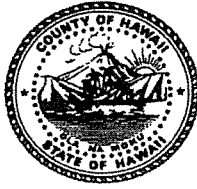


5

William P. Kenoi  
*Mayor*



BJ Leithead Todd  
*Director*

Margaret K. Masunaga  
*Deputy*

West Hawai'i Office  
74-5044 Ane Keohokalole Hwy  
Kailua-Kona, Hawai'i 96740  
Phone (808) 323-4770  
Fax (808) 327-3563

**County of Hawai'i**  
**PLANNING DEPARTMENT**

East Hawai'i Office  
101 Pauahi Street, Suite 3  
Hilo, Hawai'i 96720  
Phone (808) 961-8288  
Fax (808) 961-8742

June 26, 2012

Sidney M. Fuke  
Planning Consultant  
100 Pauahi Street, Suite 212  
Hilo, HI 96720

Dear Mr. Fuke:

**FINAL SUBDIVISION APPROVAL NO. SUB-12-001178**

**REVISED FINAL PLAT MAP**

**SUBDIVIDER: DW AINA LE'A DEVELOPMENT, LLC**

**"The Villages of Aina Le'a - Phase 1"**

Proposed Subdivision of Lot D-1-B (FSA-SUB-09-000860),  
Into Lot D-1-B-2 and Remainder Lot D-1-B-1, and Cancellation of Easement D (13,292 sq. ft.),  
And Designation of Access & Utility Easements A-3, A-4, D-1 & D2,  
Waikoloa, South Kohala, Island of Hawai'i, Hawai'i

**TMK: 6-8-001:036**

This is to acknowledge receipt of ten (10) copies of the revised final plat map dated June 14, 2012;  
Certification of Staking; and Real Property Tax Clearance for the referenced application.

Please be informed that final subdivision approval for recordation is hereby granted to the revised final plat map as attached herewith inasmuch as all requirements of the Subdivision Code, Chapter 23, as modified have been met.

You and the subdivider may wish to consult an attorney and surveyor for the preparation of the necessary legal documents and description of the certified revised final plat map for the purpose of recordation with the State of Hawaii, Bureau of Conveyances.

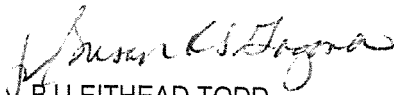
Sidney M. Fuke  
Planning Consultant  
Page 2  
June 26, 2012

This final approval is with the understanding that pending SUB-11-001070 will require a revised final plat map deleting Remainder Lot D-1-B.

By a copy of this letter, we are forwarding a copy of the certified revised final plat map and application to the listed officers for their file.

Copies of the certified revised final plat map are enclosed.

Sincerely,



BJ LEITHEAD TODD  
Planning Director

ETC:lnm

\\Coh33\planning\public\Admin Permits Division\Subdivision\2012\SUBc2012-2\SUB-12-001178DWAinaLeaPh1REVFPMFSA.doc

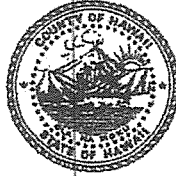
Encs.: 2 Certified Revised FPM

xc: Manager, DWS w/Certified Revised FPM & application  
Director, DPW w/Certified Revised FPM & application  
District Environmental Health Program Chief, DOH w/Certified Revised FPM & application  
District Engineer, DOT w/Certified Revised FPM & application  
Planning Department-Kona w/Certified Revised FPM & application  
Real Property Tax Division-Kona w/Certified Revised FPM  
Tax Maps and Records Supervisor w/Certified Revised FPM  
DW AINA LE'A DEVELOPMENT, LLC  
Thomas G. Pattison, LPLS, Pattison Land Surveying, Inc.  
SUB-11-001070 (pending); PUD-11-000020 (pending); FSA-SUB-09-000860

6



William P. Kenoi  
Mayor



Bobby Jean Leithead Todd  
Planning Director

Margaret K. Masunaga  
Deputy Planning Director

County of Hawaii

PLANNING DEPARTMENT

Aupuni Center • 101 Pauahi Street, Suite 3 • Hilo, Hawaii 96720  
Phone (808) 961-8288 • Fax (808) 961-8742

August 17, 2011

Sidney Fuke  
Planning Consultant  
100 Pauahi Street, Suite 212  
Hilo, HI 96720

Dear Mr. Fuke:

**REVISED PRELIMINARY PLAT MAP AND TENTATIVE APPROVAL**

**SUBDIVIDER: DW AINA LE'A DEVELOPMENT, LLC**

**"The Villages of Aina Le'a Phase 1"**

Proposed Subdivision of Lot D-1-B (FSA-SUB-09-000860)  
Into Lots 42 thru 68, Reserve Lot A, Road Lots E-1 thru E-3,  
And Remainder Lot D-1-B-1,  
Waikoloa, South Kohala, Island of Hawai'i, Hawai'i  
TMK: 6-8-001:036 (SUB-11-001070)

This is to acknowledge receipt of ten (10) copies of revised preliminary plat map dated May 27, 2011, for the above referenced subdivision application.

Please be informed that Tentative Approval of the revised preliminary plat map is hereby granted with modifications and conditions.

The subdivider is now authorized to prepare detailed drawings of the subdivision plan in accordance with Chapter 23, Subdivision Control Code, County of Hawaii, as modified. Before final approval can be granted, the following conditions must be met:

- ✓ 1) Water System
  - a) Provide a water system designed to deliver water at adequate pressure and volume under peak-flow and fire-flow conditions in accordance with Water System Standards 2002, State of Hawai'i, and the Rules and Regulations of the Department of Water Supply. The water system shall include, but not be limited to, the installation of the necessary distribution pipeline, fire hydrants, and service laterals.

