate of compliance shall be obtained on the State of Hawaii, DLIR Application for Certificate of Compliance with Section 3-122-112, HAR, Form LIR#27 which is available at http://hawaii.gov/labor/forms/forms/DCD-LIR27.pdf, or at neighbor island DLIR District Offices. The DLIR will return the form to the Offeror who in turn shall submit it to the purchasing agency.

The application for the certificate is the responsibility of the Offeror, and must be submitted directly to the DLIR and not to the purchasing agency.

3.4.5.3 Certificate of Good Standing. Successful Offeror shall be required to submit one of the following as applicable:

(a) Hawaii business. A business entity referred to as a "Hawaii business", is registered and incorporated or organized under the laws of the State of Hawaii. As evidence of compliance, Offeror shall submit a Certificate of Good Standing issued by the Department of Commerce and Consumer Affairs (DCCA), Business Registration Division (BREG).

(b) Sole Proprietorship. A Hawaii business that is a sole proprietorship, is not required to register with the BREG, and therefore not required to submit the certificate. An Offeror's status as sole proprietor or other business entity and its business street address indicated on the Bid Offer Form will be used to confirm that the Offeror is a Hawaii business.

(c) Compliant non-Hawaii business. A business entity referred to as a "compliant non-Hawaii business" is not incorporated or organized under the laws of the State of Hawaii, but is registered to do business in the State. As evidence of compliance, Offeror shall submit a Certificate of Good Standing.

A Certificate of Good Standing may be obtained online at www.BusinessRegistrations.com, or by phone at (808) 586-2727 (M-F 7:45 to 4:30 HST). The "Certificate of Good Standing" is valid for six months from date of issue and must be valid on the date it is received by the purchasing agency. Offerors are advised that there are costs associated with registering and obtaining a "Certificate of Good Standing" from the DCCA.

3.4.5.4 Hawaii Compliance Express. Instead of separately applying for the abovementioned paper certificates at the various state/federal agencies, Offerors may choose to use the Hawaii Compliance Express (HCE), which allows businesses to register on-line at:

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http://vendors.ehawaii.gov/hce/splash/welcome.html.
The HCE provides the vendor with a "Certificate of Vendor Compliance" with current status as of the issuance date, accepted for both contracting purposes and final payment. Vendors that elect to use the HCE services are required to pay an annual fee of $12.00.

ARTICLE 4: SCOPE OF WORK

4.5 - ALLOWANCES FOR OVERHEAD AND PROFIT (3-125-13-HAR)

- In both Sections 4.5.1.1 and Section 4.5.1.2, replace: "fifteen percent (15%)" with **[twenty percent (20%)]**
- In Section 4.5.1.3, replace: "seven percent (7%)" with **[ten percent (10 %)]**

ARTICLE 5: CONTROL OF WORK

5.2 – AUTHORITY OF THE PROJECT MANAGER

Under Section 5.2, Authority of the Project Manager, add the following sentence at the end of the paragraph:

"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."

5.5 - SHOP DRAWINGS AND OTHER SUBMITTALS

In the second and fourth sentences of Section 5.5.1(c), replace "licensed professional Manager" with "licensed professional Engineer."

5.6 – COORDINATION OF CONTRACT DOCUMENTS

After Section 5.6.4.1, insert the following new section:

5.6.4.2: In the event of a conflict between Form AG-008 (4/15/09) (the "General Conditions") and the DHHL Interim General Conditions (August 16, 2005), the requirements of the "DHHL Interim General Conditions (August 16, 2005)" will apply to the extent provided by and as allowed under law.

5.9.3 – MANAGERING WORK

- Replace the word: "Managering" in this section title with "Engineering."

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- In the first, second, and fourth sentences of this section, replace the words "Managering" with "engineering."

- In Section 5.9.3.4 – Replace the phrase "Civil Manager" with "Civil Engineer."

1. 5.12 – VALUE MANAGERING INCENTIVE

- Replace the word: "Managering" in this section title with "Engineering."

- In Sections 5.12.1 and 5.12.2, replace the word "Managering" with "Engineering."

- In Section 5.12.4, replace the word "Manager" in this section title with "Engineer" and replace the phrase "professional architect or Manager" with "professional architect or engineer."

5.13 – SUBCONTRACTS

In Section 5.13.6 SUBCONTRACTING, add the following at the end: "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."

ARTICLE 7: PROSECUTION AND PROGRESS

Modify the following subsection on page 45 under:

7.2 - COMMENCEMENT REQUIREMENTS

After Section 7.2.1 on page 45, add the following new section:

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 per DHHL Interim General Condition 5.9.3.4.

7.3 - INSURANCE REQUIREMENTS

Delete the limits of liability insurance specified in items 7.3.7.2. and insert the following section:

"General Liability and Automobile Insurance. CONTRACTOR shall maintain, at its own expense, the minimum insurance coverage specified below throughout the term of this Contact.

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."

7.4 – PERMITS AND LICENSES

Edit the first sentence in section 7.4.1 as follows: The Department or its representatives may process Federal (e.g. Corps of ~~Managers~~ Engineers), State and county permit applications.

ARTICLE 8: MEASUREMENT AND PAYMENT

Modify the following subsections:

8.1 - MEASUREMENT OF QUANTITIES

- Under Section 8.1.2 on page 74, delete the following phrase: "except where slope exceeds ten percent (10%)."

8.4 - PROGRESS AND/OR PARTIAL PAYMENTS

- After Section 8.4.5 on page 79, insert the following new section:

  8.4.6 Final Payment Requirements (§3-122-112, HAR). Contractor will submit the following with its invoice for final payment on the contract:

  (a) An original tax clearance certificate, not over two months old.

  (b) An original "Certification of Compliance for Final Payment" (SPO Form-22).

8.6 - RETAINAGE

- In Section 8.6.1. delete the second and third sentences and replace with the following new sentences:

  "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."

- After Section 8.6.1, add the following new sections:

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%).

- Insert at the beginning of Section 8.6.3 on page 80: "Subject to approval by the Chairman, and at the Chairman's sole discretion."

SC-15: FINAL INSPECTION

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

The Contractor shall therefore schedule the final inspection with the Department of Public Works of the County of Hawaii and notify the Department's Project Manager one week prior to said inspection.

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-16: COMPLIANCE WITH HAWAII REVISED STATUTES (HRS) CHAPTER 103B AS AMENDED BY ACT 192, SLH 2011 - EMPLOYMENT OF STATE RESIDENTS ON CONSTRUCTION PROCUREMENT CONTRACTS

The Contractor shall comply with the requirements of Hawaii Revised Statutes (HRS) Chapter 103B as amended by Act 192, SLH 2011, Employment of State Residents on Construction Procurement Contracts, as follows:

1. Definitions for terms used in HRS Chapter 103B as amended by Act 192, SLH 2011:

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a. "Contract" means contracts for construction under chapter 103D, HRS.

b. "Contractor" has the same meaning as in section 103D-104, HRS, provided that "contractor" includes a subcontractor where applicable.

c. "Construction" has the same meaning as in section 103D-104, HRS.

d. "General Contractor" means any person having a construction contract with a governmental body.

e. "Procurement Officer" has the same meaning as in section 103D-104, HRS.

f. "Resident" means a person who is physically present in the State of Hawaii at the time the person claims to have established the person's domicile in the State of Hawaii and shows the person's intent is to make Hawaii the person's primary residence.

g. "Shortage trade" means a construction trade in which there is a shortage of Hawaii residents qualified to work in the trade as determined by the Department of Labor and Industrial Relations.

2. HRS Chapter 103B as amended by Act 192, SLH 2011 – Employment of State Residents Requirements:

a. A contractor awarded a contract 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.

b. Prior to award of a contract, an Offeror/Bidder may withdraw an offer/bid without penalty if the Offeror/Bidder finds that it is unable to comply with HRS Chapter 103B as amended by Act 192, SLH 2011.

c. Prior to starting any construction work, the Contractor shall submit the subcontract dollar amount for each of its Subcontractors.

d. The requirements of this section shall apply to any subcontract of $50,000 or more in connection with the Contractor; that is, such Subcontractors must

also ensure that Hawaii residents comprise not less than 80% of the Subcontractor's workforce used to perform the subcontract.

e. The Contractor and any Subcontractor whose subcontract is $50,000 or more shall comply wit the requirements of HRS Chapter 103B as amended by Act 192, SLH 2011.

1) Certification of compliance shall be made in writing under oath by an officer of the General Contractor and applicable Subcontractors and submitted with the final payment.

2) The certification of compliance shall be made in writing under oath by an officer of the company by completing a "Certification of Compliance for Employment of State Residents" form and executing the Certificate before a licensed notary public.

3) In addition to the certification of compliance as indicated above, the Contractor and Subcontractors shall maintain records such as certified payrolls for laborers and mechanics who performed work at the site and time sheets for all other employees who performed work on the project. These records shall include the names, addresses and numbers of hours worked on the project by all employees of the Contractor and Subcontractor who performed work on the project to validate compliance with HRS Chapter 103B as amended by Act 192, SLH 2011. The Contractor and Subcontractors shall retain these records and provide access to the State for a minimum period of four (4) years after the final payment, except that if any litigation, claim, negotiation, investigation, audit or other action involving the records has been started before the expiration of the four-year period, the Contractor and Subcontractors shall retain the records until completion of the action and resolution of all issues that arise from it, or until the end of the four year period, whichever occurs later. Furthermore, it shall be the Contractor's responsibility to enforce compliance with this provision by any Subcontractor.

f. A General Contractor or applicable Subcontractor who fails to comply with this section shall be subject to any of the following sanctions:

1) With respect to the General Contractor, withholding of payment on the contract until the Contractor or its Subcontractor complies with HRS Chapter 103B as amended by Act 192, SLH 2011.

2) Proceedings for debarment or suspension of the Contractor or Subcontractor under Hawaii Revised Statues §103D-702.

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3. Conflict with Federal Law: This section shall not apply if the application of this chapter is in conflict with any federal law, or if the application of this chapter will disqualify any state or county agency from receiving federal funds or aid.

SC-17: 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.

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.

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SC-18: METHOD OF AWARD

Bidder is required to bid on entire project, including Parts 2.A. and 2.B., the Sandwich Isles Communications, Inc. (SIC) portion of the work. The award of contract will be made on the basis of the lowest responsible and responsive bid for Parts 1.A. and 1.B., the DHHL portion only. Consequently, the bidder shall enter only the amount of Parts 1.A. and 1.B., DHHL portion of the work, on the Offer Letter in the Bid Form.

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. In addition to the above, the Chairman reserves the right to negotiate with the lowest responsible and responsive bidder to award a contract within available funds.

3. SIC is not required to accept the bid for the SIC portion of the work from the Contractor who submits the lowest bid for the DHHL portion of the work.

4. In the event that SIC chooses to procure a different contractor(s) for SIC's portion of the work, other than the low bid contractor awarded by DHHL for DHHL's portion of the work, then DHHL's contractor is required to allow SIC's contractor(s) to construct its work in a reasonable manner and shall provide coordination services for the installation of SIC's portion of the work.

SC-19: STANDARD SPECIFICATIONS AND STANDARD DETAILS

The "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, SEPTEMBER 1986," of the Departments of Public Works, County of Kauai, City and County of Honolulu, County of Maui, and County of Hawaii, of the State of Hawaii, and the "STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION, SEPTEMBER 1984, AS REVISED SEPTEMBER 2000" of the Departments of Public Works, County of Kauai, City and County of Honolulu, County of Maui, and County of Hawaii, of the State of Hawaii, are by reference incorporated herein and made a part of these specifications. The term "Standard Specifications" used hereinafter refers to "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, SEPTEMBER 1986," and the term "Standard Details" used hereinafter refers to "STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION, SEPTEMBER 1984, AS REVISED SEPTEMBER 2000." Copies of the Standard Specifications and Standard Details may be purchased at the Division of Purchasing during regular business hours of the City and County of Honolulu.

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

SC-20: WATER SYSTEM SPECIFICATIONS

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

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

SC-21: STATE STANDARD SPECIFICATIONS

The "Hawaii Standard Specifications for Road, Bridge and Public Works Construction," Highways Division, Department of Transportation, State of Hawaii, 2005, as amended, and hereinafter referred to as the "State Standard Specifications" is by reference incorporated herein and made a part of these contract documents.

SC-22: SUBSTITUTION REQUESTS

The written substitution requests must be received by the Land Development Division no later than **2:00 p.m. on Monday, March 12, 2012**. The request may be hand carried or mailed to DHHL, Hale Kalanianaole, 91-5420 Kapolei Parkway, Kapolei, Hawaii 96707. Substitution requests by FAX are not acceptable.

SC-23: EXISTING GROUND ELEVATIONS

The existing ground elevations as shown on the plans shall be presumed as being correct prior to the grading work.

SC-24: ENGINEERING WORK

The DHHL may engage the Consultants for limited construction observations to supplement the inspections performed by the State and respective Counties. The Consultant's authority shall be as described in the DHHL Interim General Conditions 5.4.

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SC-25: PROJECT SIGN

The Contractor shall furnish, erect, maintain and remove one (1) project sign.

The project signboard shall be 3/4" thick, "AC" exterior grade fir plywood with resin bonded surfaces on both sides, 4 feet in height and 7 feet long. All lettering type and size and color selection shall be as specified by DHHL.

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

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

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

Payment will be made for one (1) project sign painted, with lettering specified by DHHL, in place complete (see enclosed details). Payment for sign removal shall be incidental to said item.

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PROJECT SIGN

SPECIFICATIONS

LETTER STYLE

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)

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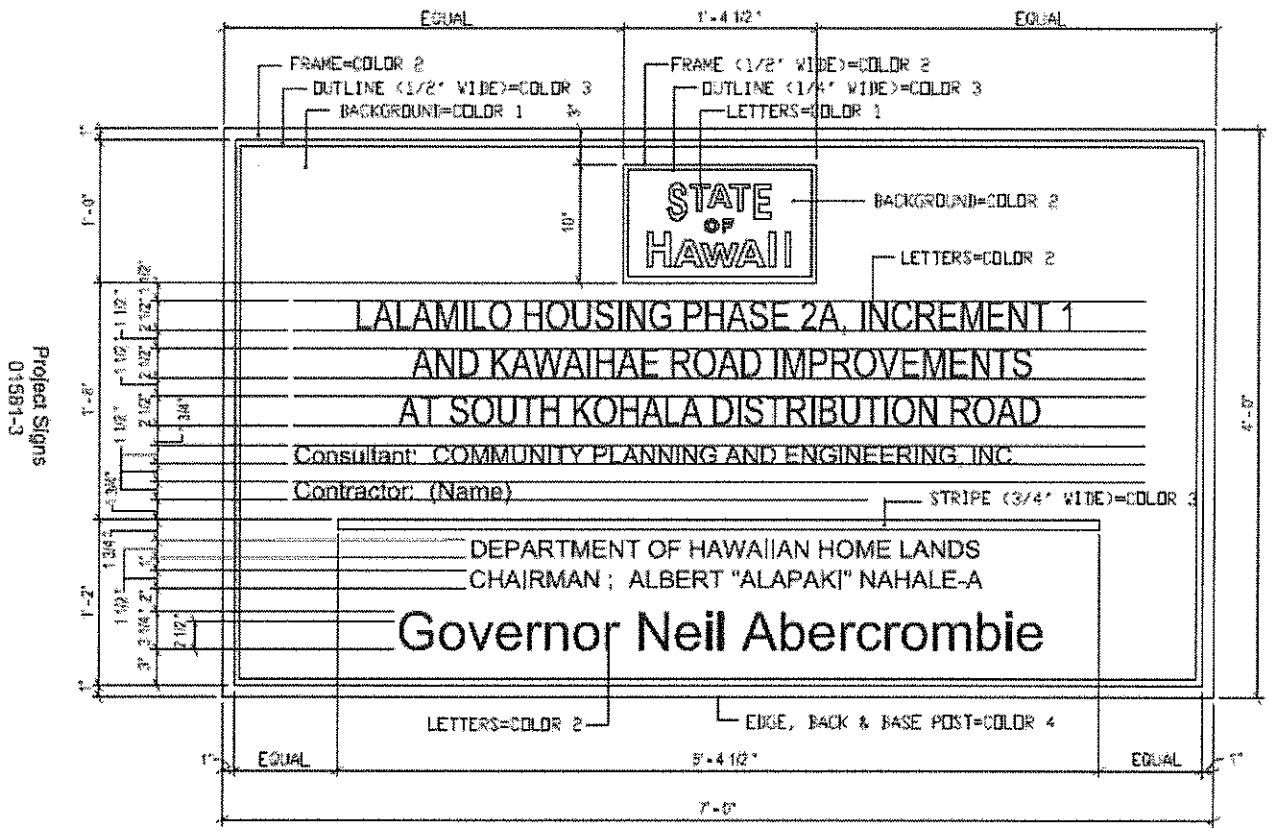
SIGN LAYOUT DETAIL



NOTE: Number of signs required 1

SIGN LAYOUT DETAIL

NOT TO SCALE

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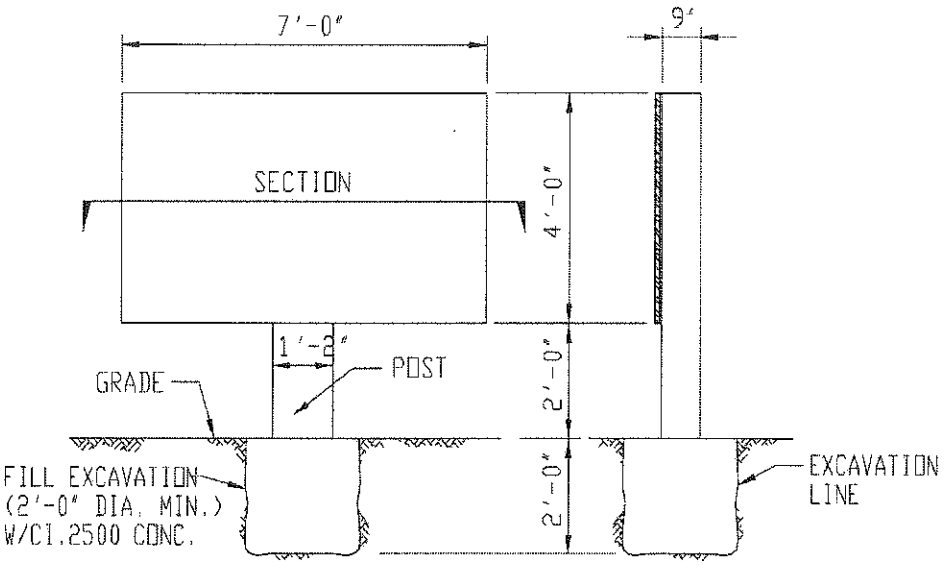
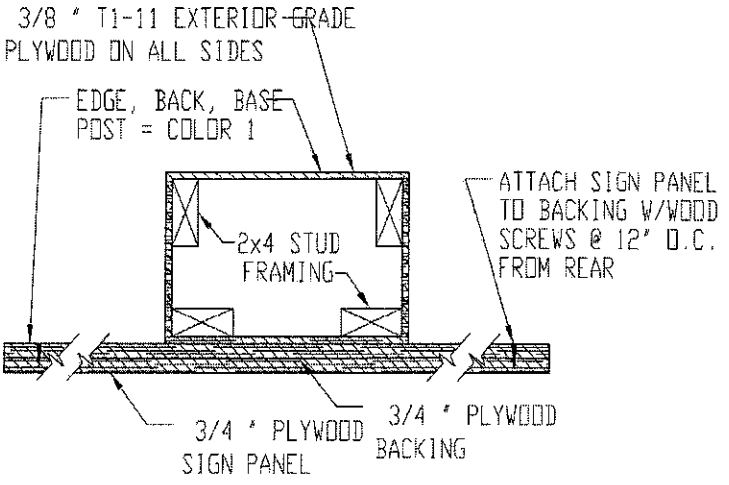
SIGN ELEVATIONS/SECTIONS DRAWING



FRONT SIDE

ELEVATIONS

NOT TO SCALE



SECTION

NOT TO SCALE

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SC-26: FIELD OFFICE

The Contractor shall coordinate with the Contractor from the Lalamilo Off-Site Water System Project in regards to the existing field office. The Contractor shall be responsible for all rental, utility and maintenance costs associated with the existing on-site field office. The field office shall be for exclusive use and entry of the Construction Manager and DHHL personnel, or their representatives.

The Contractor shall be responsible for the following monthly costs during the contract duration:

1. **Field office rental.**
2. **Electric service (HELCO).**
3. **High speed dsl (Oceanic).**
4. **Potable water service.**
5. **Wireless security alarm.**
6. **Weekly pumping of waste holding tank.**
7. **Bottled water dispenser.**

The above monthly costs shall be covered under an Allowance Item for the Field Office in the bid form. Contractor will be required to submit backup information when billing against this allowance item.

The Contractor shall maintain the field office in good repair and clean and sanitary condition, Should the Construction Manager, in his judgment, feel that the office is not being adequately maintained, operated or repaired, partial or full retention of the Contractor's monthly progress payment may be enforced until such inadequacies are corrected.

SC-27: GEOTECHNICAL ENGINEER

The services of a geotechnical engineering firm will be retained by DHHL. The Contractor shall notify the Construction Manager whenever the geotechnical engineering firm's presence is needed at the site. The Geotechnical Engineer shall be present to observe work concerning excavation, placing and compacting soil materials, and to take field density tests. Also, the Geotechnical Engineer shall perform laboratory testing of all imported soils or on-site soils to determine its acceptability for its intended use as a select

material or general fill material. The Geotechnical Engineer shall compile the daily observations, test data, test results and recommendations into a weekly submittal to the Construction Manager. The Geotechnical Engineer shall ensure that the geotechnical work complies with the soils report, specifications, and drawings.

Upon completion of the fine grading operation, the Geotechnical Engineer shall provide the information needed to complete the "Report after Grading" as required by the Hawaii County Code, Section 10-23. As a minimum, the Contractor shall submit a report summarizing the construction technique and inspection data as well as a statement regarding conformity to this chapter and the project specifications.

The Contractor shall notify the County of Hawaii Director of Public Works or the director's representative when the grading operation is ready for final inspection. Final approval shall not be given until all work including installation of all drainage structures and their protective devices have been completed and the required reports have been submitted.

If deviations from the soil conditions and recommendations presented in the soils report occur, the Contractor shall notify the Construction Manager and Geotechnical Engineer and stop wok in the area until the Geotechnical Engineer issues a course of action. Contractor shall stop work on other aspects of the project not affected by the soil condition.

SC-28: MEASUREMENT OF QUANTITIES

All quantities expressed in the proposal are computed and will be paid based on the horizontal plane. The quantities are for bidding purposes only and not intended to represent actual quantity installed.

Payment for non-expansive select material shall be based on the actual quantities incorporated in the work per the construction plans as directed by the Geotechnical Engineer. The Contractor shall record, on a daily basis, the mass graded stations, depths, widths and other data to accurately compute the quantities. The Contractor's surveyor shall furnish adequate reference points and stations to the satisfaction of the Construction Manager and to enable the Construction Manager to easily verify the stations. The Contractor shall submit three (3) copies of the report to the Construction Manager on a daily basis for record keeping and payment purposes.

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SC-29: SOILS INVESTIGATION AND REPORT

Subsurface soil investigations have been made at the subdivision site. A copy of the complete soils report entitled "Draft Preliminary Geotechnical Exploration Report. Department of Hawaiian Home lands, Lalamilo RS10 Subdivision Project, Lalamilo, Waimea, Big Island of Hawaii", dated July 28, 2006, prepared by PSC Consultants LLC, is available on the compact disc (CD) provide with these bid documents.

Contract specifications shall control over soils report on contradictory requirements.

SC-30: HAWAII PRODUCT PREFERENCE

This solicitation is subject to Section 103D-1002, Hawaii Revised Statutes (HRS), as amended by Act 175 (Session Laws of Hawaii (SLH) 2009), regarding preference for Hawaii products. For products not currently on the Hawaii products list, the manufacturers and producers must complete and submit form SPO-38 to DHHL. The form must be received by DHHL no later than **2:00 p.m., Monday, March 12, 2012.** Submittal by facsimile (808-620-9299) or e-mail (Jeffrey.Y.Fujimoto@hawaii.gov) is acceptable.

The form SPO-38 is available on the SPO webpage at http://hawaii.gov/spo under the *'Quicklinks'* menu; click on *'Forms for Vendors, Contractors, and Service Providers'* to view and download SPO-38 from site.

Bidders may claim a Hawaii product preference for products that it manufactures or produces with its own workforce and equipment. The form 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 work.

SC-31: 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 on the walls of the field office and enforce the plan.

SC-32: 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, the Contractor shall immediately cease all operations in the area and contact the Construction Manager.

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SC-33: INADVERTENT DISCOVERY OF HUMAN BURIALS

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, the Construction Manager, the Consultant, the Office of Hawaiian Affairs, Hui Malama I Na Kupuna 'O Hawai'i Nei, and the Hawaii Island 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-34 CERTIFICATION

The Contractor and the Contractor's Licensed Professional Land Surveyor shall jointly certify that the road grading and lot grading and instillation of utilities, ditches, and swales were built to the lines and grades shown on the project plans.

SC-35: EARTHWORK QUANTITIES AND IMPORTED MATERIAL

Prior to any earthwork operations, the Contractor shall submit to the Engineer a list of estimated quantities for trenching, backfill and imported material.

SC-36: RECORD DRAWINGS

Field Posted As-Built Drawings, the intent of which is to record the actual in-place construction so that any future renovations or tie-ins can be anticipated accurately, shall be prepared and submitted by the Contractor. To accomplish this, the following procedure shall be followed by the Contractor:

1. A full-size set of field posted as-built drawings shall be neatly maintained at the job site. All deviations from alignments, elevations and dimensions which are stipulated on the drawings and authorizations given by the Engineer to deviate from the drawings shall be clearly and accurately recorded by the Contractor on this set of record drawings.

2. Changes shall be recorded immediately after they are constructed in place to assure they are not forgotten. Record the changes using erasable colored pencil and refer to the authorizing document (RFI, Shop Drawing, Field Modification) or Change Order. The following color codes shall be used to document these changes on the drawings:

Additions	-	RED
Deletions	-	GREEN

STATE OF HAWAII

SPECIAL CONDITIONS

Comments	-	BLUE
Dimensions	-	GRAPHITE*

* Legibly mark to record actual depths, horizontal and vertical location of utilities and structures relative to permanent surface improvements.

The field posted as-built drawings shall be made available to the Construction Manager and Engineer during normal working hours at the Contractor's field office so that its clarity and accuracy can be monitored.

A monthly log of all the record changes shall be submitted with each progress payment request. The Contractor shall not be entitled to any progress payment until he has provided a completed log which accurately reflects the work that was done. The log shall identify each revision by drawing number and a description of the revision. The Contractor and Construction Manager shall schedule a day each month to meet and review the log and drawings together.

3. The words "FIELD POSTED AS-BUILT" shall be labeled on the title sheet and certified by the Contractor as to accuracy and completeness as shown below:

FIELD POSTED AS-BUILT

Certified By: _____ Date: _____
Contractor (Include name and company)

4. The words "FIELD POSTED AS-BUILT" shall be labeled on all sheets in the margin space to the right of the sheet number written from the bottom upward.

5. The Index to Drawings shall be revised with the label "FIELD POSTED AS-BUILT" for each sheet. The index shall conclude with the following note: "A COMPLETE SET CONTAINS ____ SHEETS" with the total number of sheets comprising the set to be placed in the blank.

6. Any "FIELD POSTED AS-BUILT" drawing which the Construction Manager or Engineer determines does not accurately record the deviation, or is not legible, will be rejected and returned to the Contractor for corrections. Drawings that are ripped or have excessive eraser marks from changes shall be replaced with a clean set of drawings.

7. Submit the set of approved "FIELD POSTED AS-BUILT" drawings to the Engineer no later than five (5) calendar days prior to the date of final inspection.

8. "RECORD DRAWINGS" will be prepared by the design consultant using the "FIELD POSTED AS-BUILT." Both sets of drawings will be sent to the Contractor for review and approval. The Contractor will have one (1) week to review and approve the drawings. After the Contractor is satisfied the Record Drawings are correct, the Contractor shall certify changes by signing the tracings.

SC-37: STATE AND COUNTY INSPECTION

All work within the State of Hawaii and County of Hawaii maintained easements and roadways shall be inspected and approved by the applicable agencies of the State of Hawaii and County of Hawaii. The Contractor shall make arrangements directly with the appropriate agencies to arrange for inspection of work and obtain the necessary certificates according to Section 23-81 *Final approval before construction completed; bond required* of the Hawaii County Code (2005), prior to the completion date outlined in these specifications. All work and/or fees necessary to comply with this item shall be considered incidental to the various contract items. No separate payment shall be made.

SC-38: STATE GENERAL EXCISE TAX

This project is exempt from the State of Hawaii General Excise Tax. The Contractor's bid shall not include the General Excise Tax for all work. Contractor shall submit Form G-37 for itself and all subcontractors to DHHL through the Construction Manager for processing and certification.

SC-39: CONTINGENT ITEMS

The quantity shown in the Bid Form for contingent items is approximate only and for the purpose of obtaining a unit price bid. The quantity may vary depending on the field conditions. Payment for contingent items shall be made by multiplying the number of units authorized by the Engineer of such contingent item incorporated in the work by the unit price for such item as set forth in the Bid Form. Adjustments in the total lump sum bid price shall be made accordingly.

SC-40: TELECOMMUNICATION SYSTEM

The telecommunication system for the subdivision, to consist of buried conduits in the road sidewalk area, conduits crossing the road pavement areas at various locations, handholes, appurtenances, and other minor improvements constructed and installed in accordance with Rural Electrician Standards, shall be installed in and for the project under a separate contract let out by SIC.

Bidders shall bid on the entire project, including the SIC portion of the Bid Form; all items for Parts 1.B and 2.B. of the Bid Form must be filled in.

Upon the request of SIC, the awardee of the Contract with DHHL shall also enter into a separate and direct contract with SIC for the construction of the telecommunication system at the amount bid under this IFB and break out its bid prices to comply with the SIC contracting format.

However, SIC is not required to accept the bid amount entered for the SIC portion of the work, in this case under Parts 1.B. and 2.B. of the Bid Form, from the bidder who submits the lowest bid for the DHHL portion of the work and SIC is not bound to retain this bidder for the construction of the telecommunications system.

In the event that SIC elects to produce a different contractor for its work, other than the contractor retained by DHHL for the DHHL portion of the work, in this case Parts 1.A. and 1.B. of the Bid Form, the DHHL contractor shall be required to allow the SIC contractor to construct its work in a reasonable manner and shall provide any coordination services necessary for the installation of the SIC portion of the work.

The Contractor is directed to refer to DHHL Interim General Condition 7.12.

SC-41: CAMPAIGN CONTRIBUTIONS BY STATE AND COUNTY CONTRACTORS

Contractors are hereby notified of the applicability of Section 11-205.5, 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-42: UNAPPROVED CONSTRUCTION PLANS

Bidders are notified that the construction plans for this project have been processed for approval signatures. The Electrical Plans do not require approval by HELCO. HELCO's Standard Details will be applicable to the project. In order that there will be no misunderstanding as to the work being bid, the successful bidder shall retain one set of "bid set" documents for their record.

SC-43: CONSTRUCTION YARD AND RIGHT-OF-ENTRY

Contractor shall be responsible for determining the staging area and final route in and out of the project site in coordination with the DHHL and for obtaining right-of-entry from the DHHL.

SC-44: CATTLE RANCHING

Project site (TMK: (3) 6-6-01: Portion 77) is currently under lease for cattle ranching purposes. Prior to start of construction, the Contractor shall coordinate with Contracting Officer in accessing the cordoned areas as well as the removal and demolition of the existing fences within the project site.

STATE OF HAWAII

SPECIAL CONDITIONS

SC-45: BOND TO WORK WITHIN STATE RIGHT-OF-WAY

Contractor shall provide a separate bond to work within Kawaihae Road (State DOT Right-of-Way).

SC-46: BURIAL SITE 21920

Prior to relocating the burial site, the surrounding area outside of the fenced buffer zone shall be mass-graded to finish conditions. Allowable cut-slope outside the buffer zone during the initial phase of grading shall not be steeper than 2H:1V. An Archeologist will be on-site to monitor the Contractor's grading work. Upon completion of the initial phase of the grading work, the burial structure will be disassembled by hand and stored at a nearby location. The burial remains will be disinterred by hand and relocated to a nearby temporary storage area within the project area lands. The remaining site will then be mass-graded to finish conditions, which shall not exceed a two-week duration. A minimum 3-foot (wide) by 7-foot (length) by 3-foot (depth) trench shall be over-excavated for the interment. The burial remains will be reinterred in the trench and the burial feature will be reconstructed. A cultural practitioner will be onsite to perform and take care of reburial. Orange fence will be installed as a temporary buffer at a distance of 20 feet around the outside perimeter of the burial feature. The buffer fence will be inspected by an archaeological monitor. Monitoring will be be per NAGPRA-Section 106 procedures. There is no cost to the Contractor for Archaeological services. The Burial Council was consulted. Also, the cultural and linear descendants were consulted and they proposed the burial procedures.

STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS

ADDENDUM NO. 1
March 12, 2012

BID OFFER FORM FOR

LALAMILO HOUSING PHASE 2A, INCREMENT 1, (PART I) AND LALAMILO HOUSING PHASE 2A, KAWAIHAE ROAD IMPROVEMENTS AT SOUTH KOHALA DISTRIBUTION ROAD (PART II)

WAIMEA, SOUTH KOHALA, ISLAND OF HAWAII, HAWAII

TAX MAP KEY
(3) 6-6-01: 10 & 77

IFB No.: IFB-12-HHL-008

Mr. Albert "Alapaki" Nahale-a, Chairman
Hawaiian Homes Commission
Department of Hawaiian Home Lands
91-5420 Kapolei Parkway
Kapolei, Hawaii 96707

Dear Mr. Nahale-a:

The undersigned has carefully examined, read, and understands the terms and conditions in the Specifications, Special Conditions attached hereto, DHHL Interim General Conditions, and General Conditions specified in the Invitation for Bids (IFB) No. IFB-12-HHL-008. The State of Hawaii's (State) Contract for Goods and Services Based on Competitive Sealed Bids AG-003 Rev. 6/22/2009, General Conditions, AG-008 Rev. 4/15/2009, are included by reference and made part hereof and available upon written request to the Procurement Officer. The undersigned herby submits the following offer to perform the work for IFB No. IFB-12-HHL-008 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:

_____

STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS

ADDENDUM NO. 1

March 12, 2012

BID FORM

FOR THE

LALAMILO HOUSING PHASE 2A, INCREMENT 1
(PART I)

AND

LALAMILO HOUSING PHASE 2A,
KAWAIHAE ROAD IMPROVEMENTS AT SOUTH KOHALA DISTRIBUTION ROAD
(PART II)

WAIMEA, SOUTH KOHALA, ISLAND OF HAWAII, HAWAII

IFB-12-HHL-008

TAX MAP KEY: 3-6-6-01:10&77

Mr. Albert "Alapaki" Nahale-A, Chairman
Hawaiian Homes Commission
Department of Hawaiian Home Lands
State of Hawaii

Dear Mr. Nahale-A:

The undersigned, having examined to full satisfaction, all the bidding documents including, but not limited to, the drawings and specifications for the captioned project, submits hereby its unit and/or lump sum prices and total sum bid of

_____

_____ Dollars ($_____),
exclusive of State of Hawaii General Excise Tax, for supplying, furnishing, and paying for all labor, materials, tools, equipment, and services necessary to construct in place complete all work and construction items listed in the following schedule.

Item No.	Estimated Quantity	Description	Unit Price	Total

PART I

PART I.A. – LALAMILO HOUSING PHASE 2A, INCREMENT 1 (EXCLUDING GET)

ROAD CONSTRUCTION
The price shall include construction of the roadway prism, base courses, curb and gutter, sidewalk and other items as called for in the plans, including labor, tools, equipment and all incidental work necessary on the plans, in place complete.

ROADS "A" TO "G" & SOUTH KOHALA DISTRIBUTION ROAD

1.	264,387	Sq. Ft., Fine Grading of Roadway Area.			
			Per Sq. Ft.	$_____	$_____
2.	2,937	Sq. Yds., Hot Mix Asphalt Concrete Pavement, County Mix No. IV (2" minimum thickness).			
			Per Sq. Yd.	$_____	$_____
3.	16,706	Sq. Yds., Hot Mix Asphalt Concrete Pavement County Mix No. IV (2-1/2" minimum thickness).			
			Per Sq. Yd.	$_____	$_____
4.	**19,643**	**Sq. Yds., Asphalt Treated Base Course (4" minimum thickness).**			
			Per Sq. Yd.	$_____	$_____

Item No.	Estimated Quantity	Description	Unit Price	Total
5.	3,740	Cu. Yds., Aggregate Subbase Course (6" minimum thickness).		
		Per Cu. Yds.	$ _____	$ _____
6.	10,270	Lin. Ft., Cast-in-Place Integral Curb and Gutter, Class "A" Concrete Gutter.		
		Per Lin. Ft.	$ _____	$ _____
7.	687	Sq. Ft. Curb Ramps with Detectable Warning Strip.		
		Per Sq. Ft.	$ _____	$ _____
8.	2,772	Sq. Ft. Curb Ramp – Type "B" (Truncated) with Detectable Warning Strip.		
		Per Sq. Ft.	$ _____	$ _____
9.	12,740	Sq. Ft., Reinforced Concrete Driveway Apron, 4" Thick.		
		Per Sq. Ft.	$ _____	$ _____
10.	49,510	Sq. Ft., 7' Wide Plain Class "B" Concrete Sidewalk, 4" Thick.		
		Per Sq. Ft.	$ _____	$ _____
11.	**25**	**Each, Street Monument.**		
		Each	$ _____	$ _____

Item No.	Estimated Quantity	Description	Unit Price	Total
12.	**250**	**Lin. Ft., Temporary Wooden Barricade with Concrete Header.**		
		Per Lin. Ft.	$	$
13.	**11**	**Each, Street Name and Traffic Sign.**		
		Each	$	$
14a.	**19**	**Each, Traffic Sign with Post.**		
		Each	$	$
14b.	**19**	**Each, Traffic Sign.**		
		Each	$	$
15.	245	Lin. Ft., 12" White Pavement Striping (thermoplastic extrusion).		
		Per Lin. Ft.	$	$
16.	75	Lin. Ft., 8" White Solid Striping (thermoplastic extrusion) with Type "C" Raised Pavement Markers.		
		Per Lin. Ft.	$	$
17.	**3,350**	**Lin. Ft., 4" Double Yellow Pavement Striping (thermoplastic extrusion) with Type "D" Raised Pavement Markers @ 20' O.C.**		
		Per Lin. Ft.	$	$

Item No.	Estimated Quantity	Description	Unit Price	Total
18.	L.S.	Temporary Traffic Control Measures.		
		Lump Sum		$
TRANSFER STATION				
19.	160	Lin. Ft., 4" Solid Yellow Pavement Striping (thermoplastic extrusion) with Type "D" Raised Pavement Markers @ 20' O.C.		
		Per Lin. Ft.	$	$
20a.	**1**	**Each, 30' Wide Gate.**		
		Each	$	$
20b.	**1**	**Each, 36' Wide Gate**		
		Each	$	$
21.	**146**	**Lin. Ft., 6' High Chainlink Fence.**		
		Per Lin. Ft.	$	$
		TOTAL – ROAD CONSTRUCTION (Items 1 to 21, inclusive)		$

Item No.	Estimated Quantity	Description	Unit Price	Total
		DRAINAGE SYSTEM The price shall include excavating for catch basins, manholes, trenching for pipes, removing and disposing of unsuitable material and replacing with select material for pipe cushion, sheeting and shoring as required, backfilling, labor, equipment, tools, materials and all incidental work necessary to construct the drainage system as indicated on the plans, in place complete.		
22.	**3,300**	**Cu. Yds., Unclassified Excavation for Catch Basins, Drain Lines, Ditches and DMH, including Backfill and Pipe Cushion, In Place Complete.**		
		Per Cu. Yds.	$ _____	$ _____
23.	**1,870**	**Lin. Ft., 18" High Density Polyethylene Pipe, In Place Complete.**		
		Per Lin. Ft.	$ _____	$ _____
24.	**192**	**Lin. Ft., 24" High Density Polyethylene Pipe, In Place Complete.**		
		Per Lin. Ft.	$ _____	$ _____

Item No.	Estimated Quantity	Description	Unit Price	Total
25.	2	**Each, Standard Reinforced Concrete Catch Basin, Type "A", 7.00' to 7.99' Deep.**		
		Each	$	$
26.	1	**Each, Standard Reinforced Concrete Catch Basin, Type "A", 8.00' to 8.99' Deep.**		
		Each	$	$
27.	1	**Each, Standard Reinforced Concrete Catch Basin, Type "A", 9.00' to 9.99' Deep.**		
		Each	$	$
28.	0	~~**Each, Standard Reinforced Concrete Catch Basin, Type "B", 4.00' to 4.99' Deep.**~~		
		Each	$	$
29.	6	**Each, Standard Reinforced Concrete Catch Basin, Type "B", 7.00' to 7.99' Deep.**		
		Each	$	$
30.	4	**Each, Standard Reinforced Concrete Catch Basin, Type "B", 8.00' to 8.99' Deep.**		
		Each	$	$

Item No.	Estimated Quantity	Description	Unit Price	Total
31.	**2**	**Each, Standard Reinforced Concrete Catch Basin, Type "B", 9.00' to 9.99' Deep.**		
		Each	$	$
32.	**0**	~~**Each, Standard Reinforced Concrete Catch Basin, Type "B", 10.00' to 10.99' Deep.**~~		
		Each	$	$
33.	**0**	~~**Each, Standard Reinforced Concrete Catch Basin, Type "B", 11.00' to 11.99' Deep.**~~		
		Each	$	$
34.	**0**	~~**Each, Special Reinforced Concrete Catch Basin on Top of Drywell, Type "A", 5.00' to 5.99' Deep.**~~		
		Each	$	$
35.	1	Each, Special Reinforced Concrete Catch Basin on Top of Drywell, Type "A", 8.00' to 8.99' Deep.		
		Each	$	$
36.	2	Each, Special Reinforced Concrete Catch Basin on Top of Drywell, Type "A", 9.00' to 9.99' Deep.		
		Each	$	$

Item No.	Estimated Quantity	Description	Unit Price	Total
37.	8	Each, Special Reinforced Concrete Catch Basin on Top of Drywell, Type "A", 11.00' to 11.99' Deep.		
		Each	$	$
38.	1	Each, Special Reinforced Concrete Catch Basin on Top of Drywell, Type "A", 12.00' to 12.99' Deep.		
		Each	$	$
39.	**1**	**Each, Standard Reinforced Concrete Shallow Drain Manhole, 6.00' to 6.99' Deep.**		
		Each	$	$
40.	**2**	**Each, Standard Reinforced Concrete Shallow Drain Manhole, 7.00' to 7.99' Deep.**		
		Each	$	$
41.	**2**	**Each, Standard Reinforced Concrete Shallow Drain Manhole, 8.00' to 8.99' Deep.**		
		Each	$	$
42.	2	Each, Standard Reinforced Concrete Shallow Drain Manhole, 9.00' to 9.99' Deep.		
		Each	$	$

Item No.	Estimated Quantity	Description	Unit Price	Total
43.	1	Each, Standard Reinforced Concrete Shallow Drain Manhole, 10.00' to 10.99' Deep.		
		Each	$	$
44.	**0**	~~**Each, Standard Reinforced Concrete Shallow Drain Manhole, 11.00' to 11.99' Deep.**~~		
		Each	$	$
45.	**2**	**Each, Standard Reinforced Concrete Drain Inlet on Top of Drywell, 6.00' to 6.99' Deep.**		
		Each	$	$
46a.	**3**	**Each, Standard Reinforced Concrete Drain Inlet on Top of Drywell, 7.00' to 7.99' Deep.**		
		Each	$	$
46b.	**2**	**Each, Standard Reinforced Concrete Drain Inlet, 7.00'-7.99' Deep.**		
		Each	$	$
47.	1	Each, Standard Reinforced Concrete Drain Inlet on Top of Drywell, 8.00' to 8.99' Deep.		
		Each	$	$

Item No.	Estimated Quantity	Description	Unit Price	Total
48.	84	Lin. Ft., 2' Wide Reinforced Concrete Ditch "A" and Relief Concrete Ditch at Road "E".		
		Per Lin. Ft.	$ _____	$ _____
49.	L.S.	Concrete Headwall for Ditch "A".		
		Lump Sum		$ _____
50.	0	~~**Each, 72" Diameter Drywell, 18.00' to 18.99' Deep, including Drywell Cover, 12" Thick Washed Crushed Stone (2 1/2" to 3") all around Drywell, Drywell Base, and Excavation.**~~		
		Each	$ _____	$ _____
51.	2	**Each, 60" Diameter Drywell, 20.00' to 20.99' Deep, including Drywell Cover, 12" Thick Washed Crushed Stone (2 1/2" to 3") all around Drywell, Drywell Base, and Excavation.**		
		Each	$ _____	$ _____
52.	8	**Each, 60" Diameter Drywell, 21.00' to 21.99' Deep, including Drywell Cover, 12" Thick Washed Crushed Stone (2 1/2" to 3") all around Drywell, Drywell Base, and Excavation.**		
		Each	$ _____	$ _____

Item No.	Estimated Quantity	Description	Unit Price	Total
53.	1	**Each, 60" Diameter Drywell, 22.00' to 22.99' Deep, including Drywell Cover, 12" Thick Washed Crushed Stone (2 1/2" to 3") all around Drywell, Drywell Base, and Excavation.**		
		Each	$_____	$_____
54.	7	**Each, 60" Diameter Drywell, 24.00' to 24.99' Deep, including Drywell Cover, 12" Thick Washed Crushed Stone (2 1/2" to 3") all around Drywell, Drywell Base, and Excavation.**		
		Each	$_____	$_____
55.	1	**Each, 60" Diameter Drywell, 27.00' to 27.99' Deep, including Drywell Cover, 12" Thick Washed Crushed Stone (2 1/2" to 3") all around Drywell, Drywell Base, and Excavation.**		
		Each	$_____	$_____
		TOTAL – DRAINAGE SYSTEM (Items 22 to 55, inclusive)		$_____

Item No.	Estimated Quantity	Description	Unit Price	Total
		WATER SYSTEM The price shall include excavation for water lines and appurtenances, pipe cushion, backfilling, sheeting and shoring as required, labor, equipment, tools, materials and all incidental work necessary to construct the water system as indicated on the plans, in place complete.		
56.	1,910	Cu. Yds., Trench Excavation (without classification) for Water Mains, including Backfill and Pipe Cushion.		
		Per Cu. Yd.	$ _____	$ _____
57.	2,299	Lin. Ft. 8" Ductile Iron Pipe, Class 52. Furnish and Install Polyethylene Wrap.		
		Per Lin. Ft	$ _____	$ _____
58.	1,239	Lin. Ft. 6" Ductile Iron Pipe, Class 52. Furnish and Install Polyethylene Wrap.		
		Per Lin. Ft.	$ _____	$ _____
59.	532	Lin. Ft. 4" Ductile Iron Pipe, Class 52 Furnish and Install Polyethylene Wrap.		
		Per Lin. Ft.	$ _____	$ _____

Item No.	Estimated Quantity	Description	Unit Price	Total
60.	16	Each, 8" Gate Valve, Flanged End/Mechanical Joint, Class 200, including Anchor Valve Block.		
		Each	$	$
61.	4	Each, 6" Gate Valve, Flanged Ends, Class 200, including Anchor Valve Block.		
		Each	$	$
62.	**12**	**Each, 6" Gate Valve, Mechanical Joint/Flanged End, Class 200, including Anchor Valve Block.**		
		Each	$	$
63.	1	Each, 4" Gate Valve, Flanged End/Mechanical Joint, Class 200, including Anchor Valve Block.		
		Each	$	$
64.	1	Each, 4" Gate Valve, Mechanical Joints, Class 200, including Anchor Valve Block.		
		Each	$	$
65.	**31**	**Each, Gate Valve Box, including all Appurtenances.**		
		Each	$	$

Item No.	Estimated Quantity	Description	Unit Price	Total
66.	3,375	Lbs. Ductile Iron Fittings. 5 - 8"x6" Tee, MJ x FE 1 - 8"x6" Tee, MJ x MJ x FE 1 - 8" Tee 5 - 8" Tee, FE 1 - 6" Tee. MJ x MJ x FE 1 - 6" Tee, FE 1 - 6" Tee, MJ x FE 3 - 8"x4" Reducer, SEB 1 - 8"x4" Reducer, FE x FE 1 - 6"x4" Reducer, SEB 1 - 6" Cross, FE 3 - 8" Cap 6 - 4" Cap Per Lb.	$	$
67.	4	Each, 1" Air Relief Valve, including all Appurtenances. Each	$	$
68.	11	Each, Air Relief Valve Box, including Frame, Cover, and Concrete Base. Each	$	$
69.	71	Each, 8" Megalugs. Each	$	$
70.	**52**	**Each, 6" Megalugs.** **Each**	$	$

Item No.	Estimated Quantity	Description	Unit Price	Total
71.	18	Each, 4" Megalugs.		
		Each	$	$
72.	41	Each, 1-1/2" Service Lateral with Type "C-1" Service Connection.		
		Each	$	$
73.	39	Each, 1" Service Lateral with Type "A" Service Connection.		
		Each	$	$
74.	121	Each, Type "X" Meter Box.		
		Each	$	$
75.	**1**	**Each, Fire Hydrant, 6.0' Curb to Invert, including Hydrant Extension, Concrete Slab and Blue Reflective Markers.**		
		Each	$	$
76.	8	Each, Fire Hydrant, 3.5' Curb to Invert, including Hydrant Extension, Concrete Slab and Blue Reflective Markers.		
		Each	$	$

Item No.	Estimated Quantity	Description	Unit Price	Total
77.	**8.00**	**Cu. Yds., DWS 2,500 Concrete Reaction Blocks, Test Blocks, Concrete Beams, Slabs, inclusive of necessary Structural Struts, Straps, Rods, Reinforcing Steel and Appurtenances.** **5 - 8"x6" Tee, MJ x FE** **1 - 8"x6" Tee, MJ x MJ x FE** **1 - 8" Tee** **5 - 8" Tee, FE** **1 - 6" Tee. MJ x MJ x FE** **1 - 6" Tee, FE** **1 - 6" Tee, MJ x FE** **1 - 6" Cross, FE** **3 - 8" Cap** **6 - 4" Cap**	**Per Cu. Yd.**	$_____	$_____
78.	9	Each, 2" Cleanout including all Appurtenances.	Each	$_____	$_____

Item No.	Estimated Quantity	Description	Unit Price	Total
79.	L.S.	Connection to existing mains including removal of 8" cap and concrete block, inclusive of furnishing and installing of all materials and appurtenances (excluding excavation and trenching work), materials to cut and plug existing main, raising existing valve box frame and cover to match new finished grade, all in accordance to the plans and specification. Connection to existing high pressure 8" D.I. stub-out at Sta. 0+23 o/s 10.5' Right, Road "B", as shown on the plans.		
		Lump Sum		$_____
80.	L.S.	Connection to existing mains including removal of 16" cap and concrete block, inclusive of furnishing and installing of all materials and appurtenances (excluding excavation and trenching work), materials to cut and plug existing main, raising existing valve box frame and cover to match new finished grade, all in accordance to the plans and specification. Connection to existing low pressure 16" D.I., gate valve at Sta. 0+18 o/s 10.5' Left, Road "F", as shown on the plans.		
		Lump Sum		$_____

Item No.	Estimated Quantity	Description	Unit Price	Total
81.	**L.S.**	**Connection to existing mains including removal of 8" cap and concrete block, inclusive of furnishing and installing of all materials and appurtenances (excluding excavation and trenching work), materials to cut and plug existing main, raising existing valve box frame and cover to match new finished grade, all in accordance to the plans and specification. Connection to existing low pressure 8" D.I., gate valve at Sta. 0+23 o/s 10.5' Right, Road "B", as shown on the plans.**		
		Lump Sum		$ _____
82.	L.S.	Chlorination and Testing.		
		Lump Sum		$ _____
		TOTAL – WATER SYSTEM (Items 56 to 82, inclusive)		$ _____

Item No.	Estimated Quantity	Description	Unit Price	Total
		MASS GRADING The price for the following items shall include all labor, tools, equipment, material and incidentals necessary to construct the following items, in place complete.		
83.	**39.5**	**Acres, Clearing and Grubbing, inclusive of Proof-Rolling, and Removal of Top 6 Inches of Organic Material (stripping).**		
		Per Acre	$_____	$_____
84.	94,500	Cu. Yds., Mass Excavation, inclusive of Hauling, Placing and Compacting (per the recommendations in the soils report) and Grading in the General Fill Stockpile and the Rock Fill Stockpile. Approximate Embankment = 215,700 cubic yards.		
		Per Cu. Yd.	$_____	$_____
85.	161,804	Sq. Yds., Fine Grading of Lot Areas.		
		Per Sq. Yd.	$_____	$_____
86.	4,529	Lin. Ft., Combination Silt / Dust Fence.		
		Per Lin. Ft.	$_____	$_____
87.	2,868	Lin. Ft., Silt Fence.		
		Per Lin. Ft.	$_____	$_____

Item No.	Estimated Quantity	Description	Unit Price	Total
88.	L.S	Temporary Erosion Control (inclusive of, but not limited to, NPDES permit requirements, roadway cleaning).		
		Lump Sum		$
89.	**L.S**	**Construct Temporary Ingress/Egress Construction Entrance at South Kohala Distribution Road and Road "B" with 65 Cubic Yards of No. 2 Crushed Rock on Dupont TYPAR Fabric 3401 or Equal.**		
		Lump Sum		$
90.	33.4	Acres, Chemical Stabilization of Residential Lots.		
		Per Acre	$	$
91.	4.5	Acres, Grassing, inclusive of 90-day Maintenance Period (New Community Park).		
		Per Acre	$	$
		TOTAL – MASS GRADING (Items 83 to 91, inclusive)		$

Item No.	Estimated Quantity	Description	Unit Price	Total
		UNDERGROUND ELECTRIC AND AREA LIGHTING SYSTEMS The prices bid herein for the following items shall include all labor, tools and equipment, materials except that to be supplied by the Utility Companies, appurtenances and incidentals necessary to install or to construct the following items in place and complete in accordance with the drawings and specifications and standard practices of Hawaii Electric & Light Co. (HELCO), Sandwich Isles Communication, Inc. (SIC) and the County of Hawaii, and to the satisfaction of the Developer.		
92.	180	Lin. Ft., Furnish and Install One 2-Inch Concrete Encased HELCO Conduit. Work shall consist of excavation and providing 2" diameter conduits, with spacers, couplings, appurtenances, and concrete jacket, backfilled per HELCO requirements, complete and in place.		
		Per Lin. Ft.	$	$

Item No.	Estimated Quantity	Description	Unit Price	Total
93.	3,400	Lin. Ft., Furnish and Install Two 2-Inch Concrete Encased HELCO Conduit. Work shall consist of excavation and providing 2" diameter conduits, with spacers, couplings, appurtenances, and concrete jacket, backfilled per HELCO requirements, complete and in place.		
		Per Lin. Ft.	$	$
94.	1,050	Lin. Ft., Furnish and Install One 3-Inch Direct Buried HELCO Conduit. Work shall consist of excavation and providing 3" diameter conduits, with spacers, couplings and appurtenances, backfilled per HELCO requirements, complete and in place.		
		Per Lin. Ft.	$	$
95.	2,700	Lin. Ft., Furnish and Install One 3-Inch Concrete Encased HELCO Conduit. Work shall consist of excavation and providing 3" diameter conduits, with spacers, couplings, appurtenances, and concrete jacket, backfilled per HELCO requirements, complete and in place.		
		Per Lin. Ft.	$	$

Item No.	Estimated Quantity	Description	Unit Price	Total
96.	630	Lin. Ft., Furnish and Install Two 3-Inch Concrete Encased HELCO Conduit. Work shall consist of excavation and providing 3" diameter conduits, with spacers, couplings, appurtenances, and concrete jacket, backfilled per HELCO requirements, complete and in place.		
		Per Lin. Ft.	$	$
97.	20	Lin. Ft., Furnish and Install Three 3-Inch Concrete Encased HELCO Conduit. Work shall consist of excavation and providing 3" diameter conduits, with spacers, couplings, appurtenances, and concrete jacket, backfilled per HELCO requirements, complete and in place.		
		Per Lin. Ft.	$	$
98.	80	Lin. Ft., Furnish and Install One 4-Inch Concrete Encased HELCO Conduit. Work shall consist of excavation and providing 4" diameter conduits, with spacers, couplings, appurtenances, and concrete jacket, backfilled per HELCO requirements, complete and in place.		
		Per Lin. Ft.	$	$

Item No.	Estimated Quantity	Description	Unit Price	Total
99.	420	Lin. Ft., Furnish and Install Two 5-Inch Concrete Encased HELCO Conduit. Work shall consist of excavation and providing 5" diameter conduits, with spacers, couplings, appurtenances, and concrete jacket, backfilled per HELCO requirements, complete and in place. Per Lin. Ft.	$	$
100.	1,840	Lin. Ft., Furnish and Install Three 5-Inch Concrete Encased HELCO Conduit. Work shall consist of excavation and providing 5" diameter conduits, with spacers, couplings, appurtenances, and concrete jacket, backfilled per HELCO requirements, complete and in place. Per Lin. Ft.	$	$
101.	90	Lin. Ft., Furnish and Install Five 5-Inch Concrete Encased HELCO Conduit. Work shall consist of excavation and providing 5" diameter conduits, with spacers, couplings, appurtenances, and concrete jacket, backfilled per HELCO requirements, complete and in place. Per Lin. Ft.	$	$

Item No.	Estimated Quantity	Description	Unit Price	Total
102.	1,160	Lin. Ft., Furnish and Install One 1.25-Inch Street Light PVC Schedule 80 Type Conduit. Work shall consist of excavation and providing 1.25" diameter conduit, with spacers, couplings and appurtenances, backfilled as required, complete and in place.		
		Per Lin. Ft.	$	$
103.	280	Lin. Ft., Furnish and Install One 1.25-Inch Concrete Encased Street Light PVC Schedule 40 Type Conduit. Work shall consist of excavation and providing 1.25" diameter conduit, with spacers, couplings, appurtenances, and concrete jacket, backfilled as required, complete and in place.		
		Per Lin. Ft.	$	$
104.	1,480	Lin. Ft., Furnish and Install One 1.5-Inch Street Light PVC Schedule 80 Type Conduit. Work shall consist of excavation and providing 1.5" diameter conduit, with spacers, couplings and appurtenances, backfilled as required, complete and in place.		
		Per Lin. Ft.	$	$

Item No.	Estimated Quantity	Description	Unit Price	Total
105.	120	Lin. Ft., Furnish and Install One 1.5-Inch Concrete Encased Street Light PVC Schedule 40 Type Conduit. Work shall consist of excavation and providing 1.5" diameter conduit, with spacers, couplings, appurtenances, and concrete jacket, backfilled as required, complete and in place.		
		Per Lin. Ft.	$ _____	$ _____
106.	6	Each, Furnish and Install 17" x 30" Non-concrete pullbox, cover with locking device, provided in accordance with HECO standard drawings No. 30-2006 & 011314.		
		Each	$ _____	$ _____
107.	34	Each, Furnish and Install 2' x 3' Non-concrete pullbox, cover with locking device, provided in accordance with HECO standard drawing No. 30-2006.		
		Each	$ _____	$ _____
108.	11	Each, Furnish and Install 4' x 6' Type 46 reinforced concrete handhole with precast concrete covers, provided in accordance with HECO standard drawing No. 101026.		
		Each	$ _____	$ _____

Item No.	Estimated Quantity	Description	Unit Price	Total
109.	7	Each, Furnish and Install 5' x 7' Type 57 reinforced concrete handhole with precast concrete covers, provided in accordance with HECO standard drawing No. 102301		
		Each	$	$
110.	1	Each, Furnish and Install 6' x 11' reinforced concrete manhole with traffic rated frame and cover, provided in accordance with HECO standard drawing No. 100726.		
		Each	$	$
111.	16	Each, Furnish and Install 6' x 7' Transformer Pad Lot. Work shall consist of reinforced concrete transformer pad and ground rod, provided as indicated on the drawings and in accordance with HECO standard drawing No. 30-5001 and 011249, complete and in place.		
		Each	$	$
112.	1	Each, Furnish and Install 10' x 14' automatic transfer switching equipment enclosure pad lot with reinforced concrete pad and ground rod, per HECO srtandard drawing No. 30-5040.		
		Each	$	$

Item No.	Estimated Quantity	Description	Unit Price	Total
113.	49	Each, Furnish and Install Street Lighting Standard (55W). Work shall consist of excavating, constructing reinforced concrete foundation, backfilling, and providing street lighting standard, luminaire and bracket arm in accordance with the County of Hawaii's Department of Public Works Standards and as indicated on the drawings, complete and in place.		
		Each	$_____	$_____
		TOTAL - UNDERGROUND ELECTRIC AND LIGHTING SYSTEMS (Items 92 to 113, inclusive)		$_____

Item No.	Estimated Quantity	Description	Unit Price	Total

PART I.B. – SANDWICH ISLES COMMUNICATIONS, INC (SIC) WORK (INCLUDING GET)

** Note: Sandwich Isles Communications, Inc. Items

The prices bid herein for the following items shall include all labor, tools and equipment, materials except that to be supplied by Sandwich Isles Communications, Inc. (SIC), appurtenances and incidentals necessary to install or to construct the following items in place and complete in accordance with the drawings and specifications and standard practices of Sandwich Isles Communications, Inc., the County of Hawaii's Department of Transportation, Highways Division, and to the satisfaction of the DHHL.