*Hawai'i County is an Equal Opportunity Provider and Employer*

*- Submit water plans.*

Sidney Fuke  
Planning Consultant  
Page 2  
August 17, 2011

*Beary Revised Notes*

- b) Submit water system construction plans for approval by affected agencies.
- c) Pay a fee of four-tenths of one percent of the estimated cost for the construction of the water system, but not less than \$50.00 to cover the costs for plan review, testing and inspection.
- 2) Drainage
  - a) Identify all watercourses and drainage ways and encumber with drainage easements. *UIC Permit letter # PLANS*
- 3) Access and Roadway Improvements
  - a) Construct minimum 32-ft. wide dedicable pavement with concrete curbs, gutters and sidewalks within a minimum 50-ft. wide right-of-way conforming to Standard Detail R-32. Streets shall be designed to support axle and wheel loads permitted under Section 291-35, Hawai'i Revised Statutes.
  - b) Construct dedicable turnaround conforming to Standard Detail R-32.
  - c) Provide minimum 20-ft. curve radii at all intersections.
  - d) Submit construction plans and drainage report for review and comment.
    - i) Additional storm runoff due to development shall be disposed within the subdivision and shall not be discharged onto adjacent properties or roadways. For planned drywells, satisfy Department of Health (DOH) drywell requirements, including issuance of an underground injection control (UIC) permit to the subdivider.
    - ii) Install streetlights/signs/pavement markings as required by the Traffic Division, Department of Public Works.
    - iii) Identify all private roadways on the construction plans.
  - e) Submit proposed street names conforming to the adopted street naming policy of the County of Hawai'i.
- 4) All easements affecting proposed lots shall be identified for its purpose and to which proposed lot(s) and/or grantee(s) the easement is in favor of. This shall be shown on the final plat map.
- 5) Property Tax Certification. Submit written proof that all taxes and assessments on the property are paid to date.
- 6) Surveyor's Certification. Place property markers in accordance with the final plat map. Surveyor shall submit certification upon completion.
- 7) Final Plat Map. **Submit ten (10) copies of the final plat map** prepared in conformity with Chapter 23, Subdivisions, within one year from the date of tentative approval, on or before **August 17, 2012**. If not, tentative approval to the revised preliminary plat map shall be deemed null and void. Only upon written request from the subdivider and for good cause, the director may grant to the subdivider an extension of time within which the subdivider may file the final plat. **As part of final plat map submittal, provide an additional copy of the final plat map as a ".dwg" or ".dxf" diskette file prepared by CAD software. In the alternate, a digital copy of the final plat map may be e-mailed to the Tax Maps and Records Supervisor at [planning@co.hawaii.hi.us](mailto:planning@co.hawaii.hi.us).**
- 8) Time Limit. Subdivider shall complete all requirements specified as conditions for tentative approval of the revised preliminary plat map within three (3) years of said tentative approval, on or before **August 17, 2014**. An extension of not more than two (2) years may be granted by the director upon timely request of the subdivider.

Sidney Fuke  
Planning Consultant  
Page 3  
August 17, 2011

Please be aware that if at any time during the fulfillment of the foregoing conditions, should concerns emerge such as environmental problems or other problems which were earlier overlooked or not anticipated/accounted for in data/reports available to date, this could be sufficient cause to immediately cease and desist from further activities on the proposed subdivision, pending resolution of the problems. The Planning Director shall confer with the listed officers to resolve the problems and notify you accordingly.

No final approval for recordation shall be granted until all the above conditions have been met.

Land shall not be offered for sale, lease or rent until final approval for recordation of the subdivision is granted by the Planning Director or the proposed subdivision has been issued a preliminary order of registration by the Department of Commerce and Consumer Affairs (DCCA) in accordance with the requirements of Chapter 484, Hawaii Revised Statutes.

By a copy of this letter, we are forwarding a copy of the revised preliminary plat map to the listed officers for their file.

Should you have any questions, please feel free to contact Ed Cheplic of this department.

Sincerely,



BJ LEITHEAD TODD  
Planning Director

ETC:lnm

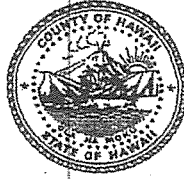
P:\Admin.Permits Division\Subdivision\2011\SUB-2011-3\SUB-11-001070\WAlnaLeaDevPh1REVPPMTA.doc

Enc.: Revised PPM (05-27-11)

xc: Manager, DWS  
Director, DPW  
District Environmental Health Program Chief, DOH  
District Engineer, DOT  
PLNG-KONA  
DW Alna Le'a Development, LLC  
Thomas G. Pattison, LPLS, Pattison Land Surveying, Inc.  
FSA-SUB-09-000860

William P. Kenoi  
*Mayor*

West Hawai'i Office  
74-5044 Ane Keohokalole Hwy  
Kailua-Kona, Hawai'i 96740  
Phone (808) 323-4770  
Fax (808) 327-3563



**County of Hawai'i**  
**PLANNING DEPARTMENT**

BJ Leithead Todd  
*Director*

Margaret K. Masunaga  
*Deputy*

East Hawai'i Office  
101 Pauahi Street, Suite 3  
Hilo, Hawai'i 96720  
Phone (808) 961-8288  
Fax (808) 961-8742

August 20, 2012

Sidney Fuke  
Planning Consultant  
100 Pauahi Street, Suite 212  
Hilo, HI 96720

Dear Mr. Fuke:

**TIME EXTENSION REQUEST**

**SUBDIVIDER: DW AINA LE'A DEVELOPMENT, LLC**

**"The Villages of Aina Le'a Phase 1"**

Proposed Subdivision of Lot D-1-B (FSA-SUB-09-000860)  
Into Lots 42 thru 68, Reserve Lot A, Road Lots E-1 thru E-3,  
And Remainder Lot D-1-B-1,  
Waikoloa, South Kohala, Island of Hawai'i, Hawai'i  
TMK: 6-8-001:036 (SUB-11-001070)

This is in response to your letter of August 15, 2012.

Please be informed that an extension of time of two (2) years until **August 17, 2014**, for the submission of the final plat map, pursuant to Condition No. 7 of the letter of Tentative Approval dated August 17, 2011, is hereby granted. The additional time is also needed to finalize the construction plans of the subject subdivision.

Please be advised that Ordinance No. 92-138, adopted by the County Council on December 4, 1992, amended Chapter 23 of the Hawaii County Subdivision Control Code, reads in part, as follows:

"The subdivider shall complete all requirements specified as conditions for approval of the preliminary plat (tentative approval) within three years of said approval. An extension of not more than two (2) years may be granted by the director upon timely written request by the subdivider."

Sidney Fuke  
Planning Consultant  
Page 2  
August 20, 2012

The ordinance also makes provisions for those pending subdivision applications which were granted tentative approval prior to the adoption of said ordinance, as follows:

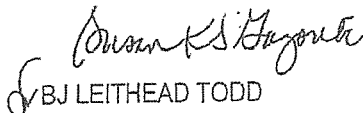
"This subsection shall be applied to all subdivision applications which have received tentative subdivision approval and which have not completed subdivision improvements, provided the three year period, and extension, if applicable, shall be taken from December 4, 1992 and not from the date of preliminary plat (tentative) approval."

Therefore, all conditions of the Tentative Approval dated August 17, 2011, must be complied with by August 17, 2014. A time extension of not more than two (2) years may be granted by the director upon timely written request by the subdivider.

Should the conditions of tentative approval not be completed within the time limit, the approval of the preliminary plat shall expire and shall be of no further force or effect, or shall be subject to the technical review of the applicable agencies for compliance with current code and rule requirements.

Should you have any questions, please feel free to contact Ed Cheplic of this department.

Sincerely,

  
BJ LEITHEAD TODD  
Planning Director

ETC:lnm

P:\Admin Permits Division\Subdivision\2012\SUBc2012-3\SUB-11-001070DW\AlnaLeaPh1TE.doc

xc:     Manager, DWS  
         Director, DPW  
         District Environmental Health Program Chief, DOH  
         District Engineer, DOT  
         Planning Department-West Hawaii  
         DW Alna Le'a Development, LLC  
         Thomas G. Pattison, LPLS, Pattison Land Surveying, Inc.  
         Alan M. Okamoto, Esq., Nakamoto Okamoto & Yamamoto, Attorneys At Law

7

NEIL ABERCROMBIE  
GOVERNOR OF HAWAII



LORETTA J. FUDDY, A.C.S.W., M.P.H.  
DIRECTOR OF HEALTH

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

In reply, please refer to:  
File:

581

August 8, 2011

Mr. Peter J.K. Dahlberg, P.E.  
74-4920 Kiwi Street  
Kailua-Kona, Hawaii 96740-9669

Dear Mr. Dahlberg:

Subject: **Approval to Construct  
The Villages of Aina Lea, Phase 1 Wastewater Treatment Works  
68-4747 Queen Kaahumanu Highway, Waikoloa, Hawaii  
TMK: (3) 6-8-001: Portions of 025, 039, & 040  
WTW File No.: 581**

The Department of Health (Department) has reviewed your Basis of Design and Engineering Report dated August 2, 2011 and equipment submittal dated November 3, 2010 for Phase 1 of The Villages of Aina Lea Wastewater Treatment Plant (WWTP). At this time, the Department does not have any further comments and has no objection to the proposed project.

The Department has determined that the proposed WWTP report and plans comply with applicable provisions of Chapter 11-62, Hawaii Administrative Rules (HAR). Therefore, the subject WWTP is approved for construction.

Please note that an inspection of the completed project to verify information provided in your submittals is required. When the project is complete, please notify our office so that arrangements can be made to conduct a final inspection with you.

The Department encourages you to continue to pursue your original plan to reuse the treated effluent to irrigate the landscaping of the proposed project.

Should you have any questions or concerns, please feel free to contact Stuart Shoji of our branch at 586-4294.

Sincerely,

A handwritten signature in black ink, appearing to read "Marshall Lum".

MARSHALL LUM, P.E., ACTING CHIEF  
Wastewater Branch

SKS:cle

County of Hawaii  
DEPARTMENT OF PUBLIC WORKS ENGINEERING DIVISION

75-5706 Kuakini Hwy,  
Kailua-Kona, HI 96740

Aupuni Center  
101 Pauahi St. Suite 7  
Hilo, HI 96720

GRADING PERMIT NO. 092150

Fee: \$ 29.00

Check only - payable to:  
COUNTY DIRECTOR OF FINANCE

Owner: DW Aina Le'a Development, LLC (Attn: Joe Bennett)

Phone: (702) 806-7179

Civil Eng./ Surveyor: Peter JK Dahlberg, PE Address: 74-4920 Kiwi Street

Phone: (808) 895-6173

License No.: PE-11345 C

Kailua-Kona, HI 9740-9669

Contractor: \_\_\_\_\_

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

Phone: \_\_\_\_\_

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

Location: 68-4747 Queen Kaahumanu Hwy. Tax Map Key: (3) 6-8-001:025 Cut (CY): 3176

Parcel Area (acre): 27.016 acres

Area to be Graded (acre): 0.9 acres

Disposal Site: Re-Use

Estimated Starting Date: 4/2/11

Estimated Completion Date: 4/2/12

Fill (CY): 403

(minimum 2 working days after issuance date)

Borrow Site: From Cut

Remarks: Cut and fill grading activities for proposed WWTP construction, access and distribution.

No building permit and no use for WWTP will be approved by Planning Dept. without prior PLAN APPROVAL per zoning Code (see attached letter)

Applicants should follow steps 1 through 3. Please mail or hand-deliver to DLNR.

1. State Department of Land and Natural Resources (DLNR)- Historic Preservation Division

933-7653 (Hawaii Island) 40 Pookela Street, Hilo, HI 96720

Received By: \_\_\_\_\_

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

Approved By: \_\_\_\_\_

LOG NO. 2010-4004

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

DOC NO. 1102TD18

FEB. 22, 2011

2. Planning Department

Received By: \_\_\_\_\_

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

Approved By: \_\_\_\_\_

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

R. YOUNG

2-28-11

[Signature]

3/20/2011

3. Department of Public Works (Permits can be approved by Kona or Hilo offices)

Received By: \_\_\_\_\_

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

Approved for Permit Issuance

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

[Signature]

3/31/11

[Signature]

03/31/11

I hereby certify that all work as requested above will conform to Chapter 10 of the Hawaii County Code.

Owner: \_\_\_\_\_

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

Return to the Department of Public Works, Engineering Division, upon completion of work.

Certification Accepted By: \_\_\_\_\_

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

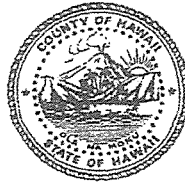
(DPW inspector/ engineer)

County of Hawaii is an Equal Opportunity Provider and Employer

RICHARD



William P. Kenoi  
Mayor



BJ Leithead Todd  
Director

Margaret K. Masunaga  
Deputy

## County of Hawaii

### PLANNING DEPARTMENT

Aupuni Center • 101 Pauahi Street, Suite 3 • Hilo, Hawaii 96720  
Phone (808) 961-8288 • Fax (808) 961-8742

March 29, 2011

Mr. Joe Bennett  
DW Aina Le'a Development, LLC  
c/o Peter J.K. Dahlberg, PE  
74-4920 Kaiwi Street  
Kailua-Kona, HI 96740-9669

Dear Messrs. Bennett and Dahlberg:

SUBJECT: Grading Permit Application (COR-11-070362)  
Cut and fill grading activities for proposed WWTP construction, access and  
distribution  
TMK: 6-8-001:125. Waikoloa. North Kohala

Although this Department has approved your above-referenced application to the County Department of Public Works for a Grading Permit, please be advised that the Planning Department will not approve any building permit or use of the subject property for construction or operation of a wastewater treatment facility (WWTP), or any portion thereof, without our prior review and approval of an application for Plan Approval as required by Article 2, Division 7 (Plan Approval) of Chapter 25, Hawai'i County Code (the Zoning Code).