114.	480	**Lin. Ft., Furnish and Install Two 1-Inch Direct Buried SIC Conduits (Tel/CATV) - UD(1x2-1"). Work shall consist of excavation and providing 1" diameter conduits, with spacers, couplings and appurtenances, backfilled per SIC requirements, complete and in place.		
		Per Lin. Ft.	$_____	$_____

Item No.	Estimated Quantity	Description	Unit Price	Total
115.	650	**Lin. Ft., Furnish and Install Two 1-Inch Concrete Encased SIC Conduits (Tel/CATV) - UD(1x2-1"). Work shall consist of excavation and providing 1" diameter conduits, with spacers, couplings, appurtenances and concrete jacket, backfilled per SIC requirements, complete and in place. Per Lin. Ft.	$	$
116.	1,000	**Lin. Ft., Furnish and Install Four 1-Inch Concrete Encased SIC Conduits (Tel/CATV) - UD(2x2-1"). Work shall consist of excavation and providing 1" diameter conduits, with spacers, couplings, appurtenances and concrete jacket, backfilled per SIC requirements, complete and in place. Per Lin. Ft.	$	$
117.	2,530	**Lin. Ft., Furnish and Install Two 4-Inch Direct Buried SIC Conduits (Tel/CATV) - UD(1x2-4"). Work shall consist of excavation and providing 4" diameter conduits, with spacers, couplings and appurtenances, backfilled per SIC requirements, complete and in place. Per Lin. Ft.	$	$

Item No.	Estimated Quantity	Description	Unit Price	Total
118.	1,980	**Lin. Ft., Furnish and Install Two 4-Inch Concrete Encased SIC Conduits (Tel/CATV) - UD(1x2-4"). Work shall consist of excavation and providing 4" diameter conduits, with spacers, couplings, appurtenances and concrete jacket, backfilled per SIC requirements, complete and in place.		
		Per Lin. Ft.	$ _____	$ _____
119.	140	**Lin. Ft., Furnish and Install Four 4-Inch Direct Buried SIC Conduits (Tel/CATV) - UD(2x2-4"). Work shall consist of excavation and providing 4" diameter conduits, with spacers, couplings and appurtenances, backfilled per SIC requirements, complete and in place.		
		Per Lin. Ft.	$ _____	$ _____
120.	100	**Lin. Ft., Furnish and Install One 4-Inch & Two 1-Inch Concrete Encased SIC Conduits (Tel/CATV) - UD(1x1-4") & UD(1x2-1"). Work shall consist of excavation and providing 4" & 1" diameter conduits, with spacers, couplings, appurtenances and concrete encasing, backfilled per SIC requirements, complete and in place.		
		Per Lin. Ft.	$ _____	$ _____

Item No.	Estimated Quantity	Description	Unit Price	Total
121.	380	**Lin. Ft., Furnish and Install Two 4-Inch & Two 1-Inch Concrete Encased SIC Conduits (Tel/CATV) - UD(1x2-4") & UD(1x2-1"). Work shall consist of excavation and providing 4" & 1" diameter conduits, with spacers, couplings, appurtenances and concrete encasing, backfilled per SIC requirements, complete and in place.		
		Per Lin. Ft.	$	$
122.	60	**Lin. Ft., Furnish and Install Two 4-Inch & Four 1-Inch Concrete Encased SIC Conduits (Tel/CATV) - UD(1x2-4") & UD(2x2-1"). Work shall consist of excavation and providing 4" & 1" diameter conduits, with spacers, couplings, appurtenances and concrete encasing, backfilled per SIC requirements, complete and in place.		
		Per Lin. Ft.	$	$
123.	860	**Lin. Ft., Furnish and Install Two 4-Inch & Four 1-Inch Direct Buried SIC Conduits (Tel/CATV) - UD(1x2-4") & UD(2x2-1"). Work shall consist of excavation and providing 4" & 1" diameter conduits, with spacers, couplings and appurtenances, backfilled per SIC requirements, complete and in place.		
		Per Lin. Ft.	$	$

Item No.	Estimated Quantity	Description	Unit Price	Total
124.	360	**Lin. Ft., Furnish and Install Two 4-Inch & Eight 1-Inch Direct Buried SIC Conduits (Tel/CATV) - UD(1x2-4") & UD(2x4-1"). Work shall consist of excavation and providing 4" & 1" diameter conduits, with spacers, couplings and appurtenances, backfilled per SIC requirements, complete and in place.		
		Per Lin. Ft.	$	$
125.	120	**Lin. Ft., Furnish and Install Four 4-Inch & Four 1-Inch Direct Buried SIC Conduits (Tel/CATV) - UD(2x2-4") & UD(2x2-1"). Work shall consist of excavation and providing 4" & 1" diameter conduits, with spacers, couplings and appurtenances, backfilled per SIC requirements, complete and in place.		
		Per Lin. Ft.	$	$
126.	40	**Lin. Ft., Furnish and Install Four 4-Inch & Six 1-Inch Direct Buried SIC Conduits (Tel/CATV) - UD(2x2-4") & UD(2x3-1"). Work shall consist of excavation and providing 4" & 1" diameter conduits, with spacers, couplings and appurtenances, backfilled per SIC requirements, complete and in place.		
		Per Lin. Ft.	$	$

Item No.	Estimated Quantity	Description	Unit Price	Total
127.	20	**Lin. Ft., Furnish and Install Five 4-Inch & Six 1-Inch Direct Buried SIC Conduits (Tel/CATV) - UD(1x5-4") & UD(2x3-1"). Work shall consist of excavation and providing 4" & 1" diameter conduits, with spacers, couplings and appurtenances, backfilled per SIC requirements, complete and in place.		
		Per Lin. Ft.	$	$
128.	20	**Lin. Ft., Furnish and Install One 3-Inch Direct Buried CATV Conduit. Work shall consist of excavation and providing 3" diameter conduits, with spacers, couplings and appurtenances, backfilled per HELCO requirements, complete and in place.		
		Per Lin. Ft.	$	$
129.	1	**Each, CATV Power Supply. Work shall consist of providing metering equipment, enclosure, conduit, wiring and all appurtenances required for the installation, as indicated on the drawings, complete and in place.		
		Each	$	$

Item No.	Estimated Quantity	Description	Unit Price	Total
130.	3	**Each, Furnish and Install 13"x24"x36" fibre reinforced plastic handhole with non-skid surface polymer concrete 20K "Traffic" rated covers, "SIC" inscribed on covers. Provided in accordance with Sandwich Isles Communications requirements. Type UHC 13x24.		
		Each	$	$
131.	14	**Each, Furnish and Install 30"x48"x33" fibre reinforced plastic handhole with non-skid surface polymer concrete 20K "Traffic" rated covers, "SIC" inscribed on covers. Provided in accordance with Sandwich Isles Communications requirements, Type UHC 30x48.		
		Each	$	$
132.	3	**Each, Furnish and Install 3'-9" x 5'-9" x 3'-10.5" reinforced concrete handhole with two piece hinged non-skid surface polymer concrete 20K "Traffic" rated covers, "SIC" inscribed on covers. Provided in accordance with Sandwich Isles Communications requirements, Type UH3x5.		
		Each	$	$

Item No.	Estimated Quantity	Description	Unit Price	Total
133.	6	**Each, Furnish and Install 3'-9" x 5'-9" x 3'-7" reinforced concrete manhole with traffic rated frame and covers, provided in accordance with Sandwich Isles Communications requirements, Type UM-35.		
		Each	$	$
134.	1	**Each, Furnish and Install 4'-0" x 6'-0" x 6'-1/4" reinforced concrete handhole with galvanized slip-not covers, "SIC" inscribed on covers. Provided in accordance with Sandwich Isles Communications requirements, Type UH-4x6.		
		Each	$	$
135.	9	**Each, Furnish and Install Housing Ground Assembly Unit BM 2(5/8)(8), with copper clad ground rod clamp and the required length of bare #6 AWG tinned copper ground wire connected to an auxiliary grouding connector within the housing, provided in accordance with SIC standard requirements, complete and in place.		
		Each	$	$
		TOTAL - SANDWICH ISLES COMMUNICATION, INC. (SIC) WORK (Items 114 TO 135, inclusive)		$

PART I
LALAMILO HOUSING PHASE 2A, INCREMENT 1
WAIMEA, SOUTH KOHALA, ISLAND OF HAWAII

RECAPITULATION

PART I.A. – LALAMILO HOUSING PHASE 2A, INCREMENT 1 (EXCLUDING GET)

TOTAL – ROAD CONSTRUCTION
(Items 1 to 21, inclusive).....$_____

TOTAL – DRAINAGE SYSTEM
(Items 22 to 55, inclusive).....$_____

TOTAL – WATER SYSTEM
(Items 56 to 82, inclusive).....$_____

TOTAL – MASS GRADING
(Items 83 to 91, inclusive).....$_____

TOTAL – UNDERGROUND ELECTRIC AND AREA LIGHTING SYSTEMS
(Items 92 to 113, inclusive).....$_____

TOTAL – PART I.A. (EXCLUDING GET)
(Items 1 to 113, inclusive).....$_____

PART I.B. – SANDWICH ISLES COMMUNICATION, INC. (SIC) WORK (INCLUDING GET)
(Items 114 to 135, inclusive).....$_____

Item No.	Estimated Quantity	Description	Unit Price	Total

PART II

PART II.A – KAWAIHAE ROAD IMPROVEMENTS AT SOUTH KOHALA DISTRIBUTION ROAD (EXCLUDING GET)

KAWAIHAE ROAD – STATE R/W

ROAD RECONSTRUCTION
The price shall include reconstruction of the roadway prism, base courses, and other items as called for in the plans, including labor, tools, equipment and all incidental work necessary to construct the roadway as indicated on the plans, in place complete.

1.	0.2	Acres, Clearing and Grubbing inclusive of Proof-Rolling, and Removal of Top 8 inches of Organic Material.		
		Per Acre	$ _____	$ _____
2.	385	Cu. Yds., Embankment, inclusive of Hauling, Placing and Compacting (per recommendations in the soils report).		
		Per Cu. Yd.	$ _____	$ _____
3.	779	Sq. Yds., Hot Mix Asphalt Concrete Pavement, State Mix No. IV (2-1/2" minimum thickness).		
		Per Sq. Yd.	$ _____	$ _____

Item No.	Estimated Quantity	Description	Unit Price	Total
4a.	**779**	**Sq. Yds., Asphalt Concrete Base Course (8" minimum thickness).**		
		Per Sq. Yd.	$	$
4b.	**110**	**Cu. Yds., Aggregate Subbase Course (12" minimum thickness).**		
		Per Cu. Yd.	$	$
5.	L.S.	Temporary Erosion Control (inclusive of, but not limited to, NPDES permit requirements, roadway cleaning).		
		Lump Sum		$
6.	L.S.	Temporary Traffic Control Measures (may be subject to change depending on striping removal schedule).		
		Lump Sum		$
7.	L.S.	Remove all Existing Striping and Pavement Markers as indicated within project documents.		
		Lump Sum		$
8.	L.S.	Remove and Relocate Existing "Waimea Transfer Station" and "SPEED LIMIT" Signs.		
		Lump Sum		$
9.	910	Lin. Ft., Remove and Relocate Existing Barbed Wire Fence.		

Item No.	Estimated Quantity	Description	Unit Price	Total
		Per Lin. Ft.	$	$
10.	3	Relocate Existing Rumble Strips.		
		Each	$	$
11.	1,009	Lin. Ft., 4-inch wide White Pavement Striping (thermoplastic extrusion) with Type "C" Raised Pavement Markers @ 40'O.C.		
		Per Lin. Ft.	$	$
12.	375	Lin. Ft., 4-inch wide Double Yellow Pavement Striping (thermoplastic extrusion) with Type "D" Raised Pavement Markers @ 20'O.C.		
		Per Lin. Ft.	$	$
13.	1,361	Lin. Ft., 4-inch wide Double Yellow Median Pavement Striping (thermoplastic extrusion) with Type "H" Raised Pavement Markers @ 20'O.C.		
		Per Lin. Ft.	$	$
14.	625	Lin. Ft., 8-inch wide White Channel Striping (thermoplastic extrusion) with Type "C" Pavement Markers @ 20'O.C.		
		Per Lin. Ft.	$	$
15.	245	Lin. Ft., 4-inch wide White Guidelines Striping (thermoplastic extrusion).		
		Per Lin. Ft.	$	$

Item No.	Estimated Quantity	Description	Unit Price	Total
16.	L.S.	12-inch wide Yellow Diagonal Striping (thermoplastic extrusion) at Median.		
		Lump Sum		$ _____
17.	L.S.	12-inch wide White Stop Bar		
		Lump Sum		$ _____
18.	L.S.	4-inch wide Yellow Guidelines.		
		Lump Sum		$ _____
19.	L.S.	Lane Reduction, Right-Turn and Left-Turn Arrow Pavement Markings.		
		Lump Sum		$ _____
20.	1	Each, Traffic Sign with Post, 30"x36" R3-5(R), in place complete.		
		Each	$ _____	$ _____
		TOTAL – ROAD RECONSTRUCTION (Items 1 to 20, inclusive)		$ _____

Item No.	Estimated Quantity	Description	Unit Price	Total
		UNDERGROUND ELECTRIC AND AREA LIGHTING SYSTEMS The prices bid herein for the following items shall include all labor, tools and equipment, materials except that to be supplied by the Utility Companies, appurtenances and incidentals necessary to install or to construct the following items in place and complete in accordance with the drawings and specifications and standard practices of Hawaii Electric & Light Co. (HELCO), Sandwich Isles Communication, Inc, (SIC) and to the satisfaction of the DHHL.		
21.	450	Lin. Ft., Street Lighting Circuit(s) (Multiple System). Work shall consist of providing cables and accessories from street lighting standard to nearest HELCO secondary cable, complete and in place. Per Lin. Ft.	$	$
22.	1	Each, Remove Existing Street Light and Bracket Arm from Existing Utility Pole. Coordinate with State of Hawaii. Each	$	$

Item No.	Estimated Quantity	Description	Unit Price	Total
23.	4	Each, Furnish and Install Street Light and Bracket Arm (180W). Work shall consist of providing street lighting luminaire and bracket arm in accordance with the State of Hawaii's Department of Transportation Highways Division Design Branch Standard Plans and as indicated on the drawings, complete and in place.		
		Each	$	$
24.	L.S.	Allowance for Relocation of HELCO overhead pole line. Contractor shall pay the HELCO charges for the relocation work along Kawaihae Road using this allowance but shall not add construction burden, administrative charges and taxes. Used remainder of the Allowance to remain with the State.		
		Lump Sum		**$ 20,000**
25.	L.S.	Allowance for Relocation of HTCO overhead pole line. Contractor shall pay the HTCO charges for the relocation work along Kawaihae Road using this allowance but shall not add construction burden, administrative charges and taxes. Used remainder of the Allowance to remain with the State.		
		Lump Sum		**$ 20,000**
		TOTAL - UNDERGROUND ELECTRIC AND AREA LIGHTING SYSTEMS (Items 21 to 25, inclusive)		$

Item No.	Estimated Quantity	Description	Unit Price	Total

PART II.B. – SANDWICH ISLES COMMUNICATIONS, INC WORK (INCLUDING GET)

** Note: Sandwich Isles Communications, Inc. Items

The prices bid herein for the following items shall include all labor, tools and equipment, materials except that to be supplied by Sandwich Isles Communications, Inc. (SIC), appurtenances and incidentals necessary to install or to construct the following items in place and complete in accordance with the drawings and specifications and standard practices of Sandwich Isles Communications, Inc., the State of Hawaii's Department of Transportation, Highways Division, and to the satisfaction of the DHHL.

26.	**90**	****Lin. Ft., Furnish and Install Two 4-Inch Concrete Encased SIC Conduits (Tel/CATV) - UD(1x2-4"). Work shall consist of excavation and providing 4" diameter conduits, with spacers, couplings, appurtenances and concrete jacket, backfilled per SIC requirements, complete and in place.**		
		Per Lin. Ft.	$_____	$_____

Item No.	Estimated Quantity	Description	Unit Price	Total
27.	1	**Ea, SIC Manhole Conduit Entry. Work shall consist of core drilling existing SIC Manhole for new duct penetration, patch and grout to match existing condition. Coordinate work with SIC & State of Hawaii for scheduling and provide per SIC requirements. Excavation required to expose wall face shall be considered incidental to this item.		
		Each	$ _____	$ _____
		TOTAL – SANDWICH ISLES COMMUNICATION (SIC) WORK (Items 26 to 27, inclusive)		$ _____

PART II
LALAMILO HOUSING PHASE 2A,
KAWAIHAE ROAD IMPROVEMENTS AT SOUTH KOHALA DISTRIBUTION ROAD
WAIMEA, SOUTH KOHALA, ISLAND OF HAWAII

RECAPITULATION

**PART II.A. – LALAMILO HOUSING PHASE 2A,
KAWAIHAE ROAD IMPROVEMENTS AT SOUTH KOHALA DISTRIBUTION ROAD
(EXCLUDING GET)**

TOTAL – ROAD RECONSTRUCTION
(Items 1 to 20, inclusive) .....$ _____

TOTAL – UNDERGROUND ELECTRIC AND AREA LIGHTING SYSTEMS
(Items 21 to 25, inclusive) .....$ _____

TOTAL – PART II.A. (EXCLUDING GET)
(Items 1 to 25, inclusive) .....$ _____

**PART II.B. – SANDWICH ISLES COMMUNICATION, INC (SIC) WORK
(INCLUDING GET)**
(Items 26 to 27, inclusive)…….. .....$ _____

Item No.	Estimated Quantity	Description	Unit Price	Total

PART III – MISCELLANEOUS (EXCLUDING GET)

MISCELLANEOUS
The price for the following items shall include all labor, tools, equipment, material and incidentals necessary to construct the following items, in place complete.

1.	L.S.	Mobilization, including Obtaining Insurance, Bonds, Permits, Scheduling, Submittal, and Other Activities to Mobilize for Project. (maximum $25,000).	Lump Sum	$ _____
2.	L.S.	Project Sign, in place complete.	Lump Sum	$ _____
3.	**Allowance**	**Field Office, including Installation and Removal.**	**Lump Sum**	**$ 35,000**
4.	L.S.	Demobilization, including Removing Excess Materials, and Equipment, Clean-up, Report After Grading, including certification (as graded topographical survey and certification letter for grader). Maximum $25,000.	Lump Sum	$ _____
5.	Allowance	Field Directed Changes by DHHL.	Allowance	$ 350,000
		TOTAL – MISCELLANEOUS (Items 1 to 5, inclusive)		$ _____

PART III
LALAMILO HOUSING PHASE 2A, INCREMENT 1 AND KAWAIHAE ROAD IMPROVEMENTS AT SOUTH KOHALA DISTRIBUTION ROAD
WAIMEA, SOUTH KOHALA, ISLAND OF HAWAII

RECAPITULATION

PART III – MISCELLANEOUS (EXCLUDING GET)

TOTAL – MISCELLANEOUS
(Items 1 to 5, inclusive) .....$ _____

TOTAL – PART III – MISCELLANEOUS (EXCLUDING GET)
(Items 1 to 5, inclusive) .....$ _____

PART I
LALAMILO HOUSING PHASE 2A, INCREMENT 1
WAIMEA, SOUTH KOHALA, ISLAND OF HAWAII

PART II
LALAMILO HOUSING PHASE 2A,
KAWAIHAE ROAD IMPROVEMENTS AT SOUTH KOHALA DISTRIBUTION ROAD
WAIMEA, SOUTH KOHALA, ISLAND OF HAWAII

AND

PART III
LALAMILO HOUSING PHASE 2A, INCREMENT 1 AND KAWAIHAE ROAD IMPROVEMENTS AT SOUTH KOHALA DISTRIBUTION ROAD
WAIMEA, SOUTH KOHALA, ISLAND OF HAWAII

RECAPITULATION

TOTAL – PART I.A. AND II.A. (EXCLUDING GET)
(PART I.A. Items 1 to 113, inclusive; and PART II.A.
Items 1 to 25, inclusive).....$ _____

TOTAL – PART I.B. AND II.B.
SANDWICH ISLES COMMUNICATION, INC. (SIC) WORK (INCLUDING GET)
(PART II.B. Items 114 to 135, inclusive; and
PART II.B. Items 26 to 27, inclusive).....$ _____

TOTAL – PART III – MISCELLANEOUS (EXCLUDING GET)
(PART III Items 1 to 5, inclusive).....$ _____

TOTAL – AMOUNT FOR COMPARISON OF BIDS
(PARTS I, II and III).....$ _____

PREFERENCE

It is further understood by the Bidder that if upon being granted Hawaii Products Preference, 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.

COMPLIANCE WITH ACT 175, HAWAII PRODUCTS PREFERENCE

Section 103D-1002, Hawaii Revised Statutes (HRS), as amended by Act 175 (Session Laws of Hawaii 2009), provides preference for Hawaii products. The previous Hawaii products list established pursuant to HRS §103D-1002 was suspended effective July 1, 2009, and a new list has been published by the State Procurement Office (SPO) at http://hawaii.gov/spo/hawaii-public-procurement-code-chapter-103d-hrs/preferences/hawaii-products-lists. DHHL will be supplementing the list with additional approved products for this solicitation.

Pursuant to HRS §103D-1002(b) (2) and Procurement Circular No. 2011-05, bidders intending to use Hawaii products should distribute the attached SPO-38, *Certification for Hawaii Product Preference*, to each of the manufacturers and producers of such products which bidders intend to use if the manufacturers and producers if their products are not listed on the SPO Hawaii Products List or in the DHHL's list below. The manufacturers and producers must complete and submit SPO-38 to DHHL. The form must be received by DHHL no later than **2:00 p.m., March 12, 2012**. Submittal by facsimile (808 620-9299) is acceptable. If DHHL receives and approves SPO-38s relating to this solicitation DHHL will issue an addendum of certified and qualified Hawaii products by **2:00 p.m., March 16, 2012.**

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.

A partial list of approved products is provided below.

Forms SPO-38, *Certification for Hawaii Product Preference* for the following Hawaii products have been received in compliance with the above.

Aggregates – Basaltic Termite Barrier							
Product Subcategory *as applicable*	Effective	**Revised**	**Manufacturer**	Oahu	Maui	Hawaii	Kauai
	11/03/09		Ameron International Corporation	X	X		

Aggregates and Sand – Basalt, Rock, Cinder, Limestone and Coral

Product Subcategory *as applicable*	Effective	Revised	Manufacturer	Oahu	Maui	Hawaii	Kauai
	11/03/09		Ameron International Corporation	X	X		
	10/23/09		CTS Earthmoving, Inc.			X	
	11/03/09	1/20/10	Delta Construction Corporation	X			
	12/14/09		Edwin Deluz Trucking & Gravel LLC			X	
	01/28/10		Goodfellow Bros., Inc.	X			
	11/02/09		Grace Pacific	X		X	X
	4/26/11		GW Construction			X	
	11/03/09		Hawaiian Cement	X	X		
	12/15/09		Jas. W. Glover, Ltd.			X	X
	06/30/10		Kauai Aggregates				X
	10/20/09	07/22/10	Sanford's Service Center, Inc.			X	
	11/05/09		Tileco, Inc.	X	X	X	X
	11/03/09		West Hawaii Concrete			X	
	11/02/09		Yamada and Sons, Inc.			X	

Aggregates – Recycled Asphalt and Concrete

Product Subcategory *as applicable*	Effective	Revised	Manufacturer	Oahu	Maui	Hawaii	Kauai
	12/15/09		Glover Honsador				X
	11/02/09		Grace Pacific	X			
	12/15/09		Jas. W. Glover, Ltd.	X		X	
	10/18/10		West Oahu Aggregate Co. Inc.	X			

Asphalt and Paving Materials - HI Products

Product Subcategory *as applicable*	Effective	Revised	Manufacturer	Oahu	Maui	Hawaii	Kauai
	06/15/10		Black Maui Rose LLC		X		
	12/22/09		Black Plumeria LLC	X			
	10/21/09	11/02/09	Grace Pacific Corporation	X		X	X
	12/05/09		Jas. W. Glover, Ltd.			X	X
	11/03/11		Maui Asphalt X-IV, LLC		X		
	10/28/09		Maui Paving LLC		X		
	11/20/09		Walker-Moody Pavement Products and Equipment	X	X	X	X

	11/22/09		Yamada and Sons, Inc. 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		Ameron International Corporation	X			
	01/19/10		BOMAT, Ltd.	X	X	X	X
	12/15/09		Glover Honsador				X
	11/03/09		Hawaiian Cement	X	X		
	12/15/09		Jas. W. Glover, Ltd.			X	X
	12/15/09		Kohala Coast Concrete & Precast LLC			X	
	06/30/10		O. Thronas, Inc.				X
	11/05/09		Tileco, Inc.	X	X	X	X
	11/03/09		West Hawaii Concrete			X	

Precast Concrete Products

Product Subcategory *as applicable*	Effective Date	Revised Date	Manufacturer	Oahu	Maui	Hawaii	Kauai
	7/12/10		Aloha Precast, Inc.	X	X	X	X
	11/03/09	04/15/10	Ameron International Corporation	X			
	08/02/10		GPRM Prestress, LLC	X	X	X	X
	11/03/09		Hawaii Concrete Products, Inc.	X			
	12/15/09		Kohala Coast Concrete & Precast LLC			X	
	11/03/09		Ramtek Fabrication Co., Inc.	X	X	X	X
	06/30/10	02/26/10	Walker Industries, Ltd.	X	X	X	X

Environmental Sewage-Treatment Innovative System (ESIS) Individual Wastewater System which utilizes anaerobic/aerobic processing to treat wastewater to R-2 quality at discharge

Product Subcategory *as applicable*	Effective	Revised	Manufacturer	Oahu	Maui	Hawaii	Kauai
	11/20/09		Environmental Waste Management Systems, Inc.	X	X	X	X
Septic Tanks	11/03/09		Ameron International Corporation	X			
	11/05/09	02/26/10	Walker Industries, Ltd.	X	X	X	X

Hot Dip Galvanizing

Product Subcategory *as applicable*	Effective Date	Revised Date	Manufacturer	Oahu	Maui	Hawaii	Kauai
	03/03/10		Universal Associates, Inc.	X			

Pipes-Aluminum and Galvanized

Product Subcategory *as applicable*	Effective Date	Revised Date	Manufacturer	Oahu	Maui	Hawaii	Kauai
Pipes-Miscellaneous	11/03/09		Ameron International Corporation	X			

Aluminum Docks, Floating, etc. - Miscellaneous

Product Subcategory *as applicable*	Effective	Revised	Manufacturer	Oahu	Maui	Hawaii	Kauai
	05/25/10	06/14/10	Bluewater Marine and Dock Specialties	X	X	X	X

Playground Surfaces

Product Subcategory as applicable	Effective	Revised	Manufacturer	Oahu	Maui	Hawaii	Kauai
	01/07/10		Innovative Playgrounds and Recreation, Inc.	X	X	X	X

Signs - Traffic, Regulatory and Construction

Product Subcategory *as applicable*	Effective	Revised	Manufacturer	Oahu	Maui	Hawaii	Kauai
	12/14/09		GP Roadway Solutions, Inc.	X	X	X	X
	11/20/09		Safety Systems Hawaii, Inc.	X	X	X	X

Veneer

Product Subcategory as applicable	Effective	Revised	Manufacturer	Oahu	Maui	Hawaii	Kauai
	11/14/11		Big Rock Manufacturing	x	x	x	x

Soil Amendments, Mulch, Compost

Product Subcategory *as applicable*	Effective Date	Revised Date	Manufacturer	Oahu	Maui	Hawaii	Kauai
	10/16/09		Kauai Nursery & Landscaping, Inc.	X	X	X	X
	10/20/09		Sanford's Service Center, Inc.			X	

Compost Filter

Product Subcategory *as applicable*	Effective Date	Revised Date	Manufacturer	Oahu	Maui	Hawaii	Kauai
	01/25/10		EnviroTech BioSolutions Hawaii, Inc.	X	X	X	X
	6/02/11		Certified Erosion Control Hawaii LLC	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
		$_____	$_____
		$_____	$_____
		$_____	$_____
		$_____	$_____
		$_____	$_____
		$_____	$_____
		$_____	$_____

The Bidder agrees that preference for Hawaii products shall be taken into consideration to determine the low Bidder in accordance with said sections and the rules promulgated; however, the award of contract will be in the amount of the bid offered exclusive of any preferences.

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://hawaii.gov/labor/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:

LIST OF APPRENTICEABLE TRADES TO BE EMPLOYED	
TRADE	APPRENTICESHIP PROGRAM SPONSOR

(Add additional sheets if necessary)

ALL JOINT CONTRACTORS OR SUBCONTRACTORS TO BE ENGAGED ON THIS PROJECT

The Bidder certifies that the following is a complete listing of all joint Contractors or Subcontractors covered under Chapter 444, Hawaii Revised Statutes, who will be engaged by the Bidder on this project to perform the nature and scope of work indicated pursuant to Section 103D-302, Hawaii Revised Statutes, and understands that failure to comply with this requirement shall be just cause for rejection of the bid.

The Bidder further understands that only those joint Contractors or Subcontractors listed shall be allowed to perform work on this project and that all other work necessary shall be performed by the Bidder with his own employees. If no joint Contractor or Subcontractor is listed, it shall be construed that all of the work shall be performed by the Bidder with his own employees.

The Bidders must be sure that they possess and that the Subcontractors listed in the bid possess all the necessary licenses needed to perform the work for this project. The bidder shall be solely responsible for assuring that all the specialty licenses required to perform the work are covered in his bid.

The Bidder shall include the license number of the joint Contractors or Subcontractors listed below. Failure to provide the correct names and license numbers as registered with the Contractor's Licensing Board may cause rejection of the bid submitted.