We further advise that a requirement for issuance of Final Plan Approval for this WWTP will be your provision of an recordable three-party agreement, acceptable to the Planning Director in form and content, among (i) the owners of the separate parcel from which the wastewater is produced, (ii) the owners of the subject property, that is, the property on which the wastewater is to be processed by means of a WWTP, and (iii) the County of Hawai'i through its Planning Director. Such agreement shall include a grant of easement to construct, operate and maintain the proposed WWTP for the life of uses generating the received effluent.

This agreement is necessary in part because operation of a WWTP as a principal use is not a permitted use in the Village Commercial (CV) zoning district within which the subject property is located. However, a WWTP may be permissible as an accessory use to single or multiple family residential uses which are permitted in the CV zoning district. By documenting its operation as being accessory to a principal use which is permitted on both the generating and receiving parcels, it may be deemed a permissible accessory use.

Messrs. Joe Bennett and Peter J.K. Dahlberg  
March 29, 2011  
Page 2

The required agreement is also necessary to ensure that the essential health and safety needs of the owners and occupants of the effluent-generating site for such a facility are met both before residential occupancy as well as for the duration of residential use on the generating site, and are not severable by any form of alienation or demise of the subject property without the further agreement of the County of Hawai'i.

Finally, noting the pendency of an action by the State Land Use Commission to reclassify the subject property to the Agricultural Land Use District, we would like to inform you that should this contemplated action be finalized, a Special Permit from the County of Hawai'i Leeward Planning Commission would have to be obtained to construct and operate the proposed WWTP, as that use is not permitted in the Agricultural Land Use District unless by means of a Special Permit pursuant to Section 205-6 of Hawai'i Revised Statutes. In that event, such Special Permit would have to be obtained before an application for Plan Approval could be accepted (or approved, if submitted and pending prior to such Land Use District reclassification).

Should you have any questions on this matter, please contact Keola Childs of the West Hawaii office at (808) 323-4770.

Sincerely,

  
BJ LEITHEAD, TODD  
Planning Director

CKC:ckc

K:\Staff\Childs\Corr\MISC\TMK 68001125 DW Aina Lea Grading Pmt Comment ltr.doc

cc: ✓ Department of Public Works – Engineering Div., West Hawai'i  
Office of the Corporation Counsel – Amy Self

NEIL ABERCROMBIE  
GOVERNOR OF HAWAII



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION  
601 KAMOKILA BOULEVARD, ROOM 555  
KAPOLEI, HAWAII 96707

WILLIAM L. AILA, JR.  
INTERIM CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE MANAGEMENT

GUY R. KALLUKUKU  
DEPUTY DIRECTOR

WILLIAM M. TAM  
INTERIM DEPUTY DIRECTOR - WATER

AQUATIC FISHERIES  
BOATING AND FISHING REGULATION  
BUREAU OF CONVEYANCES  
COMMISSION ON WATER RESOURCE MANAGEMENT  
CONSERVATION AND CLIMATE LANDS  
CONSERVATION AND REMEDIATION INVESTMENT  
ENGINEERING  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
KAHOLAWE ISLAND RESERVE COMMISSION  
LAND  
NATURAL RESOURCES

February 22, 2011

Mr. Peter Dahlberg, PE, LLC  
74-4920 Kiwi Street  
Kailua-Kona, Hawai'i 96740-9669  
(pdahlberg@hawaii.rr.com)

LOG NO: 2010.4004  
DOCNO: 1102TD18  
Archaeology

Dear Mr. Dahlberg:

Subject: Chapter 6E-42 Historic Preservation Review –  
County of Hawai'i Grading Permit for a New Waste Water Treatment Plant  
Waikoloa Ahupua'a, South Kohala District, Island of Hawai'i  
TMK: (3) 6-8-001: 025

Thank you for requesting our review of the subject application, which pertains to the Phase I development of the DW 'Aina Le'a Waste Water Treatment Plant. The proposed project encompasses 0.9 acres of a 27.016-acre parcel. We apologize for the later response to your request, which was received December 23, 2010.

Our office previously reviewed a subdivision application for DW 'Aina Le'a that included Parcel 025 within the project area (McMahon letter to Leithead Todd, 17 April 2009; *Log 2009.1417, Doc. 0904MD14*). As indicated in the prior review, an archaeological inventory survey was completed for the subdivision, and a final draft of the report was approved in 2004 (*Log 2004.0016, Doc. 0401PM01*).

No historic properties were identified on the current Parcel 025 during the inventory survey. In addition, we have been informed that this parcel has been mass graded in connection with the subdivision development. Based on the above information, we determine that no historic properties will be affected by the proposed grading.

In the unlikely event that subsurface features, including human skeletal remains, lava tubes, artifacts or structural remains are identified during grading, cease work in the immediate vicinity of the find, protect the find from additional disturbance, and immediately contact the State Historic Preservation Division at (808) 933-7653. Please contact me at [Theresa.K.Donham@hawaii.gov](mailto:Theresa.K.Donham@hawaii.gov) if you have any questions or concerns regarding this letter.

Aloha,

Theresa K. Donham  
Acting Archaeology Branch Chief  
Historic Preservation Division

8

NEIL ABERCROMBIE  
GOVERNOR OF HAWAII



GARY L. GILL  
ACTING DIRECTOR OF HEALTH

STATE OF HAWAII  
DEPARTMENT OF HEALTH  
SAFE DRINKING WATER BRANCH  
919 ALA MOANA BLVD., ROOM 308  
HONOLULU, HI 96814-4920

In reply, please refer to:  
File: SDWB  
2787Jan01.doc

January 21, 2014

Mr. Christian Renz  
Project Manager  
'Aina Le'a, Inc.  
68-4747 Queen Kaahumanu Highway  
Kamuela, Hawaii 96743

Dear Mr. Renz:

SUBJECT: OUR REPLY TO YOUR 1/13/2014 LETTER  
REQUESTING ANOTHER TIME EXTENSION FOR THE  
APPROVAL-TO-CONSTRUCT EXPIRING ON 1/31/2014 FOR  
**THE VILLAGES OF 'AINA LE'A, PHASE 1**  
UNDERGROUND INJECTION CONTROL (UIC)  
UIC APPLICATION NO. UH-2787

You are hereby granted a time extension until 1/31/2016.

Please be advised that all the applicable conditions stated in the original approval-to-construct, dated 3/30/2010, still remain effective.

1. If further construction is anticipated after 1/31/2016, you are required to obtain another time extension. However, time extensions are not guaranteed;
2. A request for a time extension should occur **at least 30 days** before the expiration date. If a time extension is not requested by the expiration date, we reserve the authority to cancel the approval-to-construct; and
3. The final report is due 60 days after the completion of injection well construction and testing.

If you have any question, please call Mr. Jaime Rimando of the UIC Program, Safe Drinking Water Branch at 586-4258 (Honolulu) or call from Big Island the direct toll free number 974-4000, ext. 64258.

Sincerely,

A handwritten signature in cursive script, appearing to read "Stuart Yamada".

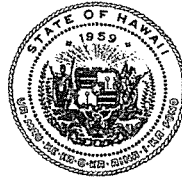
STUART YAMADA, P.E., CHIEF  
Environmental Management Division

JR:nbp

c: Mr. Geoffrey L. Casburn, P.E.  
SSFM International, Inc.

SSFM

NEIL ABERCROMBIE  
GOVERNOR OF HAWAII



LORETTA J. FUDDY, A.C.S.W., M.P.H.  
DIRECTOR OF HEALTH

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

In reply, please refer to:  
File: SDWB  
2787Jan01.HJR

January 30, 2012

Mr. Joe Bennett  
Construction Coordinator  
DW `Aina Le`a Development, LLC  
P. O. Box 383129  
Waikoloa, Hawai`i 96738

Dear Mr. Bennett:

SUBJECT: OUR REPLY TO YOUR 1/18/2012 LETTER REQUESTING A TIME EXTENSION  
FOR THE APPROVAL-TO-CONSTRUCT EXPIRATION DATE FOR  
**THE VILLAGES OF `AINA LE`A, PHASE I**  
50 DRAINAGE INJECTION WELLS  
UNDERGROUND INJECTION CONTROL (UIC)  
UIC APPLICATION NO. UH-2787

You are granted a time extension until 1/31/2014.

All the applicable conditions stated in the original approval-to-construct, dated 3/30/2010, still remain effective. Listed below are additional conditions.

1. If further construction delay is anticipated after 1/31/2014, you are required to obtain another time extension. However, time extensions are not guaranteed;
2. A request for a time extension should occur **at least 30 days** before the expiration date. If a time extension is not requested by the expiration date, we reserve the authority to cancel the approval-to-construct; and
3. The final report is due 60 days after the completion of injection well construction and testing.

If you have any question, please call Jaime Rimando of the UIC Program, Safe Drinking Water Branch at 586-4258 (Honolulu) or call from Big Island the direct toll free number 974-4000, ext. 64258.

Sincerely,

A handwritten signature in cursive script, likely belonging to Stuart Yamada.

STUART YAMADA, P.E., CHIEF  
Environmental Management Division

JR:nbp

c: Mr. Geoffrey L. Casburn, P.E.  
SSFM International, Inc.

SSFM

LINDA LINGLE  
GOVERNOR OF HAWAII



STATE OF HAWAII  
DEPARTMENT OF HEALTH  
SAFE DRINKING WATER BRANCH  
919 Ala Moana Boulevard, Room 308  
Honolulu, Hawaii 96814

SSM INTERNATIONAL, INC.  
RECEIVED  
APR 02 2010

gc  
dyu  
FILE

CHIYOME L. FUKINO, M.D.  
DIRECTOR OF HEALTH

In reply, please refer to:  
File: SDWB

March 30, 2010

Mr. Steve Dunnington  
Managing Partner  
DW 'Aina Le'a Development, LLC  
Waikoloa, Hawai'i 96788

**FILE COPY**

Dear Mr. Dunnington:

SUBJECT: THE VILLAGES OF 'AINA LE'A, PHASE I;  
UNDERGROUND INJECTION CONTROL (UIC)  
UIC APPLICATION NO. UH-2787,  
**GRANTED APPROVAL-TO-CONSTRUCT (ATC)**  
FIFTY DRAINAGE INJECTION WELLS

This ATC is hereby granted to you, the applicant, strictly based on the following 12 conditions. These conditions, unless identified as a recommendation, are enforceable under HAR 11-23-07(c) and (d). Enforcement may include, and not be limited to, monetary penalties and corrective action paid by the applicant.

1. Only applicable are the information, specifications, and plans that were provided in the UIC application dated 12/31/2009, and received by the Department of Health on 1/05/2010 and the revisions received by the Department on 1/25/2010. All other types or forms of information/materials are not applicable unless acknowledged and approved by this ATC;

2. The injection well (IW) amount per the application is fifty (50).

The approximate diameter and depth below ground surface of the injection wells are 6 feet in diameter, maximum depth of 56 feet:

IW # AH-A1 to AH-A14  
IW # AH-B1 to AH-B10  
IW # AH-AR1 to AH-AR26

The proposed injectant is generally categorized as surface runoff generated from rainfall over roadways and open land areas whether altered or unaltered by property improvements;

3. Any modification or revision to the drainage injection well's particulars, including the facility and application, shall not occur unless such proposals are first submitted to the UIC program for review, concurrence, and written approval under this ATC. Any modification, revision, or construction involving the injection well done without written authorization will constitute a violation of Chapter 11-23;

Mr. Steve Dunnington  
March 30, 2010  
Page 2

4. Operation of the drainage injection well is not automatically authorized by this ATC. Furthermore, construction and testing of the drainage injection well does not guarantee that the drainage injection well will be authorized for operation under a UIC permit. Depending on the information obtained during and from construction and testing, a UIC permit may or may not be issued;
5. The applicant is responsible to identify all drinking water sources around the injection wells in order to prevent injection well siting within one-quarter mile of any existing drinking water source. Identifying water sources may require field activities as well as records research. Noncompliance with this requirement may result in improper injection well siting needing corrective action by the applicant which includes proper backfilling and abandonment of the injection well;
6. If an artesian groundwater condition is encountered during the injection well drilling/construction, drilling shall immediately stop and not proceed until the artesian condition is assessed by the Department. The applicant is required to promptly notify the Department for an assessment. An artesian groundwater condition may warrant a redesign of the injection well in order to protect the artesian aquifer as an underground source of drinking water. For reference, artesian aquifer requirements and restrictions are described under Section 11-23-10;
7. If a void, such as a lava tube or solution cavity, 3 feet or more in diameter or vertical measurement is encountered during injection well drilling/construction, drilling shall immediately stop and not proceed until the void is assessed by the Department. The applicant is required to promptly notify the Department for an assessment. A void may warrant a redesign of the injection well in order to prevent unacceptable migration of the injectant or to prevent direct injection into the void. For reference, voids are described under Section 11-23-09 (f);
8. Each drainage injection well shall be constructed to allow for the following continuous or periodic, permit-required activities related to operating and maintaining a drainage injection well: injection well access, injection well depth and diameter measurement, injectant flow measurement (quantity metering) when applicable, injectant pressure measurement (metering) when applicable, and injection performance testing;
9. Pursuant to Section 11-23-13, submit the final report for the enclosed outline: "Final Report Form For Drainage Injection Wells." This report shall be made and signed by a geologist and a professional engineer, including the P.E. stamp. The engineer and geologist shall be responsible for monitoring the proper construction of the injection well and for obtaining the information needed to complete the final report. Please remember that the drainage injection well must be inspected by the geologist before any liners or concrete rings are installed. This inspection is necessary to produce the lithologic log of the drainage injection well;