Complete Firm Name of Joint Contractor or Subcontractor for Total Sum Bid	License Number	Nature and Scope of Work to be Performed

(Add additional sheets if necessary)

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.

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 total contract work.

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) Anti-Collusion Certification. By submitting this bid, the undersigned is declaring that the price submitted is independently arrived at without collusion.
10) 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.

11) Compliance with Hawaii Revised Statutes (HRS) Chapter 103B as amended by Act 192, SLH 2011 - Employment of State Residents on Construction Procurement Contracts. – See Special Conditions #16 (SC-16) – Attachment – S5 AG-015 for provisions.

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

	Date		Date
Addendum No. 1	March 12, 2012	Addendum No. 5	
Addendum No. 2		Addendum No. 6	
Addendum No. 3		Addendum No. 7	
Addendum No. 4		Addendum No. 8	

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

Bid Security in the amount of:_____

_____ DOLLARS ($_____)

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

(____) 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 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 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 _____, 2010.

.

_____
Secretary

END OF BID FORM

SECTION 02210 – SITE EARTHWORK

PART 1 – GENERAL

1.01 GENERAL CONDITIONS: The General Conditions and Special Conditions preceding these specifications shall govern this section of the work.

1.02 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 "Draft Preliminary Geotechnical Exploration Report Department of Hawaiian Home Lands , Lalamilo RS10 Subdivision Project, Lalamilo, Waimea, Big Island of Hawaii", dated July 28, 2006, 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 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: 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: On-site material shall consist of material excavated from within the project limits that is found below the stripped organic material layer. This excavated material shall be used as general fill under the required non-expansive select material as shown on the plans. Roots, trees, branches, and all other organic matter missed during the clearing and grubbing operations shall be removed from the fill materials.

General fill shall be free of organic matter, debris and other deleterious substances. The material shall have particle size less than 4 inches in maximum dimensions.

Most of the onsite soils below the top soil if processed to 6 inches minus can be used as general fill with the approval of the on-site Geotechnical Engineer.

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 I n 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. 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.

D. Non-Expansive Select Material: Non-expansive select material to be used for this project shall consist of shall be 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.

E. 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.

F. Organic Topsoil (Stripped Material): Subsequent to acceptable clearing and grubbing, remove the top 6 inches of organic material laden topsoil as required and disposed of properly off site.

G. Ash Material: If there are structures, roadways, sidewalks, etc., ash material should be removed prior to construction of these improvements.

PART 3 – EXECUTION

3.01 MASS 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 (soils 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 Engineer and/or other public agencies having jurisdiction.

C. Preparation of Subgrades for Areas to Receive Fill:

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. Area to receive fill 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 1557-91. The optimum moisture content is the moisture content corresponding to the maximum compacted dry density.

3. Soft Wet Soils: Soft, yielding areas encountered during site preparation or pumping areas 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 for fills 2 feet below the proposed road subgrade.

4. Rocky Soils. If the subgrade exposes rock material, where scarification is not practical, the rocky subgrade shall be proof-rolled with a 15-ton vibratory drum roller, or similar heavy construction equipment, with a minimum of 8 passes, to help detect and collapse near-surface cavities. It is important that the scarification and proof-rolling be performed in the presence of a representative of a Geotechnical Engineer retained by the Department. Cavities disclosed during the proof-rolling shall be over-excavated and backfilled with select borrow and compacted as stated above.

D. 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 if 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. **Between 2 feet and 5 feet on-site soil, except ash, can be used.**

E. Capping Fill. The **general fill areas** shall be capped with a minimum 2 feet of structural fill. Materials used for this structural fill should be non-expansive, select material, generally less than 3 inches in maximum dimensions, with sufficient fines to -prevent formation of voids in the compacted mass. The capping fill shall have a plasticity index not exceeding 15, as determined in accordance to ASTM Test Method D 4318-84, and should have a maximum of 40 percent of particles passing the No. 200 sieve. If additional offsite borrow material is required, it should be tested by the Geotechnical Engineer retained by the Department to evaluate its suitability for use as select fill prior to its delivery to the project site.

F. Fill Requirements and Compaction Requirements. Structural fill shall be placed in level lifts with maximum loose thickness of 8 inches; moisture conditioned to at least 2 percent above optimum, and properly compacted to a minimum of 95 percent relative compaction. General fills and backfills shall be placed in level lifts with a maximum loose thickness of 12 inches, moisture conditioned to at least 2 percent above optimum, and properly compacted to a minimum if 90 percent relative compaction. 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. Compaction should be accomplished by sheepfoot, vibratory or other types of acceptable compaction equipment.

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, the on-site geotechnical engineer 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. Slopes: For fill slopes consisting of granular materials (six inches or less in size) and cut slopes, maximum slopes of two horizontal to one vertical (2:1) shall be used. Fill slopes shall be constructed by overfilling 2 to 3 feet, then cutting back to the design slope to expose a well-compacted face. Slopes cut into basaltic rock formation may be made at on horizontal to one vertical (1:1). Permanent fills placed in slopes steeper than five horizontal to 1one vertical (5:1) should be benched. A keyway should be provided for fill slopes greater than 15 feet of vertical height placed in existing ground steeper than five horizontal to one vertical (5:1). For cut and fill slopes with a vertical height greater than 30 feet, an 8-foot wide bench shall be constructed at mid slope and provided with a concrete lined swale to reduce potential for erosion from storm surface runoff. Storm water shall be diverted away from the slopes by diversion ditches at the tops and surface drains on slope surface and subdrains may be used to provide adequate drainage. Slope planting shall be utilized to limit erosion.

I. 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.

J. 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 is not limited to:

1. Protect areas susceptible to traffic by erecting barricades 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 trash containers.

4. Inspect area for disease or insect damage weekly. Treat affected material immediately.

END OF SECTION

SECTION 02577 - PAVEMENT MARKERS, STRIPING AND MARKINGS

PART 1 - GENERAL

1.01 GENERAL CONDITIONS: The General Conditions and Special Conditions preceding these specifications shall govern this section of the work.

1.02 WORK INCLUDED: Furnish all labor, materials and equipment required to accomplish the installation of all pavement markers, reflectorized 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 State Department of Transportation, Highways Division and Department of Public Works, County of Hawaii. 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

1) Class III Ceramic Type. For use on Portland cement concrete and asphalt concrete road surfaces.

2) 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 "C" - Red-Clear Reflective Markers

c. Type "D" - Two-Way Yellow Reflective Markers

d. Type "DB" - Two-Way Blue Reflective Markers

e. Type "H" - One-Way Yellow Reflective Markers

3. Markers

a. Non-Reflective Markers: Type "A" pavement markers shall have the following characteristics:

1) Composition of Markers: The composition of finished markers shall conform to the following: The Class III 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 Class III markers, 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:

e)

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.

f) 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.

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 metalized.

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 degree 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.

$$SI = \frac{(R_L)(D^2)}{I_L}$$

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.

A bituminous adhesive conforming to the specifications of Section 755.03 of the State's Standard Specifications for Road and Bridge Construction (2005) may be used in lieu of the epoxy adhesives.

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°F ± 3°F: Mix equal volumes of Components A and B in an 8-ounce, unwaxed paper cut 2 inches ± 1/4 inch at base to give a 170 grams ± 10 grams total mass. Mix 60 seconds ± 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°F ± 3°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 1.0×10^5 and 3.0×10^5 centipoises for Standard Set Type and 0.8×10^5 and 2.2×10^5 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°F ± 3°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 ±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[1]	100
Titanium Dioxide, TT-P-422, Type III or IV	7.31
Resin Grade Asbestos[2]	5.00
Talc[3]	37.64
Component B	
N-Aminoethyl Piperazine[1]	23.16
Nonylphenol[5]	52.00
Carbon Black, TT-P-343, Form 1, Class B	0.22
Talc[3]	77.37
Resin Grade Asbestos[2]	1.00

[1]Viscosity, 5-7 poises at 25°C (77°F); epoxide equivalent 175-195; Color (Gardner), 5 maximum; manufactured from epichlorohydrin and bisphenol A. The reactive diluent shall be butyl glycidyl ether.

[2]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_d 25°C (77°F), 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.

[3]Percent passing U.S. No. 325 sieve, 94-96; maximum particle size, 70microns, 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.

[4]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.

[5]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 re-dispersed 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 Morest 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 ±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.^{2}/fc).

INITIAL MINIMUM REFLECTANCE VALUE

		Specific Luminance (mcd/ft.^{2}/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 pre-coated 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 reparable 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_2SO_4 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 reparable 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 of 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 (77°F) shall consist of 70 percent minimum 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 oviate 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 (77°F) 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 oviate 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	70 minimum
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 (194°F), as determined by ASTM E28.

e. Specific Gravity: Specific gravity of compound at 25°C (77°F) 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. 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 linear 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 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 thereof.

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 State of Hawaii.

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, ±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 (next page) 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" 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 ±1 foot and the 30-foot gap between segments may vary ±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° F (15°C) for air and 70°F (21°C) for roadway surfaces, with both temperatures rising. The maximum temperature shall be 150° F (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 bid form.

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 will not be measured.

Lane striping will be measured.

Pavement markers will not be measured.

Pavement arrows, legends and words will be measured as complete units of the type and design specified on the plans and in the bid form.

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 bid form 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 bid form 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 bid form by the quantity noted in the bid form. 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.

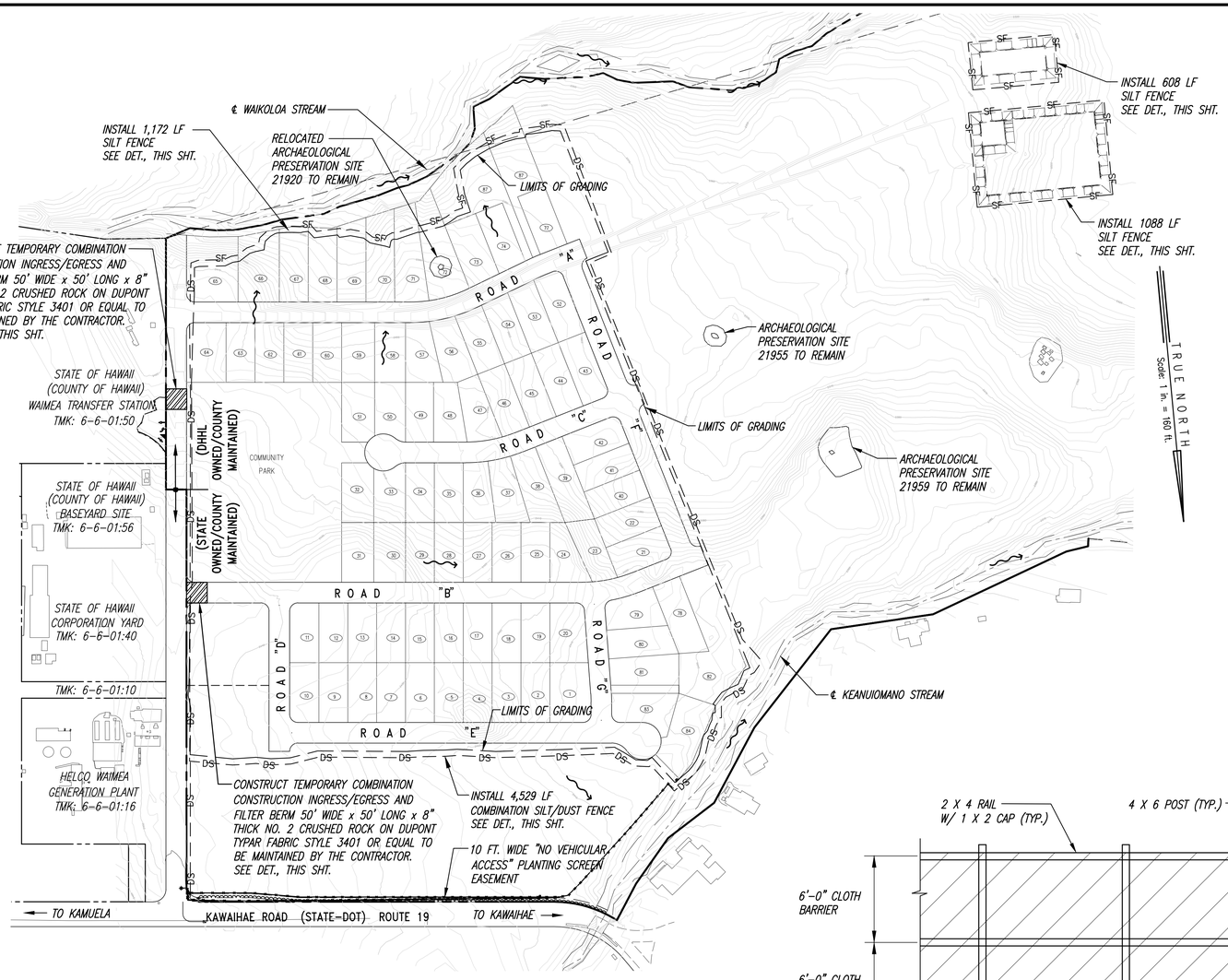
The accepted quantities of pavement arrows, legend and words will be paid for at the contract unit price per each as indicated in the bid form, in place complete.

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.

Removal of existing pavement markings and markers shall be paid for at the lump sum price bid in the bid form which price shall be full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved in removal in place as shown on the plans.

END OF SECTION



NOTE:
FOR STOCKPILE PLAN, SEE DWG. NO. C-10.

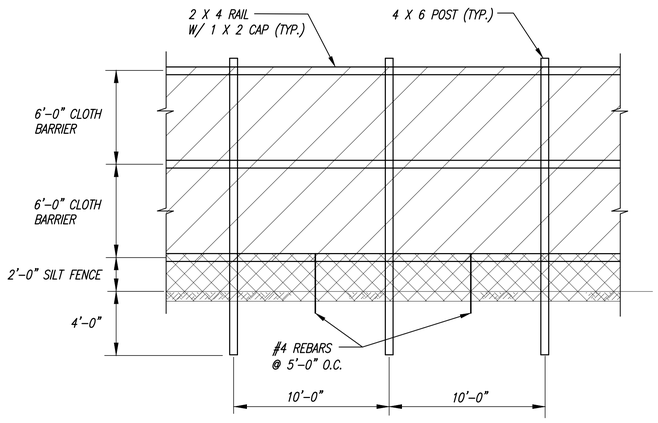
EROSION CONTROL PLAN
SCALE: 1"=160'

CONSTRUCTION BMPS

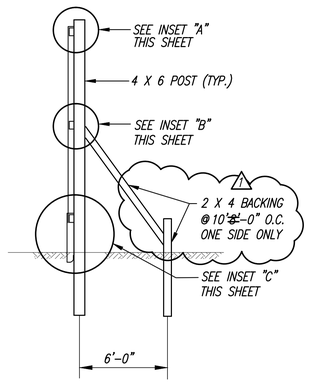
1. THE FOLLOWING SPECIAL CONDITIONS APPLY TO ALL LAND DISTURBANCE WORK CONDUCTED UNDER THE GENERAL PERMIT:
   - A. CONSTRUCTION MANAGEMENT TECHNIQUES INCLUDE:
     1. CLEARING AND GRUBBING SHALL BE HELD TO THE MINIMUM NECESSARY FOR GRADING AND EQUIPMENT OPERATION.
     2. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN PLACE AND FUNCTIONAL BEFORE EARTH MOVING OPERATIONS BEGIN AND SHALL BE CONSTRUCTED AND 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.
     3. ALL CONTROL MEASURES SHALL BE CHECKED AND REPAIRED, AS NECESSARY, WEEKLY IN DRY PERIODS AND WITHIN 24-HOUR PERIOD. DURING PROLONGED RAINFALL, DAILY CHECKING IS NECESSARY. THE PERMITTEE SHALL MAINTAIN RECORDS OF CHECKS AND REPAIRS.
     4. A SPECIFIC INDIVIDUAL SHALL BE DESIGNATED TO BE RESPONSIBLE FOR EROSION AND SEDIMENT CONTROLS ON EACH PROJECT SITE.
     5. THE CONTRACTOR SHALL HAVE PERSONNEL INSPECT, REPAIR AND MAINTAIN THE INGRESS/EGRESS FILTER BERM FOR THE DURATION OF THE PROJECT. THIS SHALL INCLUDE BUT NOT BE LIMITED TO ANY SWEEPING OF GRAVEL, SAND AND DUST THAT MAY DISPERSE FROM THE BERM WITH AN INSPECTION AT THE BEGINNING OF THE DAY AND A FINAL INSPECTION AT THE END OF THE DAY.
   - 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. ALL SURFACE WATER FLOWING TOWARD THE CONSTRUCTION AREA SHALL BE DIVERTED BY USING BERMS, CHANNELS, SEDIMENT TRAPS, AND OTHER 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. STORM DRAIN INLET PROTECTION.

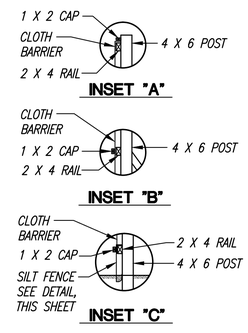
NPDES NOTES

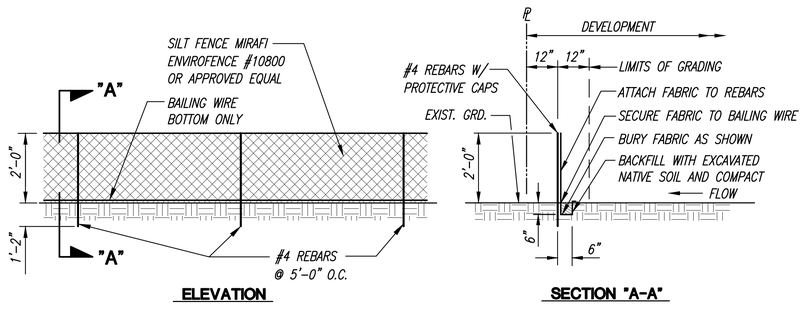
1. EROSION AND SEDIMENT CONTROL INSPECTION AND MAINTENANCE PRACTICES.
   - A. THE CONTRACTOR SHALL INSPECT THE EROSION AND SEDIMENT CONTROL MEASURES AT LEAST ONCE A WEEK OR AFTER 0.5 INCHES OF RAINFALL.
   - B. THE CONTRACTOR SHALL MAINTAIN THE EROSION AND SEDIMENT CONTROL MEASURES DURING THE PROJECT. IF A REPAIR IS NECESSARY, THE CONTRACTOR SHALL INITIATE THE REPAIRS WITHIN TWENTY-FOUR (24) HOURS AFTER THE INSPECTION SUCH AS:
     1. WHEN SEDIMENT BUILDUP REACHES ONE-THIRD (1/3) THE HEIGHT OF THE SILT FENCE, THE CONTRACTOR SHALL REMOVE AND DISPOSE OF THE SEDIMENT BUILDUP FROM THE SILT FENCE.
     2. WHEN THE DEPTH OF THE SEDIMENT BASIN REACHES TEN PERCENT (10%) OF THE DESIGN CAPACITY, THE CONTRACTOR SHALL REMOVE AND DISPOSE OF THE SEDIMENT BUILDUP.
     3. WHEN TEARS ARE FOUND ON THE SILT FENCE, THE CONTRACTOR SHALL REPLACE THE FABRIC.
     4. THE CONTRACTOR SHALL CHECK TO SEE IF THE FABRIC IS SECURELY ATTACHED TO THE FENCE POSTS AND TO SEE THAT THE FENCE POSTS ARE FIRMLY IN THE GROUND.
     5. THE CONTRACTOR SHALL INSPECT THE DIVERSION DIKE AND REPAIR THE BREACHES.
     6. THE CONTRACTOR SHALL INSPECT TEMPORARY AND PERMANENT SEEDING AND PLANTING FOR BARE SPOTS, WASHOUTS, AND HEALTHY GROWTH.
   - C. THE CONTRACTOR SHALL HAVE ITS PERSONNEL MAKE A MAINTENANCE INSPECTION REPORT PROMPTLY AFTER EACH INSPECTION. THE CONTRACTOR SHALL SELECT A MINIMUM OF THREE (3) PERSONNEL WHO WILL BE RESPONSIBLE FOR INSPECTION, MAINTENANCE, REPAIR ACTIVITIES, AND FILLING OUT THE INSPECTION AND MAINTENANCE REPORT. PERSONNEL SELECTED FOR THE INSPECTION AND MAINTENANCE RESPONSIBILITIES WILL RECEIVE TRAINING FROM THE CONTRACTOR. THE CONTRACTOR SHALL TRAIN THESE PERSONNEL IN THE INSPECTION AND MAINTENANCE PRACTICES NECESSARY FOR KEEPING THE EROSION AND SEDIMENT USED ON-SITE ACCORDING TO THE CONTRACT.
2. SUBMITTAL REQUIREMENTS
   - A. CONSTRUCTION ACTIVITIES DEWATERING AND/OR HYDROTESTING WATER.
     1. DISCHARGES INTO STATE WATERS DUE TO DEWATERING AND/OR HYDROTESTING ACTIVITIES WILL REQUIRE NPDES PERMIT(S) FROM DOH. IF THE CONTRACTOR OPTIONS TO DISCHARGE DEWATERING AND/OR HYDROTESTING EFFLUENT INTO STATE WATER, THE CONTRACTOR SHALL SUBMIT TO THE CONTRACTING OFFICER FOUR (4) SETS OF SITE-SPECIFIC DEWATERING AND/OR HYDROTESTING BMP, AND FOUR (4) COPIES OF THE QUALITY OF DISCHARGE TEST RESULTS. THE PLANS AND TEST RESULTS SHALL BE SUBMITTED NO LATER THAN THIRTY (30) CALENDAR DAYS AFTER THE AWARD OF CONTRACT.
     2. NO DEWATERING AND/OR HYDROTESTING ACTIVITIES WILL BE AUTHORIZED UNTIL THE RECEIPT OF THE NPDES PERMIT(S) FROM THE DOH.



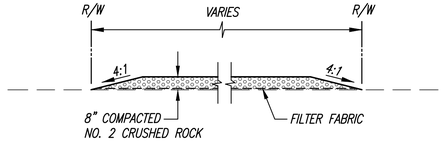
DETAIL - SILT / DUST FENCE
NOT TO SCALE







DETAIL - SILT FENCE
NOT TO SCALE



NOTE:
SEE CONSTRUCTION BMPS NOTE NO. 1.A.5., THIS SHEET

DETAIL - COMBINATION INGRESS/EGRESS AND FILTER BERM
NOT TO SCALE

LEGEND

DS	COMBINATION DUST/SILT FENCE
SF	SILT FENCE
	LIMITS OF GRADING
	SURFACE WATER FLOW

160 80 0 160 320
Graphic Scale in Feet

RICHARD Y. SANTO
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: 04/30/12

REVISION DATE	DESCRIPTION	MADE BY	APPROVED
3-8-12	REV. SILT/DUST FENCE DETAIL	CPE	CPE

Community Planning and Engineering, Inc.
Engineering Design | Construction Management | Infrastructure Planning
1100 Alakea Street, Sixth Floor Honolulu, Hawaii

LALAMILO HOUSING PHASE 2A, INCREMENT 1
WAIMEA, SOUTH KOHALA, HAWAII
SUBD. FILE NO. SUB-07-000603
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS
TAX MAP KEY: (3) 6-6-01:10 & 77

EROSION CONTROL PLAN

DRAWN BY: LYT	ENGINEER: FJC	CHECKED BY: RYS

APPROVED:

DWG. NO. C-11 SHEET 12 OF 70 SHEETS

FILE	POCKET	FOLDER	NO.

TRUE NORTH
Scale: 1 in. = 100 ft.

℄ WAIKOLOA STREAM

INSTALL 4' HIGH BARBED WIRE FENCE L=390 LF

EXIST. 11 FT HIGH CHAIN-LINK FENCE TO REMAIN L=280'

STATE OF HAWAII (COUNTY OF HAWAII) WAIMEA TRANSFER STATION TMK: 6-6-01:50

ARCHAELOGICAL PRESERVATION SITE 21920 TO BE RELOCATED

℄ EXIST. DIRT ROAD

ARCHAELOGICAL PRESERVATION SITE 21955 TO REMAIN

ARCHAELOGICAL PRESERVATION SITE TO REMAIN

SOUTH KOHALA DISTRIBUTION ROAD (DHHL/COUNTY MAINTAINED)

LALAMILO PHASE 2 INCREMENT 1 PROJECT LIMITS

ARCHAELOGICAL PRESERVATION SITE 21959 TO REMAIN

STATE OF HAWAII (COUNTY OF HAWAII) BASEYARD SITE TMK: 6-6-01:56

REMOVE EXIST. SIGN

STATE OF HAWAII CORPORATION YARD TMK: 6-6-01:40

REMOVE EXIST. SIGN

STATE OF HAWAII TMK: 6-6-01:10

SOUTH KOHALA DISTRIBUTION ROAD (STATE OWNED/COUNTY MAINTAINED)

STATE OF HAWAII TMK: 6-6-01:77

℄ EXIST. DIRT ROAD

HELCO WAIMEA GENERATION PLANT TMK: 6-6-01:16

℄ KEANUIOMANO STREAM

REMOVE EXIST. SIGN

EXIST. SIGN TO REMAIN

SALVAGE EXIST. SIGN (TO RELOCATE)

EXIST. BARBED WIRE FENCE TO REMAIN
EXIST. CHAIN-LINK FENCE TO REMAIN

TO KAMUELA

KAWAIHAE ROAD (STATE-DOT) ROUTE 19

TO KAWAIHAE

DEMOLITION PLAN

SCALE: 1"=100'

100 50 0 100 200
Graphic Scale in Feet

LEGEND

EX. FENCE TO BE REMOVED
L= 5480± LF

NOTE: REMOVE EXISITNG FENCE INSIDE LALAMILO PHASE 2A, INCREMENT 1 PROJECT SITE UNLESS NOTED OTHERWISE.

REVISION DATE	DESCRIPTION	MADE BY	APPROVED
3-8-12	REV. EXIST. BARBED WIRE FENCE.	CPE	CPE

cp&e Community Planning and Engineering, Inc.
Engineering Design | Construction Management | Infrastructure Planning
1100 Alakea Street, Sixth Floor Honolulu, Hawaii

LALAMILO HOUSING PHASE 2A, INCREMENT 1

WAIMEA, SOUTH KOHALA, HAWAII

SUBD. FILE NO. SUB-07-000603
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS
TAX MAP KEY: (3) 6-6-01:10 & 77

DEMOLITION PLAN

DRAWN BY:	ENGINEER:	CHECKED BY:
LYT	FJC	RYS

APPROVED:

RICHARD Y. SANTO
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: 04/30/12

DWG. NO. C-12 SHEET 13 OF 70 SHEETS

FILE	POCKET	FOLDER	NO.

CURB DATA			
CURVE	①	②	③
Δ	90°00'	85°38'	83°27'30"
Δ/2	45°00'	42°49'	41°43'45"
R	27.00'	27.00'	27.00'
T	27.00'	25.02'	24.08'
C	38.18'	36.70'	35.94'
L	42.41'	40.35'	39.33'

CURVE DATA			
CURVE	①	②	③
Δ	4°22'	17°8'	21°30'
Δ/2	2°11'	8°34'	10°45'
R	350.00'	350.00'	350.00'
T	13.34'	52.72'	66.45'
C	26.67'	104.27'	130.57'
L	26.68'	104.66'	131.34'

SOUTH KOHALA DISTRIBUTION ROAD SEE DWG. NO. C-23

SOUTH KOHALA DISTRIBUTION ROAD SEE DWG. NO. C-22

ROAD "D" SEE DWG. NO. C-18

ROAD "G" SEE DWG. NO. C-21

MATCHLINE STA. 11+00 SEE DWG. NO. C-16

TRUE NORTH Scale 1 in. = 40 ft.

COMMUNITY PARK

ROAD "B"

STA. 0+23 o/s 4.5' W8LP
REMOVE CAP & C.O.
CONNECT TO EXIST. W8LP
INSTALL ARV

INTERSECTION
STA. 0+00 ROAD "B"
=STA. 7+80 SOUTH KOHALA DISTRIBUTION ROAD
STREET SURVEY MON.
ELEV.=

STA. 0+23 o/s 10.5' W8HP
REMOVE CAP & C.O.
CONNECT TO EXIST. W8HP
INSTALL ARV

~~REALIGN EXIST. 3" GSP~~

5°22'00" 680.00' (MON. TO MON.)

5°22'00" 780.00' (MON. TO MON.)

ELECTRICAL EASEMENT IN FAVOR OF HELCO

STA. 1+98 o/s 10.5' W8HP
FH CONN – LAYOUT "B"
1–8"x6" TEE, MJ, W/ JOINT RESTRAINT
1–6" GV, MJ, CL. 200, W/ JOINT RESTRAINT
1–GV BOX
10 LF 6" DIP, CL. 52
1–FH (HT.=3.5')
2–CONC. BLKS.
1–BLUE REFLECTIVE MARKER

INTERSECTION
STA. 2+50 ROAD "B"
=STA. 0+00 ROAD "D"
INSTALL ST. SURVEY MON.
ELEV.=

STA. 2+60.50 ROAD "B" o/s 10.5'
=0+10.50 ROAD "D" o/s 10.5'
W8HP
1–8" TEE, MJ
3–8" GV, MJ, CL. 200
3–GV BOX
1–8"x6" REDUCER, SEB
1–CONC. BLK.

TYPE "C", 1 ½" SERVICE LATERAL WITH ⅝" METER, TYPE "X" METER BOX (TYP.)

STA. 6+24
CONST. CB "B–2"
TYPE "B"
INV.=2411.57

TYPE "A", 1" SERVICE LATERAL WITH ⅝" METER, TYPE "X" METER BOX (TYP.)

5+79.81 ℄ DRWY

18" HDPE 35' @ 0.5%

STA. 6+30 o/s 4.5' W8LP
DEFLECT PIPE 5°

6+48.79 ℄ DRWY

7+18.44 ℄ DRWY

STA. 6+15 o/s 10.5'
END W6HP
1–MH
1–6" CAP W/ 2" C.O.
1–CONC. BLK.

STA. 6+24
CONST. CB/DW "B–1"
SPECIAL TYPE "A"
INV.=2411.40–18"
INV.=2388.00–DW
SEE DET., DWG. NO. S–7 & S–8

6+48.68 ℄ DRWY

STA. 7+00 o/s 10.5'
W8LP
DEFLECT PIPE 5°

STA. 7+66 o/s 10.5'
W8LP
FH CONN – LAYOUT "B"
1–8"x6" TEE, MJ, W/ JOINT RESTRAINT
1–6" GV, MJ, CL. 200, W/ JOINT RESTRAINT
1–GV BOX
10 LF 6" DIP, CL. 52
1–FH (HT.=3.5')
2–CONC. BLKS.
1–BLUE REFLECTIVE MARKER

18" HDPE 36' @ 0.5%

7+88.19 ℄ DRWY

STA. 8+50
CONST. CB/DW "B–3"
SPECIAL TYPE "A"
INV.=2396.50–18"
INV.=2374.00–DW
SEE DET., DWG. NO. S–7 & S–8

INTERSECTION
STA. 10+11.49 ROAD "B"
=STA. 3+41.75 ROAD "G"
INSTALL ST. SURVEY MON.
ELEV.=

STA. 8+58
CONST. CB "B–4"
TYPE "B"
INV.=2396.68

8+75.25 ℄ DWY

P.C. STA. 9+84.82
INSTALL ST. SURVEY MON.
MON. ELEV. =

8+67.25 ℄ DRWY

CB "G–1"
INV.=2393.63

STA. 10+20.85 ROAD "B" o/s 10.5'
=STA. 3+31.38 ROAD "G" o/s 9.6'
W8LP
1–8" TEE, MJ
3–8" GV, MJ, CL. 200
1–8"x6" REDUCER, SEB
3–GV BOX
1–CONC. BLK.
1–ARV & MH

STA. 10+93
CONST. CB "B–5"
TYPE "B"
INV.=2391.41

P.I. STA. 10+50.49 o/s 6.25'
INSTALL STREET SURVEY MON.
ELEV.=

CB "G–2"
INV.=2393.63

CB "G–1"
INV.=2393.46

(–)3.0% 4.25' 2442.49 2442.36 2441.89 2441.34 2441.13 2440.55 0+45 1+99.89 2+05

(–)3.0% 2439.66 2439.96 2440.28 2440.52 2440.55 0+45 2+95

(–)2.0% 2400.89 2400.69 2400.49 2400.37 2400.36 LP 2400.47 2+99.03 9+69.85 8'

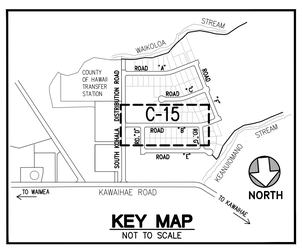
(–)2.0% 2399.26 2399.54 2399.98 2400.22 2400.47 2+99.32 10+51.45

(–)1.71%

(–)1.71%

NOTE:
CONSTRUCT 12' WIDE 4" THICK CONCRETE DRIVEWAY. SEE DETAIL, DWG. NO. C–24.

KEY MAP
NOT TO SCALE



PLAN
SCALE: 1"=40'

PROFILE
SCALES: HORIZ. 1"=40'
VERT. 1"= 8'

SOUTH KOHALA DISTRIB. RD. 0+00 RD. "B" = 7+80 S. KOHALA DISTRIB. RD.

INTERS. 2447.98 CURB 2448.06

~~EX. 3" GSP (APPROX. LOCATION; CONTRACTOR TO VERIFY)~~

~~REALIGN EX. 3" GSP; INVERT 2445.1~~

FINISH CURB GRADE ALONG ℄ ROAD

1–98 FH CONNL

(–)3.33% (–)11.11% (–)1.0% 0% (–)3.00% W8LP/HP (–)3.0%

0+50 0+23 2–1" ARV

8" TEE 2442.6 W8HP

REMOVE EX. CAP & C.O CONN. TO EX. W8HP/LP 2442.9 W8HP 2442.1 W8LP

EX. W8HP 2441.8 ⅛ BEND (H,V)

EX. 16"x8" TEE 2442.1 W8LP 2441.9 WT6LP

W8LP/HP 2442.1

INTERS. 2441.01 BVC/CR 2439.66 EVC 2431.87

2+50 ROAD "B" =0+00 ROAD "D"

2+95 150' VC PIVC 2437.41 4+45

3+70 POC=2436.59

2+68 W8LP/W6HP 2436.1

2+60.50 ROAD "B" =0+10.50 ROAD "D"

8"x6" REDUCER 2437.2 W6HP 2437.1 W8HP

8" TEE 2437.3 W8LP/HP

W6HP W8LP/W6HP (–)4.0% (–)7.21% (–)7.39% W8LP/W6HP

EXISTING GROUND ALONG ℄ ROAD

EXIST. ASH LAYER (APPROX. LOCATION)

FINISH GRADE @ ℄ WATERLINE

2' MIN. COVER (TYP.)

HGL (–)7.14% W8LP

CB "B–2" 2411.57

CB/DW "B–1" 2411.40 18" 2388.00 DW

6+24 6+15

END W6HP 2415.6 CAP

MATCHLINE STA. 7+00

BVC 2409.33 EVC 2402.29 150' VC

EXIST. ASH LAYER (APPROX. LOCATION)

EXISTING GROUND ALONG ℄ ROAD

INTERS. 2400.06

CR 2399.26

7+50 7+66 FH CONNL 9+00

PIVC 2403.79 8+25 POC=2404.80

FINISH CURB GRADE ALONG ℄ ROAD

FINISH GRADE @ ℄ WATERLINE

(–)7.39% (–)7.14% W8LP (–)2% (–)2.00%

2' MIN. COVER (TYP.)

HGL

8+25 W8LP 2400.8

8+58 CB "B–4" 2396.68

8+50 CB/DW "B–3" 2396.50 18" 2374.00 DW

10+11.49 ROAD "B" =3+41.75 ROAD "G" 10+30 10+51.45

10+20.85 ROAD "B" =3+31.38 ROAD "G" 10+93

8"x6" REDUCER 2396.8 W6LP 2396.7 W8LP

CB "B–5" 2391.36

8" TEE W8LP 2396.9

MATCHLINE STA. 11+00 SEE DWG. NO. C–16

0+00 1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00 9+00 10+00 11+00

2440 2420 2400 2380 2360

Horizontal 40 20 0 40 80

Vertical 8 6 4 2 0 8 16

Graphic Scale in Feet

RICHARD Y. SANTO 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: 04/30/12

REVISION DATE	DESCRIPTION	MADE BY	APPROVED
3-8-12	REMOVED GSP WORK	CPE	CPE

Community Planning and Engineering, Inc.
Engineering Design | Construction Management | Infrastructure Planning
1100 Alakea Street, Sixth Floor Honolulu, Hawaii

LALAMILO HOUSING PHASE 2A, INCREMENT 1
WAIMEA, SOUTH KOHALA, HAWAII
SUBD. FILE NO. SUB-07-000603
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS
TAX MAP KEY: (3) 6-6-01:10 & 77

PLAN AND PROFILE ROAD "B" STA. 0+00 TO 11+00

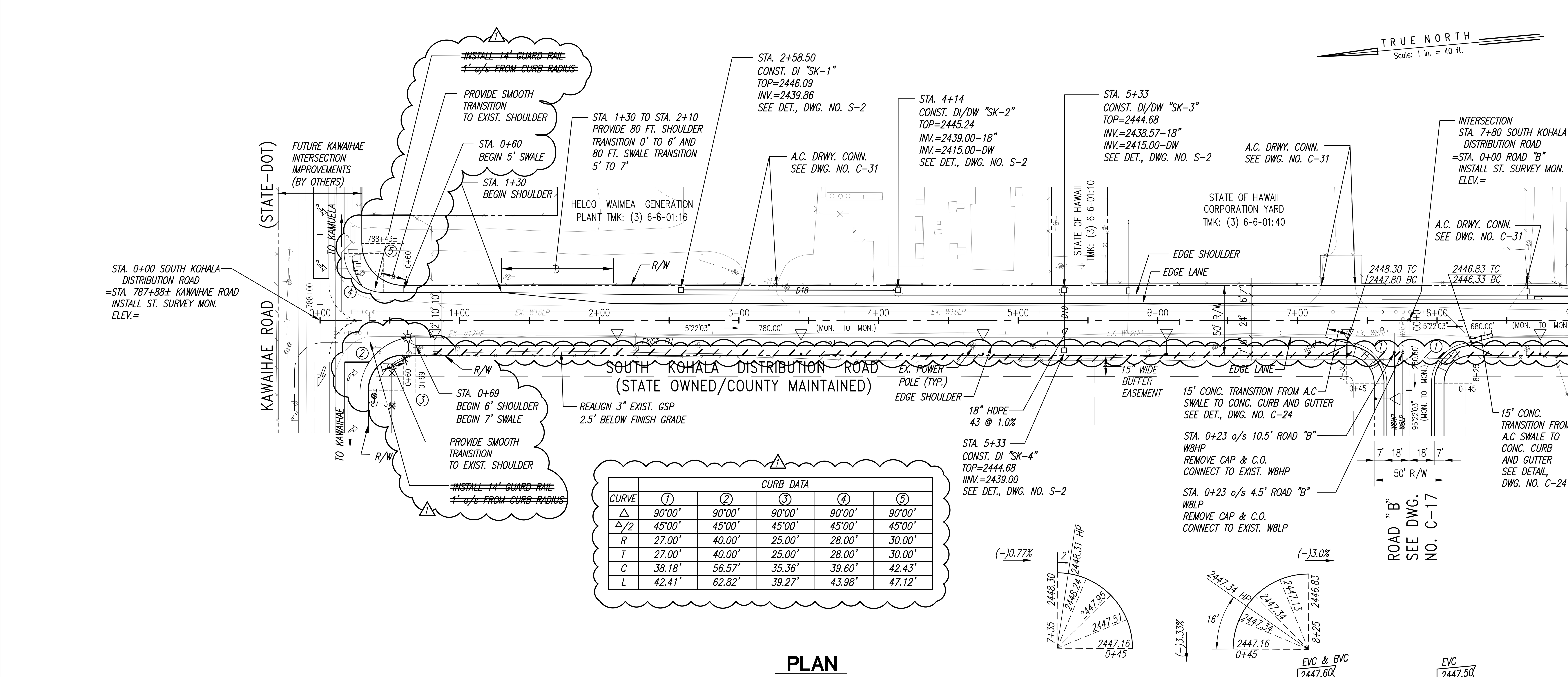
DRAWN BY:	ENGINEER:	CHECKED BY:
LT, MFN	VTF, MFC, LYT	RYS

APPROVED:

DWG. NO. C-15 SHEET 16 OF 70 SHEETS

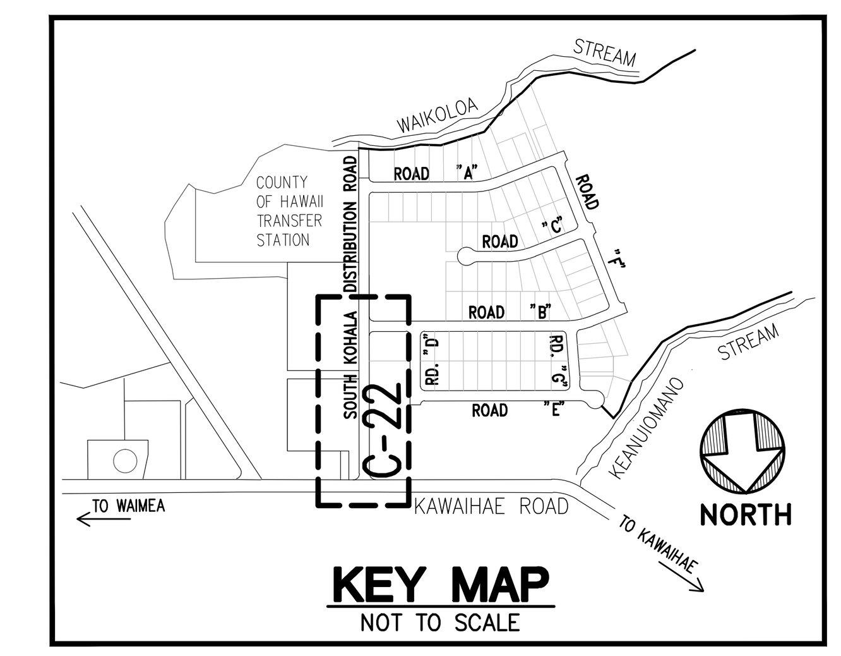
FILE	POCKET	FOLDER	NO.

P:\Land Projects\DHHL Lalamilo Phase 2\Construction Drawings\Lalamilo Housing Phase 2A, Increment 1\Government Review #3\Road B PP-1, Incre.1 GR#2.dwg, 3/12/2012 1:29:03 PM, DWG To PDF.pc3


TRUE NORTH
Scale: 1 in. = 40 ft.
INSTALL 14' GUARD RAIL 1' o/s FROM CURB RADIUS
PROVIDE SMOOTH TRANSITION TO EXIST. SHOULDER
STA. 0+60 BEGIN 5' SWALE
STA. 1+30 BEGIN SHOULDER
FUTURE KAWAIHAE INTERSECTION IMPROVEMENTS (BY OTHERS)
(STATE-DOT)
STA. 0+00 SOUTH KOHALA DISTRIBUTION ROAD =STA. 787+88± KAWAIHAE ROAD INSTALL ST. SURVEY MON. ELEV.=
KAWAIHAE ROAD
TO KAMUELA
TO KAWAIHAE
STA. 2+58.50 CONST. DI "SK-1" TOP=2446.09 INV.=2439.86 SEE DET., DWG. NO. S-2
STA. 1+30 TO STA. 2+10 PROVIDE 80 FT. SHOULDER TRANSITION 0' TO 6' AND 80 FT. SWALE TRANSITION 5' TO 7'
A.C. DRWY. CONN. SEE DWG. NO. C-31
HELCO WAIMEA GENERATION PLANT TMK: (3) 6-6-01:16
STA. 4+14 CONST. DI/DW "SK-2" TOP=2445.24 INV.=2439.00–18" INV.=2415.00–DW SEE DET., DWG. NO. S-2
STATE OF HAWAII TMK: (3) 6-6-01:10
STA. 5+33 CONST. DI/DW "SK-3" TOP=2444.68 INV.=2438.57–18" INV.=2415.00–DW SEE DET., DWG. NO. S-2
A.C. DRWY. CONN. SEE DWG. NO. C-31
STATE OF HAWAII CORPORATION YARD TMK: (3) 6-6-01:40
INTERSECTION STA. 7+80 SOUTH KOHALA DISTRIBUTION ROAD =STA. 0+00 ROAD "B" INSTALL ST. SURVEY MON. ELEV.=
A.C. DRWY. CONN. SEE DWG. NO. C-31
EDGE SHOULDER
EDGE LANE
2448.30 TC
2447.80 BC
2446.83 TC
2446.33 BC
SOUTH KOHALA DISTRIBUTION ROAD (STATE OWNED/COUNTY MAINTAINED)
R/W
EX. POWER POLE (TYP.)
EDGE SHOULDER
REALIGN 3" EXIST. GSP 2.5' BELOW FINISH GRADE
STA. 0+69 BEGIN 6' SHOULDER BEGIN 7' SWALE
PROVIDE SMOOTH TRANSITION TO EXIST. SHOULDER
18" HDPE 43 @ 1.0%
STA. 5+33 CONST. DI "SK-4" TOP=2444.68 INV.=2439.00 SEE DET., DWG. NO. S-2
15' WIDE BUFFER EASEMENT
EDGE LANE
15' CONC. TRANSITION FROM A.C SWALE TO CONC. CURB AND GUTTER SEE DET., DWG. NO. C-24
STA. 0+23 o/s 10.5' ROAD "B" W8HP REMOVE CAP & C.O. CONNECT TO EXIST. W8HP
STA. 0+23 o/s 4.5' ROAD "B" W8LP REMOVE CAP & C.O. CONNECT TO EXIST. W8LP
15' CONC. TRANSITION FROM A.C SWALE TO CONC. CURB AND GUTTER SEE DETAIL, DWG. NO. C-24
50' R/W
ROAD "B" SEE DWG. NO. C-17
MATCHLINE STA. 9+00 SEE DWG. NO. C-23
(–)0.77%
(–)3.0%
(–)3.33%
PLAN
SCALE: 1"=40'

CURB DATA

CURVE	1	2	3	4	5
Δ	90°00'	90°00'	90°00'	90°00'	90°00'
Δ/2	45°00'	45°00'	45°00'	45°00'	45°00'
R	27.00'	40.00'	25.00'	28.00'	30.00'
T	27.00'	40.00'	25.00'	28.00'	30.00'
C	38.18'	56.57'	35.36'	39.60'	42.43'
L	42.41'	62.82'	39.27'	43.98'	47.12'

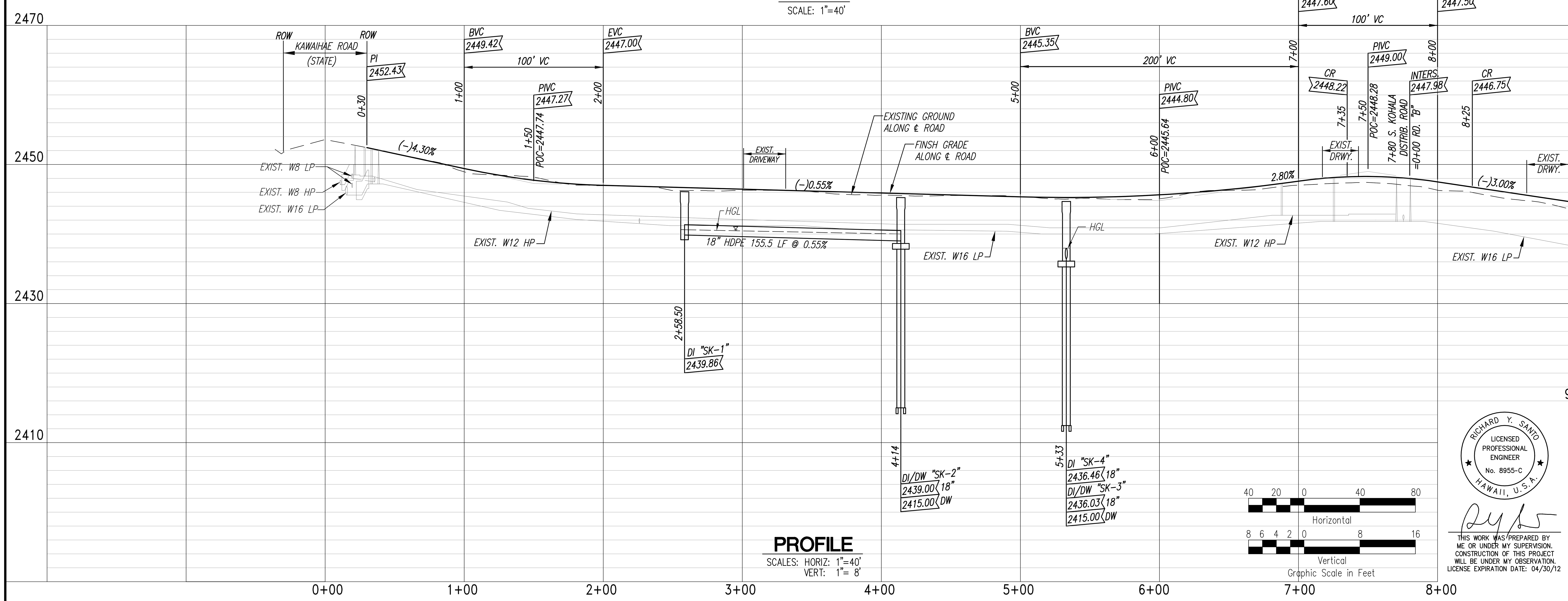


NOTES:

1. ~~IMPROVEMENT TO KAWAIHAE ROAD UNDER SEPARATE FUTURE PROJECT (BY OTHERS).~~

1. RAISE EXIST. ARV AND VALVE BOX FRAME AND COVER ALONG EX. W16 LP AND EX. W12 HP TO MATCH NEW FINISHED GRADE.

2. SAWCUT ALL EXISTING PAVED DRIVEWAYS PRIOR TO ANY EXCAVATION WORK, PROVIDE SMOOTH RIDING PAVED CONNECTION, COORDINATE AND PROVIDE VEHICLE ACCESS TO PROPERTY DURING CONSTRUCTION.


2470
2450
2430
2410
ROW
KAWAIHAE ROAD (STATE)
PI 2452.43
BVC 2449.42
100' VC
PIVC 2447.27
EVC 2447.00
BVC 2445.35
200' VC
PIVC 2444.80
EVC & BVC 2447.60
100' VC
PIVC 2449.00
EVC 2447.50
CR 2448.22
INTERS. 2447.98
CR 2446.75
(–)4.30%
(–)0.55%
2.80%
(–)3.00%
EXISTING GROUND ALONG ℄ ROAD
FINSH GRADE ALONG ℄ ROAD
EXIST. DRIVEWAY
EXIST. DRWY.
EXIST. W8 LP
EXIST. W8 HP
EXIST. W16 LP
EXIST. W12 HP
HGL
18" HDPE 155.5 LF @ 0.55%
EXIST. W16 LP
EXIST. W12 HP
EXIST. W16 LP
DI "SK-1" 2439.86
DI/DW "SK-2" 2439.00 18" 2415.00 DW
DI "SK-4" 2436.46 18"
DI/DW "SK-3" 2436.03 18" 2415.00 DW
MATCHLINE STA. 9+00 SEE DWG. NO. C-23
0+00 1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00 9+00
Horizontal
Vertical
Graphic Scale in Feet
PROFILE
SCALES: HORIZ: 1"=40' VERT: 1"= 8'

RICHARD Y. SANTO
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: 04/30/12

REVISION	DATE	DESCRIPTION	MADE BY	APPROVED
1	3-8-12	REV. CURB DATA, REMOVED GUARD RAIL & GSP WORK & REV. NOTES.	CPE	CPE

Community Planning and Engineering, Inc.
Engineering Design | Construction Management | Infrastructure Planning
1100 Alakea Street, Sixth Floor, Honolulu, Hawaii

LALAMILO HOUSING PHASE 2A, INCREMENT 1

WAIMEA, SOUTH KOHALA, HAWAII
SUBD. FILE NO. SUB-07-000603
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS
TAX MAP KEY: (3) 6-6-01:10 & 77

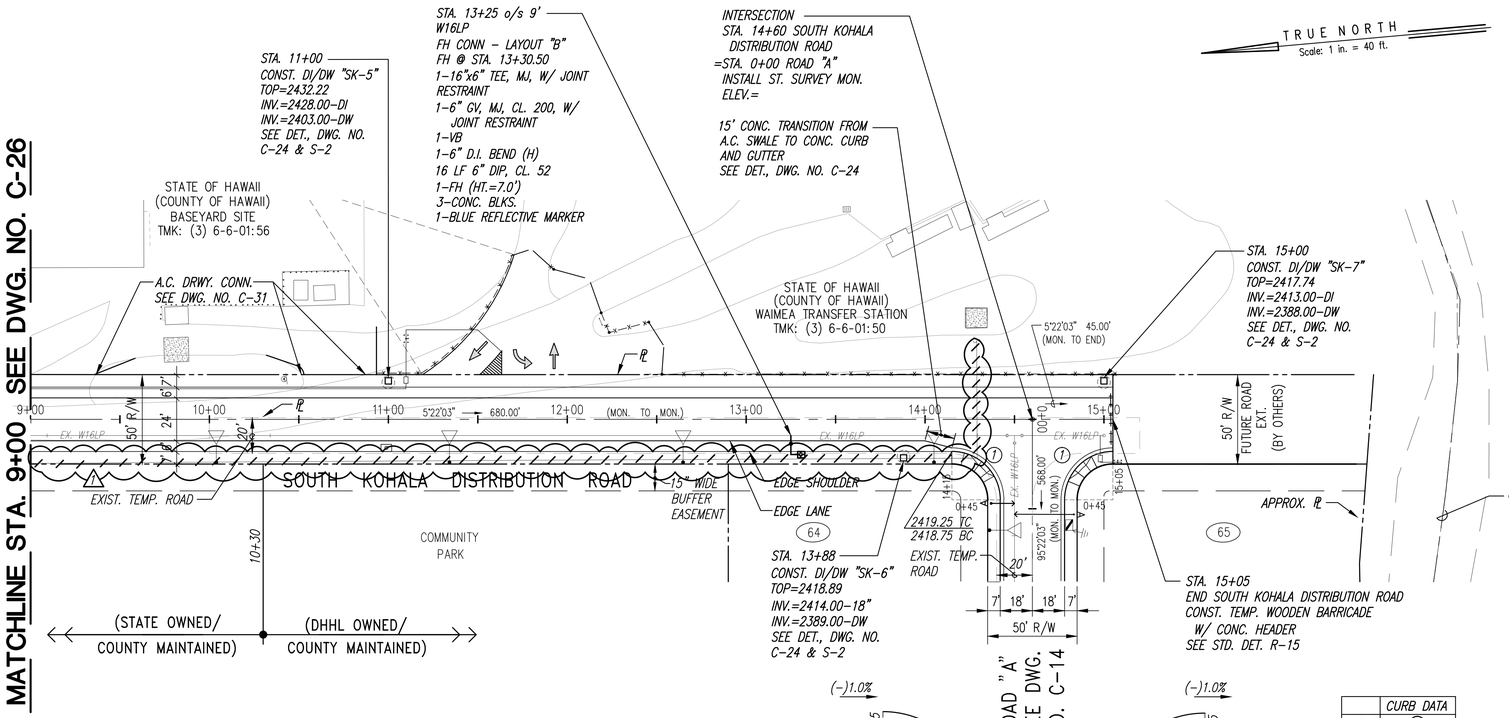
PLAN AND PROFILE SOUTH KOHALA DISTRIBUTION ROAD STA. 0+00 TO 9+00

DRAWN BY: LT, MFN | ENGINEER: VTF, MFC, LYT | CHECKED BY: RYS

APPROVED:

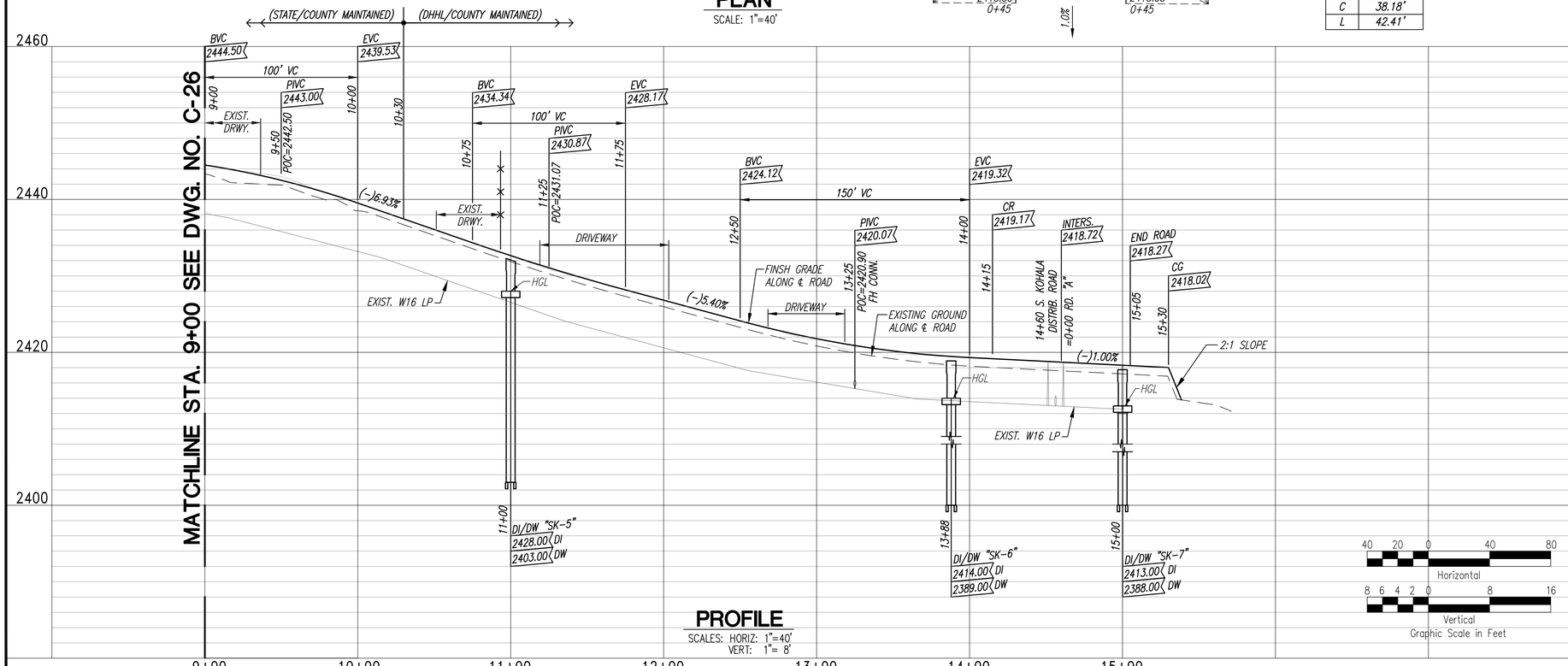
DWG. NO. C-22 SHEET 23 OF 70 SHEETS

P:\Land Projects\DHHL Lalamilo Phase 2\Construction Drawings\Lalamilo Housing Phase 2A, Increment 1\Government Review #3\Road Kohala PP-1, Incre.1 GR#2.dwg, 3/12/2012 1:51:40 PM, DWG To PDF.pc3

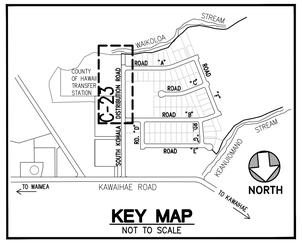


	CURB DATA
CURVE	①
△	90°00'
△/2	45°00'
R	27.00'
T	27.00'
C	38.18'
L	42.41'

PLAN
SCALE: 1"=40'



PROFILE
SCALES: HORIZ: 1"=40'
VERT: 1"= 8'



NOTES:

1. RAISE EXIST. ARV AND VALVE BOX FRAME AND COVER ALONG EX. W16LP TO MATCH NEW FINISHED GRADE.
2. SAWCUT ALL EXISTING PAVED DRIVEWAYS PRIOR TO ANY EXCAVATION WORK, PROVIDE SMOOTH RIDING PAVED CONNECTION, COORDINATE AND PROVIDE VEHICLE ACCESS TO PROPERTY DURING CONSTRUCTION.
3. FOR TRANSFER STATION PLAN, SEE DWG. NO. C-30.