Mr. Steve Dunnington  
March 30, 2010  
Page 3

- 3/30/2012*
10. The final report is due by two years from the date of this ATC letter. The final report shall be fully complete and satisfactory. Unless the final report is submitted by the due-date, this ATC automatically expires and is void. A late final report may subject the applicant to an enforcement action/penalty or corrective measures, including a permit reapplication. If more time beyond the due-date is needed to complete the final report, a written request with reasons for a time extension must be submitted at least 60 days before the due-date. Time extensions are not guaranteed, and if granted, may contain restrictive conditions;
  11. Backfilling and abandonment of an injection well, should such an activity become necessary, whether during construction or after full well completion, may only occur under the instructions from the Department. An abandonment application must first be submitted, and specific abandonment instructions will be issued by the Department. Drilling contractors under their own discretion should not backfill and abandon an injection well; and
  12. Rainfall runoff flowing into a newly constructed drainage injection well might occur, and such a condition does not necessarily trigger a violation for using the injection well without a UIC permit. However, unless the applicant proceeds expeditiously in completing the application requirements to obtain the UIC permit, the Department of Health may pursue corrective measures and penalties through enforcement.

If you have any questions about the final report, or the processing of your application, please contact Jaime Rimando of the Safe Drinking Water Branch at 808-586-4258 (Honolulu) or call from Big Island the direct toll free number 974-4000, ext. 64258.

Sincerely,

*Wilfred K. Nagamine*

WILFRED K. NAGAMINE, P.E., ACTING CHIEF  
Environmental Management Division

*Steward* *Steward Yamada* Chief Environmental Management Division  
JR:nbp

Enclosure: Final Report Form For Drainage Injection Wells

c: Mr. Geoffrey L. Casburn, P.E.  
SSFM International, Inc.  
501 Summer Street, Suite 620  
Honolulu, HI 96817 (w/encl.)

*Request for improving and no changes to the plans -*

**FINAL REPORT FORM FOR DRAINAGE INJECTION WELLS  
UNDERGROUND INJECTION CONTROL (UIC)  
UIC APPLICATION NO. UH-278  
(July 2004)**

1. Facility Name: THE VILLAGES OF 'AINA LE'A, PHASE I  
\_\_\_\_\_  
Address: \_\_\_\_\_  
\_\_\_\_\_
2. Project's TMK: \_\_\_\_\_  
Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_
3. Name of Owner: \_\_\_\_\_  
Address: \_\_\_\_\_
4. Name of Operator: \_\_\_\_\_  
Address: \_\_\_\_\_
5. Drainage Injection Well System:  
Number of Drainage Injection Wells: \_\_\_\_\_  
Design Capacity: \_\_\_\_\_  
Date(s) of Construction: \_\_\_\_\_  
Injection Well Dedication: ☐ yes ☐ no To: \_\_\_\_\_  
Describe any changes from original proposal: \_\_\_\_\_
- | Drainage Injection | As-Blt.<br><u>Diameter</u> | As-Blt.<br><u>Depth</u> | Grd. <u>Well No.</u><br><u>Elev.</u> |
|--------------------|----------------------------|-------------------------|--------------------------------------|
| _____              | _____                      | _____                   | _____                                |
| _____              | _____                      | _____                   | _____                                |
| _____              | _____                      | _____                   | _____                                |
| _____              | _____                      | _____                   | _____                                |
| _____              | _____                      | _____                   | _____                                |
| _____              | _____                      | _____                   | _____                                |

6. Hydrogeologic Characteristics: **Attach the following to this report:**

- a. Lithology (geologic profile including soil and rock descriptions, and geologic conditions of significance) of drainage injection wells:

DW #AH-AR-1, AH-AR6, AH-AR10, AH-AR14, AH-AR17, AH-AR20

AH-AR24, AH-AR13, AH-B4, AH-B6, AH-B10, AH-A5 and AH-A9

*3/29/10*

- b. Injection test results which shall include a brief description of the test and shall state the maximum rate of discharge into the drainage injection wells. Injection testing shall be conducted on drainage injection wells:

DW #AH-AR-1, AH-AR6, AH-AR10, AH-AR14, AH-AR17, AH-AR20

AH-AR24, AH-AR13, AH-B4, AH-B6, AH-B10, AH-A5 and AH-A9

*3/29/10*

7. Attach the following to this report:

- a. An as-built drainage injection well location plan on an 11" x 17" paper.

Label the drainage injection wells.

8. This report shall include the Department's "Signatory and Certification Statement" signed and dated by the operator or legal representative of the facility.

9. This report must be signed by the geologist and licensed engineer and shall bear the engineer's stamp.

The date of this Final Report is \_\_\_\_\_.

# DW AINA LE'A DEVELOPMENT, LLC

THE VILLAGES OF  
'Aina Le'a  
BIG ISLAND, HAWAII

January 18, 2012

Mr. Stuart Yamada  
Chief Environmental Management Division  
Safe Drinking Water Branch

re: The Villages of Aina Le'a, Phase 1  
Underground Injection Control  
UIC Application No. UH-2787  
Fifty Drainage Injection Wells

Dear Mr. Yamada,

Please accept this request for an extension to the above referenced application. Due to unforeseen complications and delays, we will not have completed this part of the infrastructure work by the March 30, 2012 permit expiration. We are moving forward with our contractors, and there are no changes to the currently approved plans. Once completed, we will present the final report to the SDWB Environmental Division.

If you have any questions, please feel free to contact me at 702-806-7179 or [joe@ainalea.com](mailto:joe@ainalea.com)

Your consideration is deeply appreciated.

Cordially,

Joe Bennett  
DW Aina Le'a Development, LLC  
Construction Coordinator

U.S. Postal Service  
CERTIFIED MAIL  
(Domestic Mail Only: No Ins<sup>ns</sup>)  
For delivery information visit us  
HONOLULU, HI 96814  
OFFICE  
Postage \$  
Certified Fee \$  
Return Receipt Fee (Endorsement Required) \$  
Restricted Delivery Fee (Endorsement Required) \$  
Total Postage & Fees \$  
Sent To  
Street, Apt. No., or P.O. Box No.  
City, State, ZIP+4<sup>®</sup>

7011 2000 0002 1602 0686  
18/2012

9

NEIL ABERCROMBIE  
GOVERNOR OF HAWAII



LORETTA J. FUDDY, A.C.S.W., M.P.H.  
DIRECTOR OF HEALTH

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

In reply, please refer to:  
File:

581

August 8, 2011

Mr. Peter J.K. Dahlberg, P.E.  
74-4920 Kiwi Street  
Kailua-Kona, Hawaii 96740-9669

Dear Mr. Dahlberg:

Subject: **Approval to Construct**  
**The Villages of Aina Lea, Phase 1 Wastewater Treatment Works**  
**68-4747 Queen Kaahumanu Highway, Waikoloa, Hawaii**  
**TMK: (3) 6-8-001: Portions of 025, 039, & 040**  
**WTW File No.: 581**

The Department of Health (Department) has reviewed your Basis of Design and Engineering Report dated August 2, 2011 and equipment submittal dated November 3, 2010 for Phase 1 of The Villages of Aina Lea Wastewater Treatment Plant (WWTP). At this time, the Department does not have any further comments and has no objection to the proposed project.

The Department has determined that the proposed WWTP report and plans comply with applicable provisions of Chapter 11-62, Hawaii Administrative Rules (HAR). Therefore, the subject WWTP is approved for construction.

Please note that an inspection of the completed project to verify information provided in your submittals is required. When the project is complete, please notify our office so that arrangements can be made to conduct a final inspection with you.

The Department encourages you to continue to pursue your original plan to reuse the treated effluent to irrigate the landscaping of the proposed project.

Should you have any questions or concerns, please feel free to contact Stuart Shoji of our branch at 586-4294.

Sincerely,

A handwritten signature in black ink, appearing to read "Marshall Lum".

MARSHALL LUM, P.E., ACTING CHIEF  
Wastewater Branch

SKS:cle

County of Hawaii  
DEPARTMENT OF PUBLIC WORKS ENGINEERING DIVISION

75-5706 Kuakini Hwy,  
Kailua-Kona, HI 96740

Aupuni Center  
101 Pauahi St. Suite 7  
Hilo, HI 96720

GRADING PERMIT NO. 092150

Fee: \$ 29.00

Check only - payable to:

COUNTY DIRECTOR OF FINANCE

Owner: DW Aina Le'a Development, LLC (Attn: Joe Bennett)

Phone: (702) 806-7179

Civil Eng./ Surveyor: Peter JK Dahlberg, PE Address: 74-4920 Kiwi Street

Phone: (808) 895-6173

License No.: PE-11345 C

Kailua-Kona, HI 9740-9669

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

Phone: \_\_\_\_\_

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

Location: 68-4747 Queen Kaahumanu Hwy. Tax Map Key: (3) 6-8-001:025 Cut (CY): 3176

Parcel Area (acre): 27.016 acres Area to be Graded (acre): 0.9 acres Disposal Site: Re-nat

Estimated Starting Date: 4/2/11 Estimated Completion Date: 4/2/12 Fill (CY): 403

(minimum 2 working days after issuance date)

Borrow Site: From Cut

Remarks: Cut and fill grading activities for proposed WWTP construction, access and distribution.

NO building permit and no use for WWTP will be approved by Planning Dept. without prior PLAN APPROVAL per zoning Code (see attached letter)

Applicants should follow steps 1 through 3. Please mail or hand-deliver to DLNR.

1. State Department of Land and Natural Resources (DLNR)- Historic Preservation Division

933-7653 (Hawaii Island) 40 Pookela Street, Hilo, HI 96720

Received By: \_\_\_\_\_

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

Approved By: \_\_\_\_\_

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

LOG NO: 2200-400

DOC NO: 11021018

FEB. 22, 2011

2. Planning Department

Received By: \_\_\_\_\_

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

Approved By: \_\_\_\_\_

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

R. YOUNG

2.28.11

[Signature]

3/20/2011

3. Department of Public Works (Permits can be approved by Kona or Hilo offices)

Received By: \_\_\_\_\_

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

Approved for Permit Issuance

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

[Signature]

3/31/11

[Signature]

03/31/11

I hereby certify that all work as requested above will conform to Chapter 10 of the Hawaii County Code.

Owner: \_\_\_\_\_

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

[Signature] for DW Aina Le'a

12/23/2010

Return to the Department of Public Works, Engineering Division, upon completion of work.

Certification Accepted By: \_\_\_\_\_

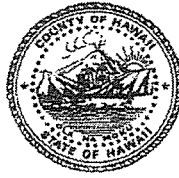
Date: \_\_\_\_\_

(DPW inspector/ engineer)

County of Hawaii is an Equal Opportunity Provider and Employer

RICHARD

William P. Kenoi  
Mayor



BJ Leithead Todd  
Director

Margaret K. Masunaga  
Deputy

## County of Hawaii

### PLANNING DEPARTMENT

Aupuni Center • 101 Pauahi Street, Suite 3 • Hilo, Hawaii 96720  
Phone (808) 961-8288 • Fax (808) 961-8742

March 29, 2011

Mr. Joe Bennett  
DW Aina Le'a Development, LLC  
c/o Peter J.K. Dahlberg, PE  
74-4920 Kaiwi Street  
Kailua-Kona, HI 96740-9669

Dear Messrs. Bennett and Dahlberg:

SUBJECT: Grading Permit Application (COR-11-070362)  
Cut and fill grading activities for proposed WWTP construction, access and  
distribution  
TMK: 6-8-001:125, Waikoloa, North Kohala

Although this Department has approved your above-referenced application to the County Department of Public Works for a Grading Permit, please be advised that the Planning Department will not approve any building permit or use of the subject property for construction or operation of a wastewater treatment facility (WWTP), or any portion thereof, without our prior review and approval of an application for Plan Approval as required by Article 2, Division 7 (Plan Approval) of Chapter 25, Hawai'i County Code (the Zoning Code).