RICHARD Y. SANYO
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: 04/30/12

REVISION DATE	DESCRIPTION	MADE BY	APPROVED
3-8-12	REMOVED CSP WORK	CPE	CPE

cp&e Community Planning and Engineering, Inc.
Engineering Design | Construction Management | Infrastructure Planning
1100 Alakea Street, Sixth Floor Honolulu, Hawaii

LALAMILO HOUSING PHASE 2A, INCREMENT 1
WAIMEA, SOUTH KOHALA, HAWAII
SUBD. FILE NO. SUB-07-000603
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS
TAX MAP KEY: (3) 6-6-01:10 & 77

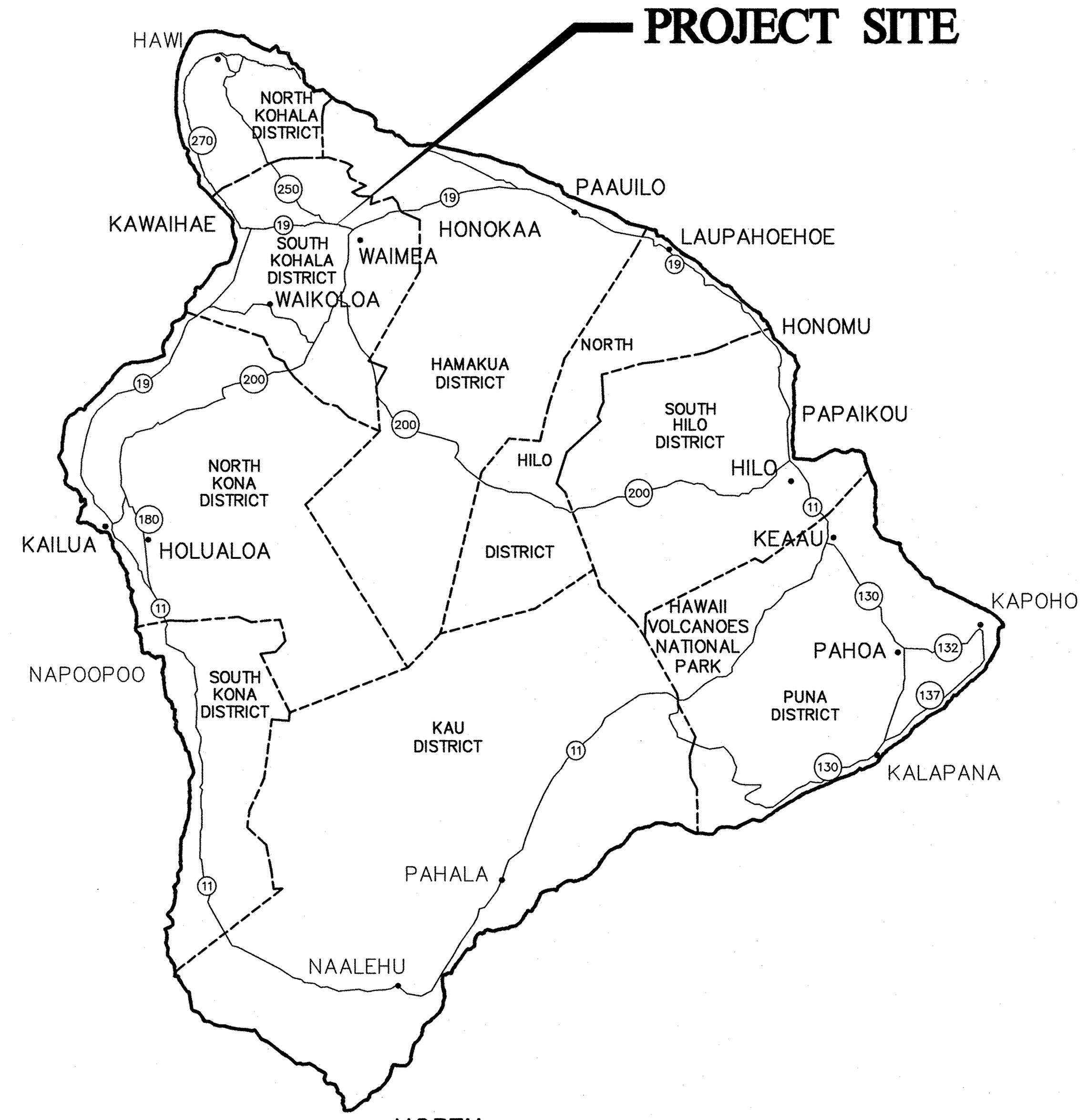
PLAN AND PROFILE SOUTH KOHALA DISTRIBUTION ROAD STA. 9+00 TO END

DRAWN BY:	ENGINEER:	CHECKED BY:
LT, MFN	VIT, MFC, LYT	RYS

APPROVED:

DWG. NO. C-23 SHEET 24 OF 70 SHEETS

FILE	POCKET	FOLDER	NO.



NORTH

ISLAND OF HAWAII

NOT TO SCALE

GENERAL NOTES

1. PROVIDE 5' MINIMUM CLEAR BETWEEN STREET LIGHT POLES & SEWER LATERALS.
2. PROVIDE 3' MINIMUM CLEAR BETWEEN PULLBOXES & SEWER LATERALS.
3. PROVIDE 6' MINIMUM CLEAR BETWEEN TRANSFORMER PADS & SEWER LATERALS (DO NOT STRADDLE).
4. PROVIDE 3' MINIMUM CLEAR BETWEEN DUCTLINES & SEWER LINES.
5. CONTRACTOR SHALL VERIFY SEWER LATERAL LOCATIONS WITH CIVIL SHEETS.
6. PROVIDE 3' MINIMUM HORIZONTAL CLEAR & 6" VERTICAL CLEAR BETWEEN WATER LINES & ALL ELECTRICAL SYSTEMS.
7. CONTRACTOR SHALL BE RESPONSIBLE TO ARRANGE WITH THE GENERAL CONTRACTOR TO IDENTIFY THE LOCATIONS OF CIVIL SITE UTILITIES, DRIVEWAYS, ETC. PRIOR TO ELECTRICAL CONTRACTORS LAYOUT OF ELECTRIC, STREET LIGHT, TRAFFIC SIGNAL, AND COMMUNICATIONS SYSTEMS.

NOTES FOR CONSTRUCTION

a. THE LOCATION OF OVERHEAD AND UNDERGROUND FACILITIES SHOWN ON THE PLANS ARE FROM EXISTING RECORDS WITH VARYING DEGREES OF ACCURACY AND ARE NOT GUARANTEED AS SHOWN. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHENEVER CONSTRUCTION CROSSES OR IS IN PROXIMITY OF UNDERGROUND LINES AND SHALL MAINTAIN ADEQUATE CLEARANCE WHEN OPERATING EQUIPMENT UNDER ANY OVERHEAD LINES.

b. THE CONTRACTOR IS TO COMPLY WITH THE DIRECTIONS OF THE STATE OF HAWAII OCCUPATIONAL SAFETY AND HEALTH LAW (DOSH).

c. WHEN TRENCH EXCAVATION IS ADJACENT TO EXISTING STRUCTURES OR FACILITIES, THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SHEETING AND BRACING THE EXCAVATION AND STABILIZING THE EXISTING GROUND TO RENDER IT SAFE AND SECURE FROM POSSIBLE SLIDES, CAVE-INS AND SETTLEMENT, AND FOR PROPERLY SUPPORTING EXISTING STRUCTURES AND FACILITIES WITH BEAMS, STRUTS OR UNDERPINNING TO FULLY PROTECT IT FROM DAMAGE.

d. AS REQUIRED BY THE COUNTY OF HAWAII, THE CONTRACTOR SHALL PROVIDE OFF-DUTY POLICE OFFICERS TO CONTROL THE FLOW OF TRAFFIC.

e. WHERE PEDESTRIAN WALKWAYS EXIST, SUCH WALKWAYS SHALL BE MAINTAINED IN PASSABLE CONDITION OR OTHER FACILITIES FOR PEDESTRIANS SHALL BE PROVIDED. PASSAGE BETWEEN WALKWAYS AT INTERSECTIONS SHALL LIKEWISE BE PROVIDED.

f. DRIVEWAYS SHALL BE KEPT OPEN UNLESS THE OWNERS OF THE PROPERTY USING THESE RIGHT-OF-WAYS ARE OTHERWISE PROVIDED FOR SATISFACTORILY.

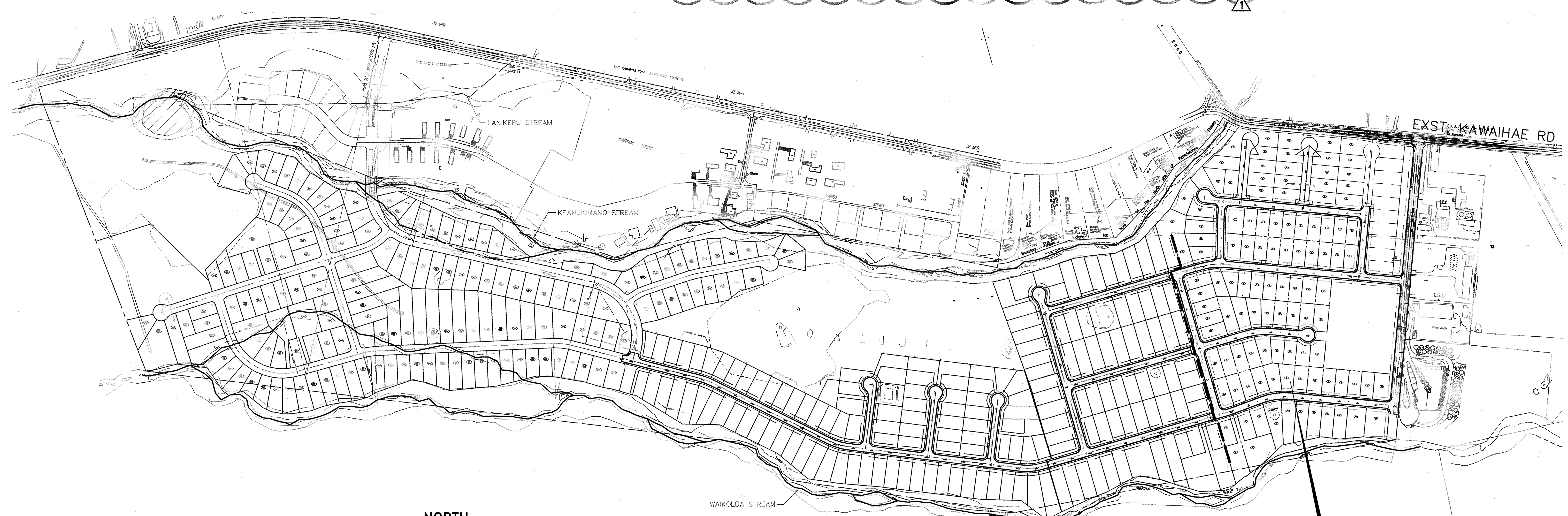
g. THE UNDERGROUND PIPES, CABLES OR DUCTLINES KNOWN BY THE ENGINEER TO EXIST FROM HIS SEARCH OF RECORDS ARE INDICATED ON THE PLANS. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF THE FACILITIES AND EXERCISE PROPER CARE IN EXCAVATING THE AREA. WHEREVER CONNECTIONS OF NEW UTILITIES TO EXISTING UTILITIES 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.

h. FOR CONSTRUCTION OF HELCO FACILITIES, CONTRACTOR TO REFER TO HELCO DRAWING 10-E-464. CONTACT KELLY IKEDA AT HELCO (1-808-327-0515) FOR ANY QUESTIONS OR COMMENTS OF HELCO FACILITIES.

ELECTRICAL SYMBOLS

SYMBOL	DESCRIPTION
	55W STREET LIGHT, LOW PRESSURE SODIUM LUMINAIRE, ALUMINUM POLE, XFMR BASE & BRACKET ARM, SEE DETAIL A/E-12
	BREAKLINE TO BEGIN & END DUCT SECTION TYPE
	ELECTRIC/SIGNAL DUCTLINE WITH DESIGNATORS; INDICATES TYPE "A" DUCT SECTION WITH "2-2E" DUCTS. SEE SHEET E-8 & E-9 FOR DUCT SECTIONS AND E-2 FOR CONDUIT SCHEDULE
	STUB, CAP, & MARK CONDUIT(S) WITH CONCRETE MARKER, SEE DETAIL B/E-11
	SAWCUT EXST. A.C. PAVEMENT, CONC. SIDEWALK, CURB & GUTTER PRIOR TO TRENCH EXCAVATION. RESTORE SUBBASE, BASECOURSE, PAVEMENT, CONC. SIDEWALK, CURB & GUTTER PER COUNTY REQUIREMENTS, THICKNESS SHALL MATCH EXST. ROAD DESIGN. SEE CIVIL SHEET C-29 FOR DETAIL.
——SL——	STREET LIGHT DUCTS & WIRING
—SL→	STREET LIGHT HOMERUN TO HELCO HANDHOLE
———e———	EXST. UNDERGROUND DUCTLINE & WIRING
———t———	EXST. UNDERGROUND TEL. CABLES
———sl———	EXST. UNDERGROUND STREET LIGHT CABLES & CONDUITS
———ts———	EXST. UNDERGROUND TRAFFIC SIGNAL CONDUITS
———p———	EXST. UNDERGROUND SECONDARY POWER CABLES AND CONDUIT
1 M2 A2 120V	STREET LIGHT I.D. TAG, SEE DETAIL C/E-12

SYMBOL	DESCRIPTION
	HELCO 2' x 3' PULLBOX
	HELCO 3' X 5' HANDHOLE
	HELCO 4' X 6' HANDHOLE
	HELCO 5' X 7' HANDHOLE
	HELCO 6' X 11' MANHOLE
	EXST. HELCO HANDHOLE
	EXST. HELCO MANHOLE
	EXST. HELCO MANHOLE
	SIC 13" X 24" HANDHOLE
	SIC 30" X 48" HANDHOLE
	SIC 3' X 5' HANDHOLE
	SIC 3' X 5' MANHOLE
	SIC 4' X 6' HANDHOLE
	GROUND ROD, 5/8" DIA. X 8'-0" (BM2)
	EXST. SIC MANHOLE
	EXST. HTCO MANHOLE
	CATV POWER SUPPLY PAD, SEE DETAIL ON E-13
	HELCO TRANSFORMER PAD LOT, SEE DETAIL D/E-10
	HELCO SWITCHING EASEMENT PAD LOT, SEE DETAIL A/E-11
	EXST. HELCO XFMR EASEMENT PAD LOT
	EXST. HELCO SWITCHING EASEMENT PAD LOT
1	NOTE SYMBOL, SEE PLAN FOR NOTES



NORTH

LOCATION MAP

NOT TO SCALE

REVISION DATE	DESCRIPTION	MADE BY	APPROVED
1 3/8/12	ADD HELCO NOTE	GDT	

Community Planning and Engineering, Inc.
Engineering Design | Construction Management | Infrastructure Planning
1100 Alakea Street, Sixth Floor, Honolulu, Hawaii

LALAMILO HOUSING
PHASE 2A, INCREMENT 1
WAIMEA, SOUTH KOHALA, HAWAII
SUBD. FILE NO. SUB-07-000603
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS
TAX MAP KEY: 6-6-01: 77

ELECTRICAL SYMBOLS, MAPS, NOTES

DRAWN BY: CAD | ENGINEER: GDT | CHECKED BY: SS

APPROVED:

DATE

DATE

SANDWICH ISLES COMMUNICATIONS, INC. DATE

DATE

STEVEN H. SAKAI LICENSED PROFESSIONAL ENGINEER No. 7637-E 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: 04/30/12

DWG. NO. E-1 SHEET 56 OF 70 SHEETS

FILE | POCKET | FOLDER | NO.

HAWAII ELECTRIC LIGHT COMPANY (HELCO) NOTES

1. LOCATION OF HELCO FACILITIES

THE LOCATION OF HELCO'S OVERHEAD AND UNDERGROUND FACILITIES SHOWN ON THE PLANS ARE FROM EXISTING RECORDS WITH VARYING DEGREES OF ACCURACY AND ARE NOT GUARANTEED AS SHOWN. THE CONTRACTOR SHALL VERIFY IN THE FIELD THE LOCATIONS OF THE FACILITIES AND SHALL EXERCISE PROPER CARE IN EXCAVATING AND WORKING IN THE AREA. WHEREVER CONNECTIONS OF NEW UTILITIES TO EXISTING UTILITIES AND UTILITY CROSSINGS ARE SHOWN, THE CONTRACTOR SHALL EXPOSE THE EXISTING LINES AT THE PROPOSED CONNECTIONS AND CROSSINGS TO VERIFY THE DEPTHS PRIOR TO EXCAVATION FOR THE NEW LINES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGES TO HELCO'S FACILITIES WHETHER SHOWN OR NOT SHOWN ON THE PLANS.

2. COMPLIANCE WITH HAWAII OCCUPATIONAL SAFETY AND HEALTH LAWS

THE CONTRACTOR SHALL COMPLY WITH THE STATE OF HAWAII'S OCCUPATIONAL SAFETY AND HEALTH LAWS AND REGULATIONS, INCLUDING WITHOUT LIMITATION, THOSE RELATED TO WORKING ON OR NEAR EXPOSED OR ENERGIZED ELECTRICAL LINES AND EQUIPMENT.

3. EXCAVATION PERMIT

THE CONTRACTOR SHALL OBTAIN AN EXCAVATION PERMIT FROM THE COUNTY TWO WEEKS PRIOR TO STARTING CONSTRUCTION. PLEASE REFER TO OUR REQUEST NUMBER AT THAT TIME. 1

4. CAUTION!!! ELECTRICAL HAZARD!!!

EXISTING HELCO OVERHEAD AND UNDERGROUND LINES ARE ENERGIZED AND WILL REMAIN ENERGIZED DURING CONSTRUCTION UNLESS PRIOR SPECIAL ARRANGEMENTS HAVE BEEN MADE WITH HELCO. ONLY HELCO PERSONNEL ARE TO HANDLE THESE ENERGIZED LINES AND ERECT TEMPORARY GUARDS TO PROTECT THESE LINES FROM DAMAGE. THE CONTRACTOR SHALL WORK CAUTIOUSLY AT ALL TIMES TO AVOID ACCIDENTS AND DAMAGE TO EXISTING HELCO FACILITIES, WHICH CAN RESULT IN ELECTROCUTION.

5. OVERHEAD LINES

STATE LAW REQUIRES THAT A WORKER AND THE LONGEST OBJECT HE OR SHE MAY CONTACT CANNOT COME CLOSER THAN A MINIMUM RADIAL CLEARANCE OF 10 FEET WHEN WORKING CLOSE TO OR UNDER ANY OVERHEAD LINES RATED 50KV AND BELOW. FOR EACH ADDITIONAL 1KV ABOVE 50KV, AN ADDITIONAL 0.4 INCH SHALL BE ADDED TO THE 10- FOOT CLEARANCE REQUIREMENT. THE PRECEDING INFORMATION ON LINE CLEARANCE REQUIREMENTS IS PROVIDED AS A CONVENIENCE AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO BE INFORMED OF AND COMPLY WITH ANY REVISIONS OR AMENDMENTS TO THE LAW.

SHOULD THE CONTRACTOR ANTICIPATE THAT HIS WORK WILL RESULT IN THE NEED TO ENCROACH WITHIN THE MINIMUM REQUIRED CLEARANCE AT ANY TIME, THE CONTRACTOR SHALL NOTIFY HELCO AT LEAST FOUR (4) WEEKS PRIOR TO THE PLANNED ENCROACHMENT SO THAT, IF FEASIBLE, THE NECESSARY PROTECTIONS (E.G. RELOCATE, DE- ENERGIZE, OR BLANKET HELCO LINES) CAN BE PUT IN PLACE. HELCO'S COST OF SAFEGUARDING ITS LINES WILL BE CHARGED TO THE CONTRACTOR.

CONTACT HELCO'S CUSTOMER INSTALLATIONS DEPARTMENT AT 969-6666 FOR ASSISTANCE IN IDENTIFYING AND SAFEGUARDING OVERHEAD POWER LINES. 1

REFER TO SECTION X OF HELCO'S ELECTRIC SERVICE INSTALLATION MANUAL FOR ADDITIONAL GUIDELINES WHEN WORKING AROUND HELCO'S FACILITIES. A COPY MAY BE OBTAINED FROM HELCO'S CUSTOMER INSTALLATIONS DEPARTMENT.

6. POLE BRACING

A MINIMUM CLEARANCE OF 10 FEET MUST BE MAINTAINED WHEN EXCAVATING AROUND UTILITY POLES AND/OR THEIR ANCHOR SYSTEM TO PREVENT WEAKENING OR POLE SUPPORT FAILURE. SHOULD WORK REQUIRE EXCAVATING WITHIN 10 FEET OF A POLE AND/OR ITS ANCHOR SYSTEM, THE CONTRACTOR SHALL PROTECT, SUPPORT, SECURE, AND TAKE ALL OTHER PRECAUTIONS TO PREVENT DAMAGE TO OR LEANING OF THESE POLES. THE CONTRACTOR IS RESPONSIBLE FOR ALL ASSOCIATED COSTS TO BRACE, REPAIR, OR STRAIGHTEN POLES. ALL MEANS OF STRUCTURAL SUPPORT FOR THE POLE PROPOSED BY THE CONTRACTOR SHALL FIRST BE REVIEWED BY HELCO BEFORE IMPLEMENTATION. FOR POLE BRACING INSTRUCTIONS, THE CONTRACTOR SHALL CALL THE HELCO CONSTRUCTION AND MAINTENANCE DEPT., SUPERINTENDENT A MINIMUM OF TWO (2) WEEKS IN ADVANCE. 1

7. UNDERGROUND LINES

THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHENEVER CONSTRUCTION CROSSES OR IS IN CLOSE PROXIMITY OF UNDERGROUND LINES. HELCO'S EXISTING ELECTRICAL CABLES ARE ENERGIZED AND WILL REMAIN ENERGIZED DURING CONSTRUCTION. ONLY HELCO PERSONNEL ARE TO BREAK INTO EXISTING HELCO FACILITIES, HANDLE THESE CABLES, AND ERECT TEMPORARY GUARDS TO PROTECT THESE CABLES FROM DAMAGE. THE COST OF HELCO'S ASSISTANCE IN PROVIDING PROPER SUPPORT AND PROTECTION OF ITS UNDERGROUND LINES WILL BE CHARGED TO THE CONTRACTOR. SPECIAL PRECAUTIONS ARE REQUIRED WHEN EXCAVATING NEAR HELCO'S 62KV UNDERGROUND LINES (SEE HELCO INSTRUCTIONS TO CONSULTANTS/CONTRACTORS ON "EXCAVATION NEAR HELCO'S UNDERGROUND 62KV LINES" FOR DETAILED REQUIREMENTS).

FOR VERIFICATION OF UNDERGROUND LINES, THE CONTRACTOR SHALL CALL ONE-CALL A MINIMUM OF 72 HOURS IN ADVANCE.

FOR ASSISTANCE IN PROVIDING PROPER SUPPORT AND PROTECTION OF THESE LINES, THE CONTRACTOR SHALL CALL HELCO'S CONSTRUCTION & MAINTENANCE DEPT., SUPERINTENDENT, A MINIMUM OF TWO (2) WEEKS IN ADVANCE. 1

8. UNDERGROUND FUEL PIPELINES

THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHENEVER CONSTRUCTION CROSSES OR IS IN CLOSE PROXIMITY OF HELCO'S UNDERGROUND FUEL OIL PIPELINES. SPECIAL PRECAUTIONS ARE REQUIRED WHEN EXCAVATING NEAR HELCO'S UNDERGROUND FUEL OIL PIPELINES (SEE HELCO INSTRUCTIONS TO CONSULTANTS/CONTRACTORS ON "EXCAVATION NEAR HELCO'S UNDERGROUND FUEL PIPELINES" FOR DETAILED REQUIREMENTS).

9. EXCAVATIONS

WHEN TRENCH EXCAVATION IS ADJACENT TO OR BENEATH HELCO'S EXISTING STRUCTURES OR FACILITIES, THE CONTRACTOR IS RESPONSIBLE FOR:

a) SHEETING AND BRACING THE EXCAVATION AND STABILIZING THE EXISTING GROUND TO RENDER IT SAFE AND SECURE AND TO PREVENT POSSIBLE SLIDES, CAVE-INS, AND SETTLEMENTS.
b) PROPERLY SUPPORTING EXISTING STRUCTURES OR FACILITIES WITH BEAMS, STRUTS, OR UNDER-PINNINGS TO FULLY PROTECT IT FROM DAMAGE.
c) BACKFILLING WITH PROPER BACKFILL MATERIAL INCLUDING SPECIAL THERMAL BACKFILL WHERE EXISTING (REFER TO ENGINEERING DEPARTMENT FOR THERMAL BACKFILL SPECIFICATIONS).

10. RELOCATION OF HELCO FACILITIES

ANY WORK REQUIRED TO RELOCATE OR MODIFY HELCO FACILITIES SHALL BE DONE BY HELCO, OR BY THE CONTRACTOR UNDER HELCO'S SUPERVISION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION, AND SHALL PROVIDE NECESSARY SUPPORT FOR HELCO'S WORK, WHICH MAY INCLUDE, BUT NOT BE LIMITED TO, EXCAVATION AND BACKFILL, PERMITS AND TRAFFIC CONTROL, BARRICADING, AND RESTORATION OF PAVEMENT, SIDEWALKS, AND OTHER FACILITIES.

ALL COSTS ASSOCIATED WITH ANY RELOCATION OR MODIFICATION (EITHER TEMPORARY OR PERMANENT) FOR THE CONVENIENCE OF THE CONTRACTOR, OR TO ENABLE THE CONTRACTOR TO PERFORM HIS WORK IN A SAFE AND EXPEDITIOUS MANNER IN FULFILLING HIS CONTRACT OBLIGATIONS SHALL BE BORNE BY THE CONTRACTOR.

11. CONFLICTS

ANY REDESIGN OR RELOCATION OF HELCO'S FACILITIES NOT SHOWN ON THE PLANS MAY BE CAUSE FOR LENGTHY DELAYS. THE CONTRACTOR ACKNOWLEDGES THAT HELCO IS NOT RESPONSIBLE FOR ANY DELAY OR DAMAGE THAT MAY ARISE AS A RESULT OF ANY CONFLICTS DISCOVERED OR IDENTIFIED WITH RESPECT TO THE LOCATION OR CONSTRUCTION OF HELCO'S ELECTRICAL FACILITIES IN THE FIELD, REGARDLESS OF WHETHER THE CONTRACTOR HAS MET THE REQUESTED MINIMUM ADVANCE NOTICES. IN ORDER TO MINIMIZE ANY DELAY OR IMPACT ARISING FROM SUCH CONFLICTS, HELCO SHOULD BE NOTIFIED IMMEDIATELY UPON DISCOVERY OR IDENTIFICATION OF SUCH CONFLICT.

12. DAMAGE TO HELCO FACILITIES

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL HELCO SURFACE AND SUBSURFACE UTILITIES AND SHALL BE RESPONSIBLE FOR ANY DAMAGES TO HELCO'S FACILITIES AS A RESULT OF HIS OPERATIONS. THE CONTRACTOR SHALL IMMEDIATELY REPORT SUCH DAMAGES TO HELCO'S TROUBLE DISPATCHER. REPAIR WORK SHALL BE DONE BY HELCO OR BY THE CONTRACTOR UNDER HELCO'S SUPERVISION COSTS FOR DAMAGES TO HELCO'S FACILITIES SHALL BE BORNE BY THE CONTRACTOR.

IN CASE OF DAMAGE OR SUSPECTED DAMAGE TO HELCO'S FUEL PIPELINE, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY HELCO'S TROUBLE DESK (969-6666) (A 24-HOUR NUMBER) SO HELCO PERSONNEL CAN SECURE THE DAMAGED SECTION AND REPORT ANY OIL SPILLS TO THE PROPER AUTHORITIES. ALL COSTS ASSOCIATED WITH THE DAMAGE, REPAIR, AND OIL SPILL CLEANUP SHALL BE BORNE BY THE CONTRACTOR. 1

13. HELCO STAND-BY PERSONNEL

THE CONTRACTOR MAY REQUEST HELCO TO PROVIDE AN INSPECTOR TO STAND-BY DURING CONSTRUCTION NEAR HELCO'S FACILITIES. THE COST OF SUCH INSPECTION WILL BE CHARGED TO THE CONTRACTOR.

THE CONTRACTOR SHALL CALL THE HELCO CONSTRUCTION AND MAINTENANCE DEPT., SUPERINTENDENT A MINIMUM OF 5 WORKING DAYS IN ADVANCE TO ARRANGE FOR HELCO STAND-BY PERSONNEL. 1

14. CLEARANCES

THE FOLLOWING CLEARANCES SHALL BE MAINTAINED BETWEEN HELCO'S DUCTLINE AND ALL ADJACENT STRUCTURES (CHARTED AND UNCHARTED) IN THE TRENCH:

STRUCTURE TYPE	MINIMUM CLEARANCE(INCHES)
WATER LINES, PARALLEL	36 (A)
WATER LINES, CROSSING	12 (B)
SEWER LINES, PARALLEL	36 (C)
SEWER LINES, CROSSING	24 (D)
DRAIN LINES, PARALLEL	12
DRAIN LINES, CROSSING	6 (E)
ELECTRICAL AND GAS LINES, PARALLEL	12
ELECTRICAL AND GAS LINES, CROSSING	12
TELEPHONE LINES, PARALLEL	6 (E)
TELEPHONE LINES, CROSSING	6 (E)
CHEVRON OIL LINES, PARALLEL	36
CHEVRON OIL LINES, CROSSING	48 BELOW OIL LINE (F)

A. THE MINIMUM HORIZONTAL CLEARANCES TO WATER LINES PARALLEL TO ELECTRICAL DUCTLINES MUST BE INCREASED TO 60 INCHES IF THE WATER LINE IS GREATER THAN 16 INCHES IN DIAMETER
B. THE MINIMUM VERTICAL CLEARANCES TO WATER LINES CROSSING ELECTRICAL DUCTLINES CAN BE REDUCED TO 6 INCHES IF THE ELECTRICAL DUCTLINE STRUCTURE IS CONCRETE ENCASED AND IS BELOW THE WATER LINE AND THE WATER LINE IS LESS THAN 16 INCHES IN DIAMETER.
C. A MINIMUM HORIZONTAL CLEARANCE OF 36 INCHES IS REQUIRED BETWEEN NEW HANDHOLES AND EXISTING SEWER LATERALS.
D. THE MINIMUM VERTICAL CLEARANCES TO SEWER PIPES CROSSING ELECTRICAL DUCTLINES CAN BE REDUCED TO 12 INCHES IF THE SEWER PIPE IS JACKETED IN CONCRETE.
E. THE MINIMUM CLEARANCES SHALL BE INCREASED TO 12 INCHES IF THE ELECTRICAL DUCTLINE IS DIRECT BURIED.
F. THE MINIMUM VERTICAL CLEARANCES TO OIL LINES CROSSING ELECTRICAL DUCTLINES CAN BE REDUCED TO 24 INCHES BELOW OIL LINES IF THE CROSSINGS ARE ENCASED IN 6 INCHES OF CONCRETE.
G. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER & HELCO OF ANY HEAT SOURCES (POWER CABLE DUCT BANK, STEAMLINE, ETC.) ENCOUNTERED THAT ARE NOT PROPERLY IDENTIFIED ON THE DRAWING.

THE FOLLOWING CLEARANCE SHALL BE MAINTAINED BETWEEN HELCO'S FUEL OIL PIPELINES AND ALL ADJACENT STRUCTURES: 24-INCHES, PARALLEL OR CROSSING. THE MINIMUM CLEARANCE CAN BE REDUCED TO 12 INCHEL (PARALLEL AND BELOW ONLY) IF THE STRUCTURE IS JACKETED IN CONCRETE.

15. INDEMNITY

THE CONTRACTOR SHALL INDEMNIFY, DEFEND AND HOLD HARMLESS HELCO FROM AND AGAINST ALL LOSSES, DAMAGES, CLAIMS, AND ACTIONS, INCLUDING BUT NOT LIMITED TO REASONABLE ATTORNEY'S FEES AND COSTS BASED UPON OR ARISING OUT OF DAMAGE TO PROPERTY OR INJURIES TO PERSONS, OR OTHER TORTIOUS ACTS CAUSED OR CONTRIBUTED TO BY CONTRACTOR OR ANYONE ACTING UNDER ITS DIRECTION OR CONTROL OR ON ITS BEHALF; PROVIDED CONTRACTOR'S INDEMNITY SHALL NOT BE APPLICABLE TO ANY LIABILITY BASED UPON THE SOLE NEGLIGENCE OF HELCO.

16. SCHEDULE

CONTRACTOR SHALL FURNISH HIS CONSTRUCTION SCHEDULE 22 WORKING DAYS PRIOR TO STARTING WORK ON HELCO FACILITIES. CONTRACTOR SHALL GIVE HELCO, IN WRITING 30 WORKING DAYS NOTICE TO PROCEED WITH HELCO'S PORTION OF WORK. 1

17. AUTHORITY

ALL CONSTRUCTION, RESTORATION WORK, AND INSPECTION SHALL BE SUBJECT TO WHICHEVER GOVERNMENTAL AGENCY HAS AUTHORITY OVER THE WORK.

18. SPECIFICATIONS

CONSTRUCTION OF HELCO'S UNDERGROUND FACILITIES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST REVISIONS OF HELCO SPECIFICATIONS CS7001, CS7003, CS7202, CS9301, AND CS9401 AND APPLICABLE HELCO STANDARDS.

19. CONSTRUCTION

CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, EQUIPMENT, AND SERVICES TO PROPERLY PERFORM AND FULLY COMPLETE ALL WORK SHOWN ON THE CONTRACT, DRAWINGS, AND SPECIFICATIONS. ALL MATERIALS SHALL BE NEW AND MANUFACTURED IN THE UNITED STATES OF AMERICA. ALL MANHOLE, HANDHOLE, AND DUCTLINE INSTALLATIONS SHALL BE INSPECTED AND APPROVED BY HELCO PRIOR TO EXCAVATION AND PRIOR TO PLACING CONCRETE. CONTRACTOR SHALL NOTIFY HELCO'S INSPECTION DIVISION AT 935-1171 AT LEAST 48 HOURS PRIOR TO PLACING CONCRETE.

CONTRACTOR TO COORDINATE WORK TO BREAK INTO HELCO'S EXISTING ELECTRICAL FACILITIES WITH HELCO'S UNDERGROUND DIVISION AT 935-1171 AT LEAST 10 WORKING DAYS IN ADVANCE. 1

20. STAKEOUT

THE CONTRACTOR SHALL ARRANGE FOR TONEOUTS OF ALL UNDERGROUND FACILITIES AND SHALL STAKEOUT ALL PROPOSED HELCO FACILITIES WITHIN THE PROJECT AREA SO AS TO NOT CONFLICT WITH ANY UTILITY (EXISTING OR PROPOSED) AND ANY PROPOSED CONSTRUCTION OR IMPROVEMENT WORK FOR VERIFICATION BY HELCO BEFORE PROCEEDING WITH HELCO WORK.

21. DUCTLINES

ALL DUCTLINE INSTALLATIONS SHALL BE PVC SCHEDULE 40 ENCASED IN CONCRETE, UNLESS OTHERWISE NOTED. ALL COMPLETED DUCTLINES SHALL BE MANDREL TESTED BY THE CONTRACTOR IN THE PRESENCE OF HELCO'S INSPECTOR USING HELCO'S STANDARD PRACTICE. THE CONTRACTOR SHALL INSTALL A 1/8" POLYOLEFIN PULL LINE IN ALL COMPLETED DUCTLINES AFTER MANDREL TESTING IS COMPLETE.

22. JOINT POLE REMOVAL

THE LAST JOINT POLE OCCUPANT OFF THE POLES SHALL REMOVE THE POLES.

23. AS-BUILT PLANS

THE CONTRACTOR SHALL PROVIDE HELCO WITH TWO SETS OF AS-BUILT REPRODUCIBLE TRACINGS SHOWING THE OFFSETS, STATIONING, AND VERTICAL ELEVATION OF THE DUCT LINE(S) CONSTRUCTED.

REVISION DATE	DESCRIPTION	MADE BY	APPROVED
1 3/8/12	REVISED HELCO NOTES	GDT	

Community Planning and Engineering, Inc.
Engineering Design | Construction Management | Infrastructure Planning
1100 Alakea Street, Sixth Floor Honolulu, Hawaii

LALAMILO HOUSING
PHASE 2A, INCREMENT 1
WAIMEA, SOUTH KOHALA, HAWAII
SUBD. FILE NO. SUB-07-000603
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS
TAX MAP KEY: 6-6-01: 77

HELCO NOTES

STEVEN H. SAKAI
LICENSED PROFESSIONAL ENGINEER
No. 7637-E
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: 04/30/12

DRAWN BY: CAD | ENGINEER: GDT | CHECKED BY: SS

APPROVED:

DATE DATE

DATE DATE

FILE	POCKET	FOLDER	NO.

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NOTES:

1. ELECTRICAL WARNING TAPE–HEAVY GAUGE 4 MIL, RED WITH BLACK LETTERING, 3" WIDE, "BURIED ELECTRIC LINE BELOW–CAUTION" @ DIRECT BURIED CONDUITS.
2. "CAUTION" WARNING TAPE REQUIRED OVER ENTIRE LENGTH OF ALL CONDUITS.
3. 3" SEPARATION REQUIRED BETWEEN ELECTRICAL AND TELEPHONE CONDUITS WITHIN CONCRETE ENCASEMENT.
4. CONTRACTOR TO MAINTAIN MIN. 8" SEPERATION FROM DUCTLINE TO PROPERTY LINE/EASEMENT.
5. SEE DISTRIBUTION PLANS FOR DUCT QUANTITY.
6. CONTRACTOR TO CONSTRUCT HELCO FACILITIES PER HELCO DRAWING 10-E-464. SEE GENERAL NOTE ON SHEET E-1.

BACKFILL NOTES:

TYPE "A" BACKFILL – EARTH & GRAVEL. ROCK SIZE TO BE 1" MAX & THE MIXTURE TO CONTAIN NOT MORE THAN 50% BY VOLUME OF ROCK PARTICLES. THE MATERIAL SHALL BE NONEXPANSIVE. 95% COMPACTION.

TYPE "B" BACKFILL – EARTH & GRAVEL. MIXTURE MUST PASS A 1/2" MESH SCREEN & CONTAIN NOT MORE THAN 20% BY VOLUME OF ROCK PARTICLES. 95% COMPACTION.

NOTE – IF NORMAL MATERIAL AT BOTTOM OF TRENCH IS NOT TYPE "B", AN ADDITIONAL 3" SHALL BE EXCAVATED & TYPE "B" BACKFILL PROVIDED.

CONCRETE – 3" ENCASEMENT, 2500 PSI COMPRESSIVE STRENGTH @ 28 DAYS.

TYPICAL DUCT SECTIONS I

NOT TO SCALE

STEVEN H. SAKAI LICENSED PROFESSIONAL ENGINEER No. 7637-E 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: 04/30/12

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1 3/8/12	ADD HELCO NOTE	GDT	

Community Planning and Engineering, Inc.
Engineering Design | Construction Management | Infrastructure Planning
1100 Alakea Street, Sixth Floor Honolulu, Hawaii

LALAMILO HOUSING
PHASE 2A, INCREMENT 1
WAIMEA, SOUTH KOHALA, HAWAII
SUBD. FILE NO. SUB-07-000603
OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS
TAX MAP KEY: 6-6-01: 77

TYPICAL DUCT SECTIONS I

DRAWN BY: CAD | ENGINEER: GDT | CHECKED BY: SS

APPROVED:

DATE DATE

SANDWICH ISLES COMMUNICATIONS, INC. DATE DATE

DWG. NO. E-8 SHEET 63 OF 70 SHEETS

FILE	POCKET	FOLDER	NO.

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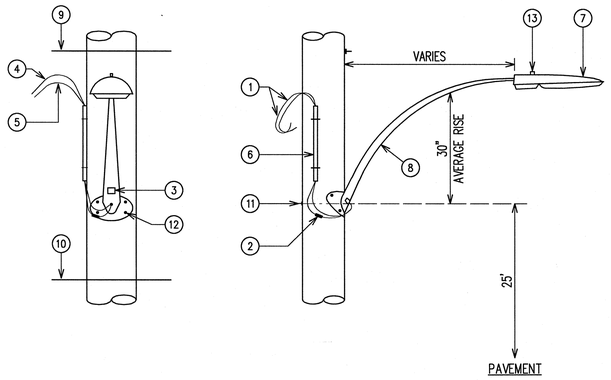
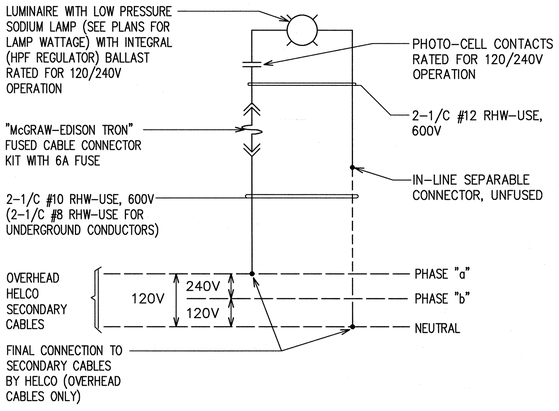


1. NO. 12 AWG–RHW, BLACK AND WHITE COPPER WIRE.
2. IN–LINE FUSE HOLDER AND FUSE (6 AMP) FOR NO. 12 AWG COPPER WIRE ON LOAD SIDE.
3. 2" X 2" REFLECTORIZED GREEN STICKER, SIGNIFYING THAT STREET LIGHTS ARE BONDED.
4. NO. 12 AWG–RHW BLACK, SINGLE CONDUCTOR COPPER WIRE. MINIMUM 3'.
5. NO. 12 AWG–RHW WHITE, SINGLE CONDUCTOR COPPER WIRE. MINIMUM 3'.
6. $^{3}/_{4}$" SCHED 80 PVC WITH CONDUIT STRAPS.
7. LUMINAIRE.
8. TAPERED ELLIPTICAL ALUMINUM MOUNTING BRACKET.
9. SECONDARY BY HELCO.
10. HTCO LINES.
11. MACHINE BOLT, $^{5}/_{8}$" X REQUIRED LENGTH.
12. LAG SCREW, $^{1}/_{2}$" X 4".
13. PHOTOCELL.

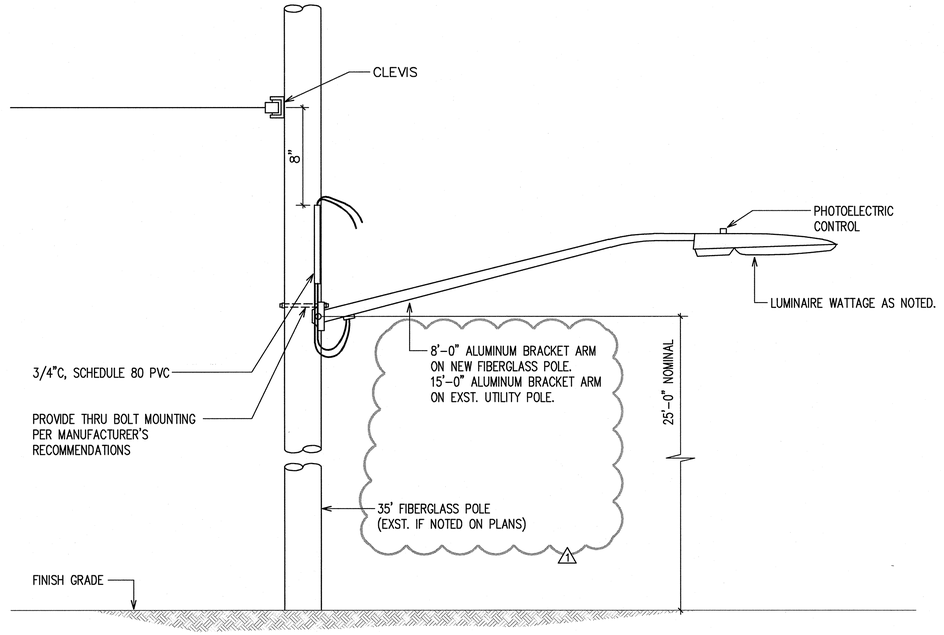
NOTE: FINAL CONNECTIONS TO BE MADE BY HAWAII ELECTRIC LIGHT CO.

A / E–4 OVERHEAD WIRING INSTALLATION

NOT TO SCALE (MULTIPLE CONNECTION TO HELCO SECONDARY)



B / E–4 TYPICAL SINGLE STREET LIGHT LUMINAIRE CONNECTION DIAGRAM



C / E–4 STREET LIGHT STANDARD

NOT TO SCALE

STREET LIGHT NOTES:

1. NO CHANGES WILL BE ALLOWED WITHOUT PRIOR APPROVAL FROM TRAFFIC DIVISION.
2. ALL STREET LIGHT IDENTIFICATION TAG NUMBERING FOR METAL POLES SHALL START WITH "1" AND CONTINUE NUMERICALLY FOR EACH STREET IN THE SUBDIVISION. ALL STREET LIGHT I.D. TAG NUMBERING FOR WOODEN POLES SHALL BE IN ACCORDANCE WITH HELCO'S NUMBERING SYSTEM.
3. CONTRACTOR SHALL PROVIDE ALL NECESSARY SECONDARY CIRCUIT EXTENSIONS TO THE NEAREST HELCO SECONDARY. IF THE STREETLIGHTS ARE INSTALLED BEFORE HELCO INSTALLS THEIR SECONDARY, THE CONTRACTOR IS RESPONSIBLE FOR COORDINATION AND INFORMING HELCO OF STREET LIGHT LOCATIONS AND POLE CONTACTS.
4. FOR FINAL INSPECTION APPROVAL: ANY SUBDIVISION WITH TWO (2) OR MORE STREET LIGHTS–DEVELOPER SHALL SET UP ACCOUNT WITH HELCO – PROVIDING STREET NAME(S), POLE NUMBERS, WATTAGES, AND BILLING ADDRESS TO ENERGIZE LIGHTS IN SUBDIVISION. DEVELOPER WILL ALSO BE RESPONSIBLE FOR ENERGY COST UNTIL STREET(S) ARE DEDICATED TO COUNTY WHERE UPON BILLING WILL BE TRANSFERED TO COUNTY.
5. CONTRACTOR SHALL INSCRIBE THE MONTH AND YEAR OF INSTALLATION ON PHOTOCELLS AND LAMPS. ALL P.E.'S SHALL HAVE THE NORTH INDEX FACING NORTH.
6. ALL LABOR AND MATERIALS SHALL BE WARRANTED FOR A MINIMUM OF ONE YEAR FROM DATE OF FINAL APPROVAL.
7. ACCEPTABLE STREET LIGHT MATERIALS:
   A. LUMINARIES: MUST HAVE PE RECEPTACLE AND HPF BALLAST.
      VISIONAIRE LIGHTING: (REQUIRED FIXTURE IN KONA AND KOHALA DISTRICTS.)
      RDW–1 (55W), RDW–2 (90W), RDW–3 (180W). GREY FINISH (GY), AND REMOVABLE BALLAST TRAY (RBT)
      AMERICAN ELECTRIC: (NOT FOR USE IN KONA AND KOHALA DISTRICTS)
      SRX–55, SP2–90, SP2–180 WITH POLYCARBONATE SEMI–CUTOFF LENS.
   B. PHOTOCELLS: COMPLETELY SOLID STATE. FAIL "ON".
      FISHER PIERCE: FP–7790B SPS
   C. ALUMINUM POLES: INTERNAL MOUNTED VIBRATION DAMPER, MIN. 0.188 WALL THICKNESS. MUST BE APPROVED BY F.H.W.A. AND IN COMPLIANCE WITH THE 2001 AMENDED AND ADOPTED AASHTO SPECIFICATIONS. 10–12 INCH BASE BOLT CIRCLE. ARM LENGTH SHALL BE PER PLAN.
      LEXINGTON: 2708–45806T4 , 2208–45806T4
      HAPCO: B78382–001, B78382–002, B76205–001, B76205–002 73892–001, 73892–002, 73892–003.
   D. TRANSFORMER BASES: ALUMINUM WITH 15" BASE BOLT CIRCLE. MUST BE APPROVED BY F.H.W.A. TO BE IN COMPLIANCE WITH THE 2001 AMENDED AND ADOPTED AASHTO BREAK AWAY SPECIFICATIONS.
      LEXINGTON 08R–1315B–17
      AKRON FOUNDRY TB1–17
   E. FIBERGLASS POLES:
      COMPOSITE MATERIALS TECHNOLOGY––HI–MB33–K–50–SE8–OHS–PC–MH
   F. WIRE: RHW–STRANDED–SIZE SHALL BE PER PLAN. WHITE TAPE DENOTING NEUTRAL SHALL BE A MINIMUM OF 12".
8. A SCALED DRAWING OF STREET LIGHT LOCATIONS (PREFER ON ONE SHEET) AND DETAILS OF FIXTURE MOUNTING, LUMINARIES TYPE, ARM LENGTH, IDENTIFICATION TAGS. IF UNDERGROUND––CIRCUITS, FOUNDATION, BASE AND POLES WILL BE SUBMITTED TO THE TRAFFIC DIVISION AFTER PLAN APPROVAL AND BEFORE CONSTRUCTION BEGINS.
9. SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL BY TRAFFIC DIVISION.
10. ANY STREET LIGHT(S) REQUIRED ON EXISTING POLE(S) SHALL BE INSTALLED BY TRAFFIC DIVISION AT A COST OF $2,500.00 PER LIGHT, DEVELOPER WILL SUBMIT CHECK––PAYABLE TO COUNTY FINANCE DIRECTOR–ALONG WITH SUBDIVISION NUMBER, DPW FOLDER NAME, TAX KEY AND POLE NUMBER(S).
11. WHEN STREET LIGHTS ARE INSTALLED ON ROADWAYS UNDER STATE JURISDICTION THE DEVELOPER SHALL SUBMIT PLANS TO THE STATE D.O.T. FOR APPROVAL. TRAFFIC DIVISION WILL INSTALL STREET LIGHTS ON EXISTING POLE(S) WITH COST DEPENDENT ON HEIGHT OF POLE.
12. ALL OVERHEAD WIRING STREET LIGHT FIXTURES SHALL BE BONDED TO THE NEUTRAL WIRE. ALL BONDED STREET LIGHT FIXTURES SHALL HAVE 2"X2" REFLECTIVE GREEN STICKER PLACED AT THE BASE OF WIRING OPENING ON ALUMINUM ARM, SIGNIFYING STREET LIGHTS ARE BONDED.
13. ALL UNDERGROUND WIRING STREET LIGHTS SHALL BE GROUNDED TO PROVIDE A MAXIMUM 25 OHMS TO GROUND.
14. ALL WORK SHALL CONFORM TO THE LATEST NATIONAL ELECTRICAL CODE.

REV. 11/09

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REVISION DATE	DESCRIPTION	MADE BY	APPROVED
1 3/8/12	ADD HELCO NOTE	GDT	

Community Planning and Engineering, Inc.
Engineering Design | Construction Management | Infrastructure Planning
1100 Alakea Street, Sixth Floor Honolulu, Hawaii

LALAMILO HOUSING PHASE 2A
KAWAIHAE ROAD IMPROVEMENTS AT SOUTH KOHALA DISTRIBUTION ROAD

WAIMEA, SOUTH KOHALA, HAWAII

OWNER & DEVELOPER: DEPARTMENT OF HAWAIIAN HOME LANDS

STREET LIGHT DETAILS

DRAWN BY: CAD	ENGINEER: GDT	CHECKED BY: SS

APPROVED:

DATE DATE

DATE DATE

STEVEN H. SAKAI LICENSED PROFESSIONAL ENGINEER No. 7637-E 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: 04/30/12

DWG. NO. E–4 SHEET 4 OF 4 SHEETS

FILE	POCKET	FOLDER	NO.

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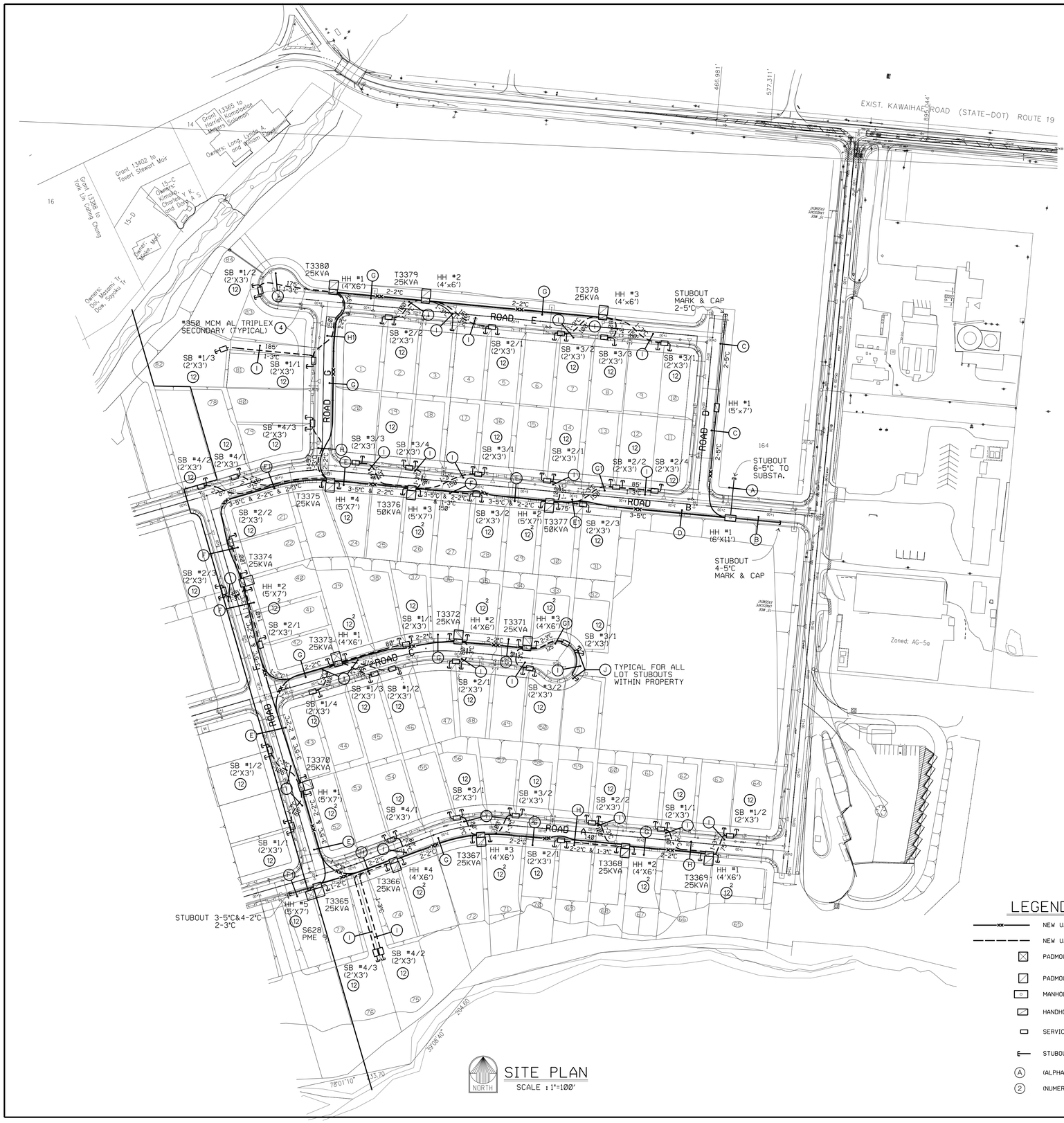
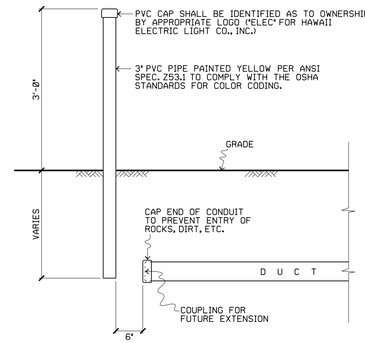
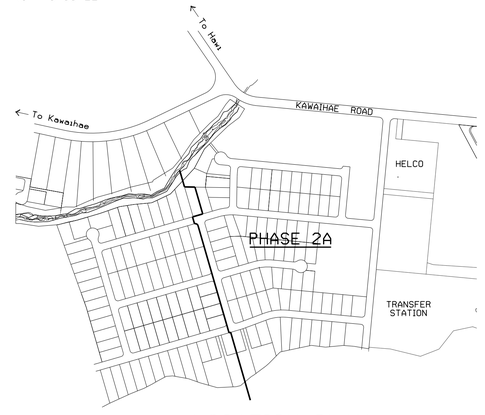


CUSTOMER NOTES

1. ALL WORK MUST BE COORDINATED WITH HELCO'S DISTRIBUTION DEPARTMENT AND IS SUBJECT TO HELCO INSPECTION. CONTRACTOR SHALL GIVE HELCO THREE (3) WORKING DAYS INSPECTION NOTICE PRIOR TO POURING OF CONCRETE OR BACKFILLING OF TRENCHES. PH. 935-1171(HILO), 327-0556(KONA), 327-0656(WAIMEA).
2. DO ALL NECESSARY EXCAVATION AND BACKFILLING OF DUCTLINES AS PER SPEC. NO. CS7001.
3. AS THE DESIGN OF THIS SERVICE WAS MADE FROM PRELIMINARY PROJECT DRAWINGS, ANY ADDITIONAL PULLBOXES OR HANDHOLES REQUIRED DUE TO CHANGES IN GRADE/DIRECTION WILL BE FURNISHED AND INSTALLED BY THE CUSTOMER.
4. BENDS DUE TO CHANGES OF GRADE/DIRECTION ARE TO HAVE A MINIMUM RADIUS OF 20'-0".
5. FURNISH AND INSTALL SCHEDULE 40 PVC CONDUITS AS NOTED ON THIS DRAWING.
6. FURNISH AND INSTALL PULLBOXES/HANDHOLES AS NOTED ON THIS DRAWING.
7. ALL DUCTLINES SHALL CONTAIN A 1800# MULE TAPE (L.H. DOTTIE CO. CAT. NO. DWP 3001 OR EQUVALENT).
8. ALL CONDUITS SHALL BE REAMED WITH A MANDREL 1/2" SMALLER IN DIAMETER THAN THE CONDUIT. DUCTS SHALL BE SWABBED AND CLEARED OF ALL BURRS AND FOREIGN MATERIAL.
9. ALL LATERALS NOTED SHALL BE INSTALLED IN ACCORDANCE WITH DRAWING NO. 22-1007 OF THE HECO UNDERGROUND CONSTRUCTION STANDARDS UNLESS OTHERWISE NOTED.
10. PREPARE ALL VAULT SITES AND FURNISH AND INSTALL THE CONCRETE TRANSFORMER/PME SWITCHGEAR PADS AS SPECIFIED.
11. CUSTOMER/CONTRACTOR SHALL NOT OPEN OR ENTER HELCO'S HANDHOLES AND MANHOLES. CUSTOMER/CONTRACTOR TO CONTACT HELCO'S INSPECTION DIVISION FOR ASSISTANCE.
12. ANY QUESTIONS AS TO THE RESPONSIBILITY OF ANY WORK NOT SPECIFICALLY COVERED IN THESE SPECIFICATIONS SHALL BE CLEARED WITH HELCO'S ENGINEERING DEPARTMENT.



STUBOUT LOCATION MARKER
TYPICAL FOR STUBOUTS
NOT TO SCALE



LOCATION PLAN
NOT TO SCALE

LEGEND

- NEW U.G. PRIMARY
- NEW U.G. SECONDARY
- PADMOUNTED SWITCHGEAR : PME PAD PER DETAIL BY CUSTOMER; VACUUM SWITCH PAD PER DETAIL BY CUSTOMER
- PADMOUNTED TRANSFORMER : PAD PER DETAIL BY CUSTOMER
- MANHOLE : 6' x 11' MANHOLE PER STD. DWG. NO. 892003, 892004, & 922003-C BY CUSTOMER
- HANDHOLE : 5' x 7' V HANDHOLE PER STD. DWG. NO. 892001 & 892004 BY CUSTOMER; 4' x 6' V HANDHOLE PER STD. DWG. NO. 892001 & 892004 BY CUSTOMER
- SERVICE BOX : 2' x 4' SERVICE BOX PER STD. NO. 30-2005 & 30-2005A BY CUSTOMER; 2' x 3' NON-CONCRETE SERVICE BOX PER STD. DWG. NO. 30-2006 BY CUSTOMER
- STUBOUTS FOR FUTURE CONNECTION
- (A) (ALPHA) DETAIL BY CUSTOMER-REFER TO ATTACHMENTS
- (2) (NUMERIC) HELCO SMU

NO.	DATE	REVISIONS	BY	CHK'D	APP'D
3	12/14/11	REVISED PER COMMENTS BY CONSULTANT.	MM	RVR	RVR
2	11/15/11	REVISED PER COMMENTS BY CONSULTANT.	MM	RVR	RVR
1	11/3/11	REVISED PER COMMENTS BY CONSULTANT.	MM	RVR	RVR

LALAMILO HOUSING PH 2A
LALAMILO, S. KOHALA
UNDERGROUND DISTRIBUTION SYSTEM

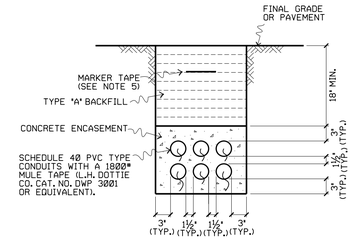
DESIGNED	MM	DRAWN	KO	DATE	10/7/11	SCALE	AS NOTED
CHECKED	ELEC.	MECH.	STRUC.	CIVIL			

HAWAII ELECTRIC LIGHT CO., INC.
ENGINEERING DEPARTMENT
HILO, HAWAII

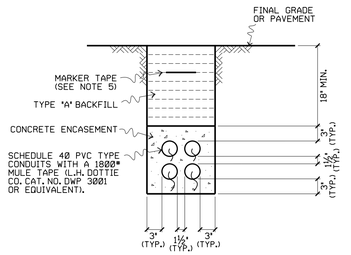
APPROVAL
10/12/11

DRAWING NUMBER
10-E-464
SHEET 1 OF 4

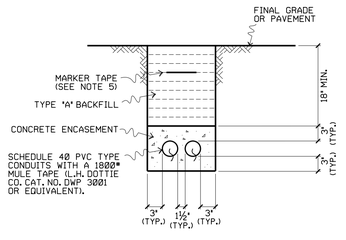
P.W.O. NO.	J.P. NO.	PROJ. NO.	T.M.K.
H0047287		H	6-6-1:77



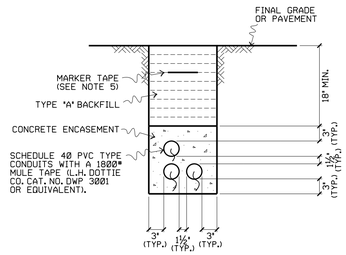
DETAIL A - 6-5"C



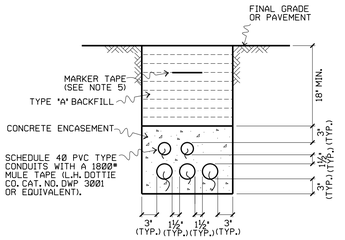
DETAIL B - 4-5"C



DETAIL C - 2-5"C



DETAIL D - 3-5"C



DETAIL E - 3-5"C & 2-2"C
DETAIL E1 - 3-5"C & 2-3"C

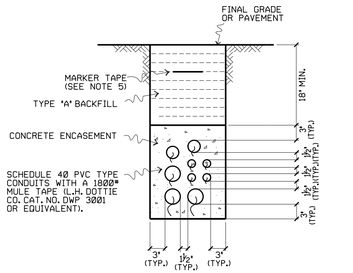
NOTES :

1. DUCT LINE SHOULD BE LAID OUT PARALLEL TO THE CENTER OF ROAD WHERE POSSIBLE.
2. KEEP DUCT LINE SQUARE TO THE WINDOW FACE WHEN ENTERING HANDHOLES.
3. CONCRETE NOTES :
   a) CONCRETE STRENGTH 2,500 P.S.I. IN 28 DAYS.
   b) MAXIMUM AGGREGATE FOR DUCT LINE CONCRETE - ¾".
4. IF THE NORMAL MATERIAL IN THE BOTTOM OF THE TRENCH IS NOT TYPE 'B', AN ADDITIONAL 3" SHALL BE EXCAVATED AND THE TYPE 'B' BACKFILL SHALL BE PROVIDED.
5. BACKFILL :

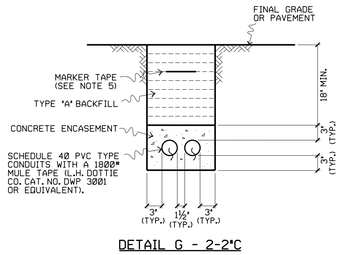
   TYPE 'A' - BEACH SAND, EARTH OR EARTH & GRAVEL. IF EARTH & GRAVEL, THE MAXIMUM ROCK SIZE SHALL BE 1" AND THE MIXTURE SHALL CONTAIN NOT MORE THAN 50% BY VOLUME OF ROCK PARTICLES.

   TYPE 'B' - BEACH SAND, EARTH OR EARTH & GRAVEL. IF EARTH & GRAVEL, THE MIXTURE MUST PASS A ½" MESH SCREEN AND CONTAIN NOT MORE THAN 20% BY VOLUME OF ROCK PARTICLES. CORAL, CORAL WASTE MATERIAL OR CINDER MATERIAL WILL NOT BE ACCEPTABLE.

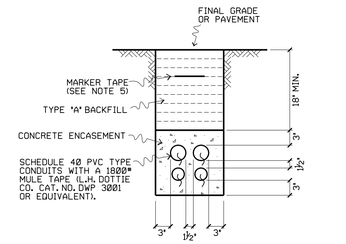
6. ELECTRICAL WARNING MARKER TAPE IS REQUIRED ABOVE ALL DIRECT-BURIED CONDUITS, AND FOR CONCRETE-ENCASED CONDUITS IN THE STATE HIGHWAY RIGHT-OF-WAY. PLACE MARKER TAPE 12 INCHES ABOVE BACKFILL OR ENCASEMENTS. MARKER TAPE MUST CONFORM TO HECO SPECIFICATION M0302.



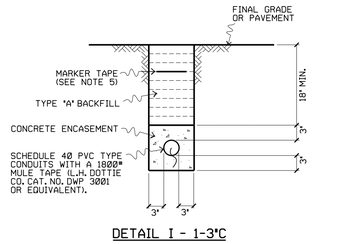
DETAIL F - 3-5"C & 2-2"C & 1-3"C
⚠ DETAIL F1 - 3-5"C & 4-2"C & 2-3"C



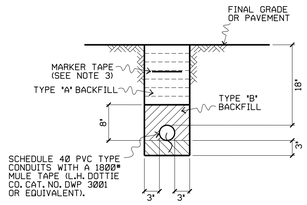
DETAIL G - 2-2"C
DETAIL G1 - 2-3"C



DETAIL H - 2-2"C & 1-3"C
DETAIL H1 - 2-2"C & 2-3"C



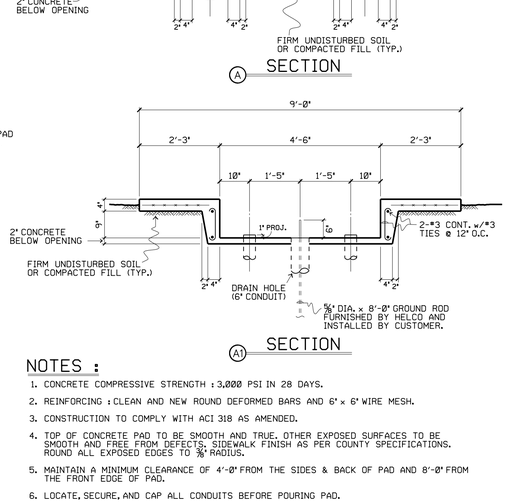
DETAIL I - 1-3"C



DETAIL J - 1-3"C

DUCT LINE & TRENCHING DETAILS

NOT TO SCALE



2-4" & 6-2" CONDUITS WITH 36" RADIUS BENDS.
CAP OR PLUG ALL DUCT OPENINGS.

PLAN

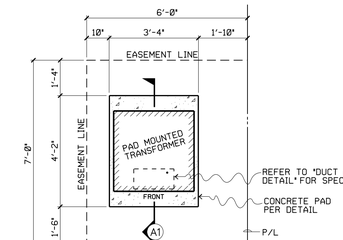
A1 SECTION

NOTES :

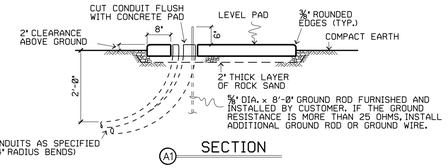
1. CONCRETE COMPRESSIVE STRENGTH : 3,000 PSI IN 28 DAYS.
2. REINFORCING : CLEAN AND NEW ROUND DEFORMED BARS AND 6" x 6" WIRE MESH.
3. CONSTRUCTION TO COMPLY WITH ACI 318 AS AMENDED.
4. TOP OF CONCRETE PAD TO BE SMOOTH AND TRUE. OTHER EXPOSED SURFACES TO BE SMOOTH AND FREE FROM DEFECTS. SIDEWALK FINISH AS PER COUNTY SPECIFICATIONS. ROUND ALL EXPOSED EDGES TO ⅞" RADIUS.
5. MAINTAIN A MINIMUM CLEARANCE OF 4'-0" FROM THE SIDES & BACK OF PAD AND 8'-0" FROM THE FRONT EDGE OF PAD.
6. LOCATE, SECURE, AND CAP ALL CONDUITS BEFORE POURING PAD.
7. IF THE GROUND RESISTANCE IS MORE THAN 25 OHMS, INSTALL ADDITIONAL GROUND RODS OR GROUND WIRE.

PME-9 SWITCHGEAR CONCRETE PAD DETAILS

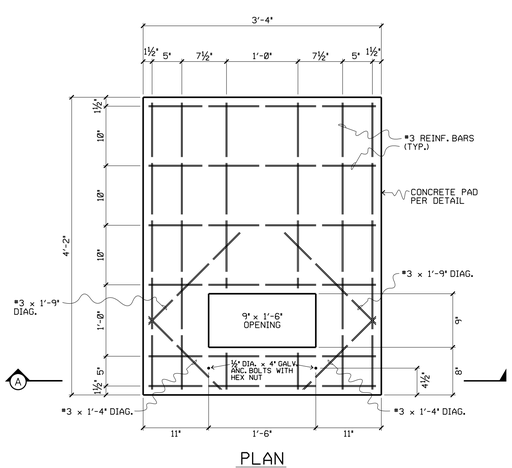
NOT TO SCALE



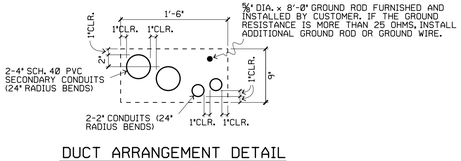
PLAN



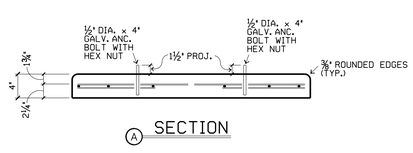
A1 SECTION



PLAN



DUCT ARRANGEMENT DETAIL



A SECTION

NOTES :

1. COMPRESSIVE STRENGTH : 3,000 PSI IN 28 DAYS.
2. REINFORCING : CLEAN, NEW ROUND DEFORMED BARS.
3. CONSTRUCTION TO COMPLY WITH ACI 318 AS AMENDED.
4. TOP OF CONCRETE PAD TO BE SMOOTH AND TRUE. OTHER EXPOSED SURFACES TO BE SMOOTH AND FREE FROM DEFECTS. SIDEWALK FINISH AS PER COUNTY SPECIFICATIONS. ROUND ALL EXPOSED EDGES TO ⅞" RADIUS.
5. GRADE AND COMPACT THE PAD SITE SO THAT THE HIGHER FRONT CORNER MATCHES THE CONCRETE SIDEWALK GRADE. THE LOT SHALL HAVE A SLOPE NOT GREATER THAN ½" PER FOOT TOWARD THE SIDEWALK.
6. GRADE SUFFICIENTLY AROUND THE LOT SITE TO PREVENT DEBRIS FROM FALLING IN OR EROSION OF THE LOT. WHEN REQUIRED, THE CUSTOMER SHALL CONSTRUCT A RETAINING WALL OF SUITABLE MATERIAL.
7. COMPACT BY ROLLING THE LOT SITE IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR COMPACTING SIDEWALK AREA.
8. FURNISH AND INSTALL CONDUITS ENCASED AS SPECIFIED FROM TRANSFORMER PAD TO HANDHOLE.
9. EXCAVATE AN AREA 3'-8" x 4'-6" x 2' DEEP AFTER LOT IS COMPACTED. THIS AREA SHALL BE FILLED WITH #4 LAVA ROCK.
10. REFER TO CONCRETE PAD DETAIL.
11. REFER TO PROJECT DRAWING FOR ADDITIONAL SPECIFICATIONS.
12. MAINTAIN A MINIMUM CLEARANCE OF 2'-0" FROM THE SIDES & BACK OF PAD AND 8'-0" FROM THE FRONT OF PAD.
13. TRANSFORMER PAD MAY BE CASTED IN PLACE OR PRE-CASTED. HELCO INSPECTION IS REQUIRED PRIOR TO AND DURING POURING OF CONCRETE.

1-PHASE PADMOUNTED TRANSFORMER CONCRETE PAD DETAILS

NOT TO SCALE

NO.	DATE	REVISIONS	BY	CHK'D	APP'D
⚠	11/3/11	REVISED TO ADD TRENCH DETAIL.	MM	RVR	

LALAMILO HOUSING PH 2A
LALAMILO, S. KOHALA
UNDERGROUND DISTRIBUTION SYSTEM

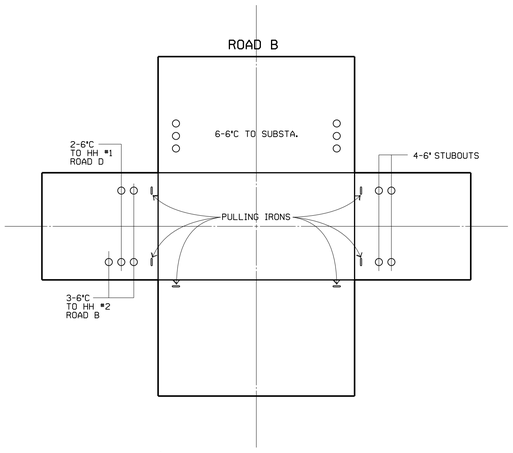
DESIGNED	MM	DRAWN	KO	DATE	10/11/11	SCALE	AS NOTED
CHECKED	ELEC.	MECH.	STRUC.	CIVIL			

HAWAII ELECTRIC LIGHT CO., INC.
ENGINEERING DEPARTMENT
HILO, HAWAII

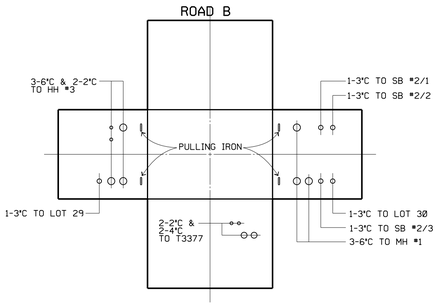
APPROVAL
10/12/11

DRAWING NUMBER
10-E-464
SHEET 2 OF 4

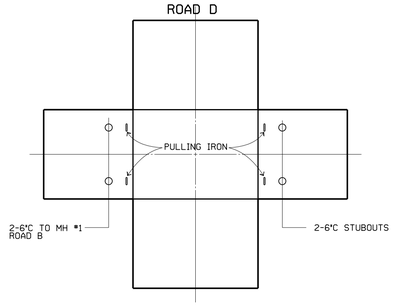
P.W.O. NO.	J.P. NO.	PROJ. NO.	T.M.K.
H0047287		H	6-6-1:77



1 ROAD "B" MANHOLE NO. 1
(6'X11')



1 ROAD "B" HANDHOLE NO. 2
(5'X7')



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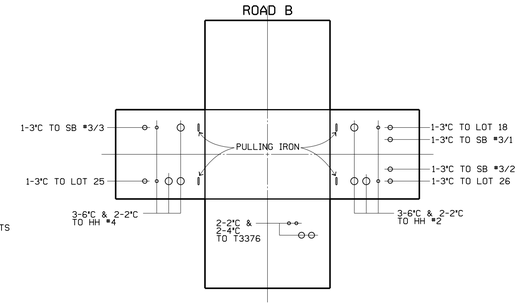
(5'X7')



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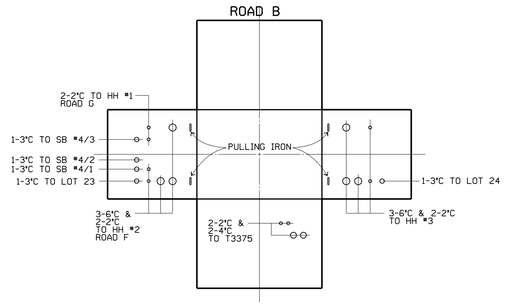
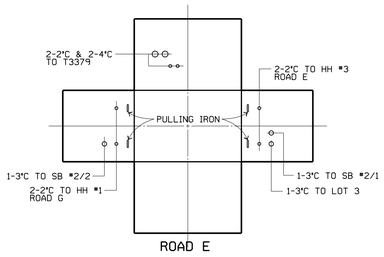
(5'X7')



3 1 ROAD "B" HANDHOLE NO. 4
(5'X7')



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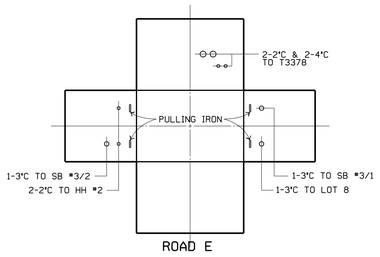
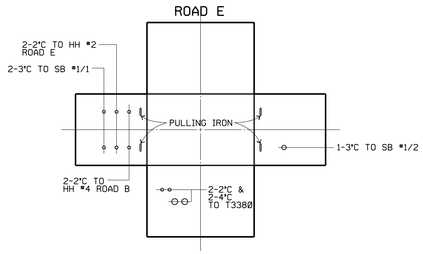
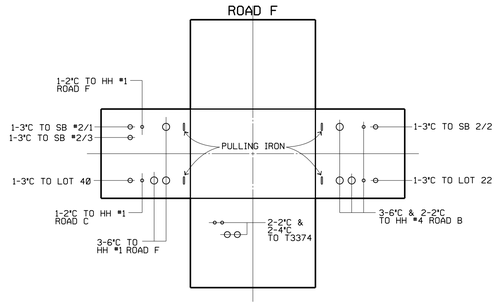
(4'X6')



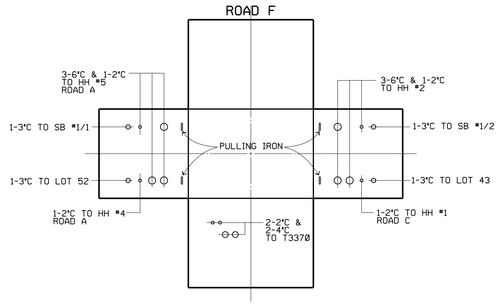
1 ROAD "E" HANDHOLE NO. 3
(4'X6')



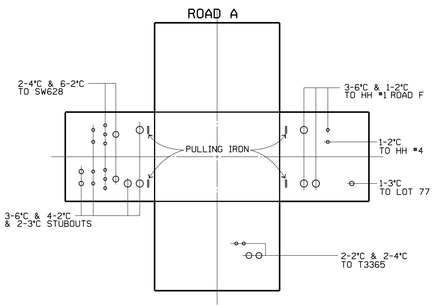
2 1 ROAD "E" HANDHOLE NO. 1
(4'X6')



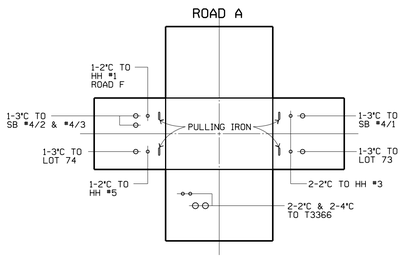
3 1 ROAD "F" HANDHOLE NO. 2
(5'X7')



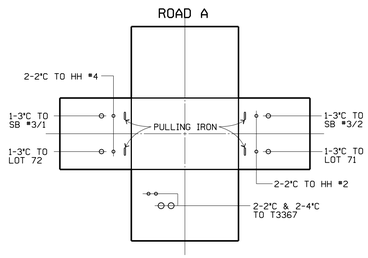
1 ROAD "F" HANDHOLE NO. 1
(5'X7')



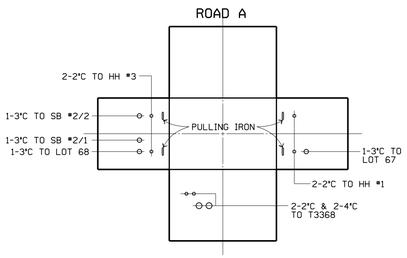
1 ROAD "A" HANDHOLE NO. 5
(5'X7')



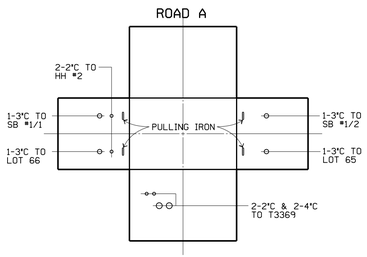
1 ROAD "A" HANDHOLE NO. 4
(4'X6')



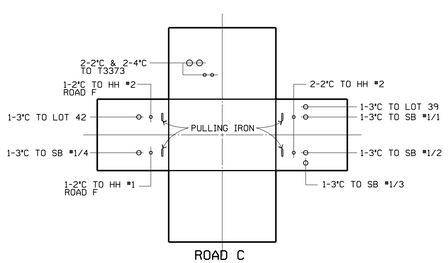
ROAD "A" HANDHOLE NO. 3
(4'X6')



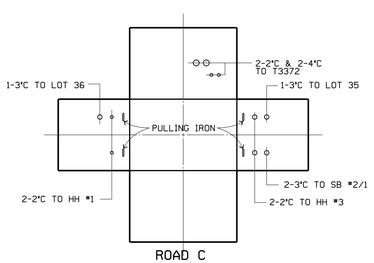
ROAD "A" HANDHOLE NO. 2
(4'X6')



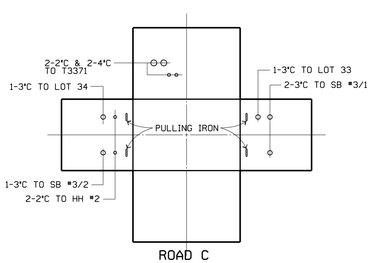
ROD "A" HANDHOLE NO. 1
(4'X6')



3 2 1 ROAD "C" HANDHOLE NO. 1
(4'X6')



ROAD "C" HANDHOLE NO. 2
(4'X6')



1 ROAD "C" HANDHOLE NO. 3
(4'X6')

NO.	DATE	REVISIONS	BY	CHK'D	APP'D
3	12/14/11	REVISED PER COMMENTS BY CONSULTANT.	MM	RVR	
2	11/15/11	REVISED PER COMMENTS BY CONSULTANT.	MM	RVR	
1	11/3/11	REVISED BUTTERFLIES PER REV 1 SHT 1.	MM	RVR	

LALAMILO HOUSING PH 2A
LALAMILO, S. KOHALA
UNDERGROUND DISTRIBUTION SYSTEM

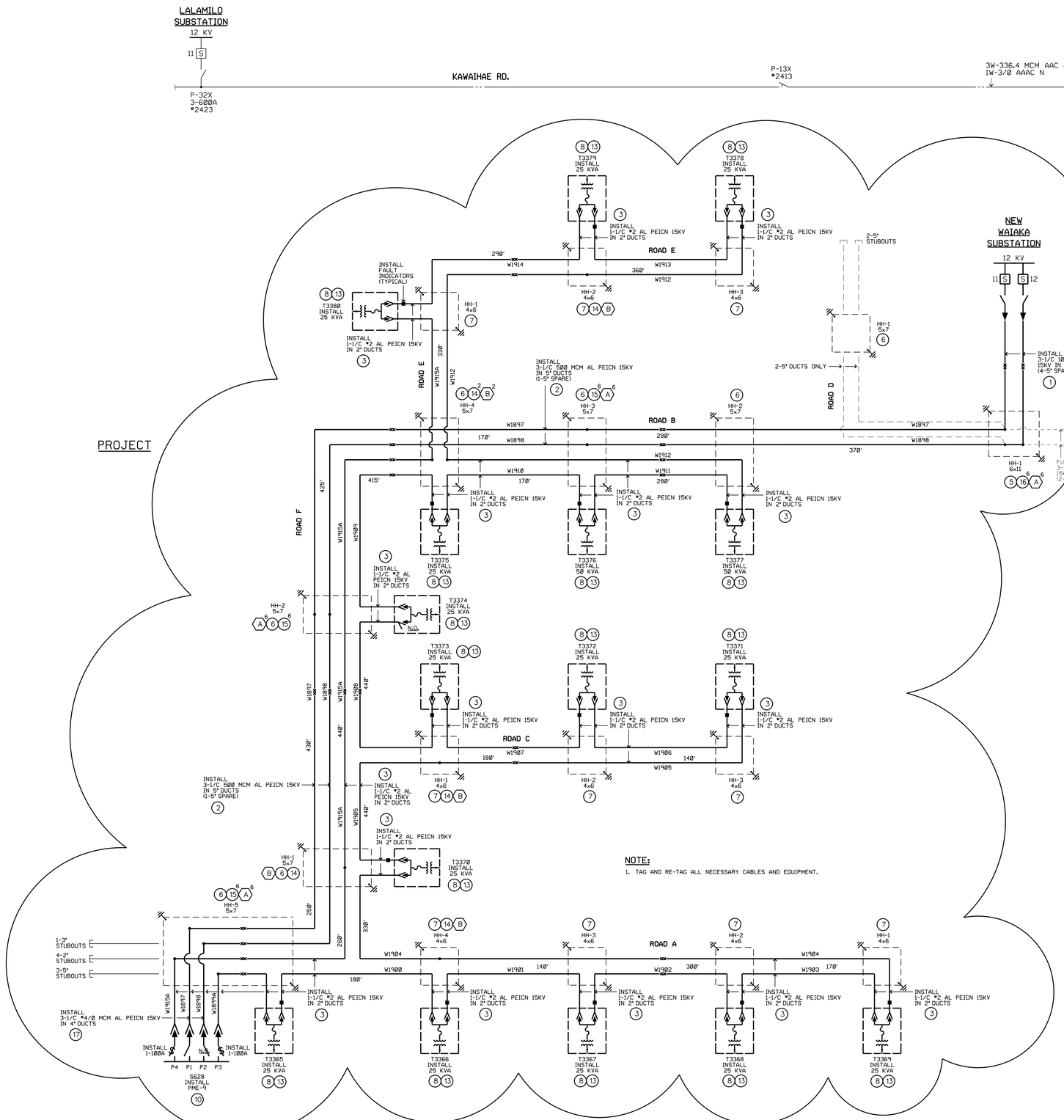
DESIGNED MM		DRAWN KO		DATE 10/11/11	SCALE AS NOTED
CHECKED	ELEC.	MECH.	STRUC.	CIVIL	

HAWAII ELECTRIC LIGHT CO., INC.
ENGINEERING DEPARTMENT
HILO, HAWAII

APPROVAL
10/12/11

DRAWING NUMBER
10-E-464
SHEET 3 OF 4

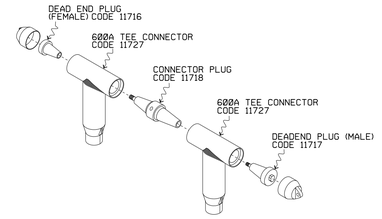
P.W.O. NO.	J.P. NO.	PROJ. NO.	T.M.K.
H0047287		H	6-6-1:77



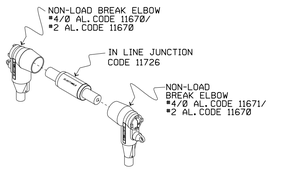
SINGLE LINE DIAGRAM
NOT TO SCALE

NOTE:
1. TAG AND RE-TAG ALL NECESSARY CABLES AND EQUIPMENT.

LINE	SMU NO.		QTY.
1	C187534	(3-1/C #1000 KCMIL AL)	400'
2	C114868	(3-1/C #500 MCM AL PEICN)	4260'
3	C114827	(1/C #2 AL PEICN)	8575'
3, 1	4 C115386	(#350 MCM AL TRIPLEX)	5735'
5	21-1046-1H	(GRD & RACK 6'X11' MH)	1
6	21-1046-2H	(GRD & RACK 5'X7' HH)	6
7	21-1046-3H	(GRD & RACK 4'X6' HH)	10
8	23-1022-H1		15
9	23-1022-H2	(OPEN POINT)	1
10	23-3006-1H	(PME 9)	1
11	23-5001-H	(FAULT INDICATORS)	15
3, 1	24-1007-H	(4 POSS C104385)	63
13	24-1009-H	(SEC TSF CONN)	16
14	26-2003-H	(1/C #2 AL DISC T-SPLICE)	6
15	26-2003-H	(#500 AL DISC T-SPLICE)	18
16	26-2003-H	(#1000-#500 DISC STR SPLICE)	6
1	C114843	(3-1/C #4/0 AL PEICN)	100'



600A STRAIGHT SPLICE DETAIL (A)
NOT TO SCALE



200A STRAIGHT SPLICE DETAIL (B)
NOT TO SCALE

CONSTRUCTION NOTES :

A. INSTALL :

1. 3-PH 12.47KV & 1-PH, 7.2KV UNDERGROUND DISTRIBUTION SYSTEM PER SINGLE LINE DIAGRAM.
2. (14) 25 KVA & (2) 50 KVA, 1-PH, 12470 GRD Y/7200V-240/120 VOLT DEADFRONT PAD MOUNTED TRANSFORMERS.
3. (1) PME-9 SWITCHGEAR.
4. #350 MCM AL TRIPLEX SECONDARY UNDERGROUND CABLES.

B. GROUND SYSTEM AT ALL PRIMARY SPLICE LOCATIONS.

NO.	DATE	REVISIONS	BY	CHK'D	APP'D
3	12/14/11	REVISED MATERIALS TO ACCOMMODATE REVISION 3, SHT 1.	MM	RVR	
2	11/15/11	REVISED MATERIALS TO ACCOMMODATE REVISION 2, SHT 1.	MM	RVR	
1	11/3/11	REVISED MATERIALS TO ACCOMMODATE REVISION 1, SHT 1.	MM	RVR	

LALAMILO HOUSING PH 2A
LALAMILO, S. KOHALA
UNDERGROUND DISTRIBUTION SYSTEM

DESIGNED	MM	DRAWN	KO	DATE	10/11/11	SCALE	AS NOTED
CHECKED	ELEC. / MECH. / STRUC. / CIVIL						

HAWAII ELECTRIC LIGHT CO., INC.
ENGINEERING DEPARTMENT
HILO, HAWAII

APPROVAL
10/12/11

DRAWING NUMBER
10-E-464
SHEET 4 OF 4

P.W.O. NO.	J.P. NO.	PROJ. NO.	T.M.K.
H0047287		H	6-6-1:77