We further advise that a requirement for issuance of Final Plan Approval for this WWTP will be your provision of an recordable three-party agreement, acceptable to the Planning Director in form and content, among (i) the owners of the separate parcel from which the wastewater is produced, (ii) the owners of the subject property, that is, the property on which the wastewater is to be processed by means of a WWTP, and (iii) the County of Hawai'i through its Planning Director. Such agreement shall include a grant of easement to construct, operate and maintain the proposed WWTP for the life of uses generating the received effluent.

This agreement is necessary in part because operation of a WWTP as a principal use is not a permitted use in the Village Commercial (CV) zoning district within which the subject property is located. However, a WWTP may be permissible as an accessory use to single or multiple family residential uses which are permitted in the CV zoning district. By documenting its operation as being accessory to a principal use which is permitted on both the generating and receiving parcels, it may be deemed a permissible accessory use.



Messrs. Joe Bennett and Peter J.K. Dahlberg  
March 29, 2011  
Page 2

The required agreement is also necessary to ensure that the essential health and safety needs of the owners and occupants of the effluent-generating site for such a facility are met both before residential occupancy as well as for the duration of residential use on the generating site, and are not severable by any form of alienation or demise of the subject property without the further agreement of the County of Hawai'i.

Finally, noting the pendency of an action by the State Land Use Commission to reclassify the subject property to the Agricultural Land Use District, we would like to inform you that should this contemplated action be finalized, a Special Permit from the County of Hawai'i Leeward Planning Commission would have to be obtained to construct and operate the proposed WWTP, as that use is not permitted in the Agricultural Land Use District unless by means of a Special Permit pursuant to Section 205-6 of Hawai'i Revised Statutes. In that event, such Special Permit would have to be obtained before an application for Plan Approval could be accepted (or approved, if submitted and pending prior to such Land Use District reclassification).

Should you have any questions on this matter, please contact Keola Childs of the West Hawaii office at (808) 323-4770.

Sincerely,

  
BJ LEITHEAD, TODD  
Planning Director

CKC:cke

K:\Staff\Childs\Corr\MISC\TMK 68001125 DW Aina Lea Grading Pmt Comment ltr.doc

cc: ✓ Department of Public Works – Engineering Div., West Hawai'i  
Office of the Corporation Counsel – Amy Self

NEIL ABERCROMBIE  
GOVERNOR OF HAWAII



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION  
601 KAMOKILA BOULEVARD, ROOM 555  
KAPOLEI, HAWAII 96707

WILLIAM J. AILA, JR.  
200TH CHAIRMAN IN  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE MANAGEMENT

GUY H. KAULUKUKUI  
FIRST DEPUTY

WILLIAM M. TAM  
INTERIM DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES  
BOATING AND OCEAN RECREATION  
BUREAU OF CONSERVATION  
COMMISSION FOR WATER HISTORIC MANAGEMENT  
CONSERVATION AND COASTAL LANDS  
CONSERVATION AND RESOURCES ENFORCEMENT  
ENGINEERING  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
KAMOKILA INLAND RESERVE COMMISSION  
LAND  
SEATTLE, WASH.

February 22, 2011

Mr. Peter Dahlberg, PE, LLC  
74-4920 Kiwi Street  
Kailua-Kona, Hawai'i 96740-9669  
(pdahlberg@hawaii.rr.com)

LOG NO: 2010.4004  
DOCNO: 1102TD18  
Archaeology

Dear Mr. Dahlberg:

Subject: Chapter 6E-42 Historic Preservation Review –  
County of Hawai'i Grading Permit for a New Waste Water Treatment Plant  
Waikoloa Ahupua'a, South Kohala District, Island of Hawai'i  
TMK: (3) 6-8-001: 025

Thank you for requesting our review of the subject application, which pertains to the Phase I development of the DW 'Aina Le'a Waste Water Treatment Plant. The proposed project encompasses 0.9 acres of a 27.016-acre parcel. We apologize for the later response to your request, which was received December 23, 2010.

Our office previously reviewed a subdivision application for DW 'Aina Le'a that included Parcel 025 within the project area (McMahon letter to Leithead Todd, 17 April 2009; *Log 2009.1417, Doc. 0904MD14*). As indicated in the prior review, an archaeological inventory survey was completed for the subdivision, and a final draft of the report was approved in 2004 (*Log 2004.0016, Doc. 0401PM01*).

No historic properties were identified on the current Parcel 025 during the inventory survey. In addition, we have been informed that this parcel has been mass graded in connection with the subdivision development. Based on the above information, we determine that **no historic properties will be affected** by the proposed grading.

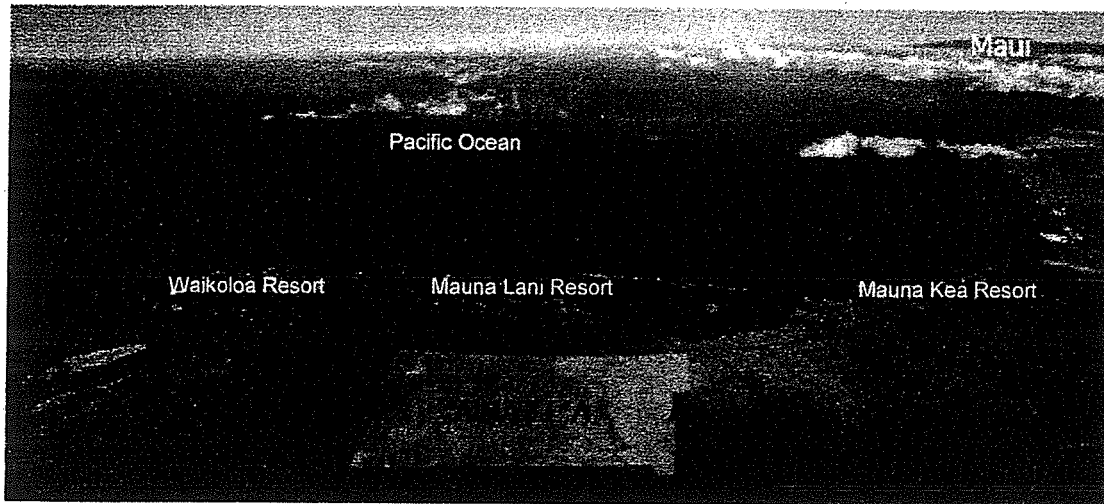
In the unlikely event that subsurface features, including human skeletal remains, lava tubes, artifacts or structural remains are identified during grading, cease work in the immediate vicinity of the find, protect the find from additional disturbance, and immediately contact the State Historic Preservation Division at (808) 933-7653. Please contact me at [Theresa.K.Donham@hawaii.gov](mailto:Theresa.K.Donham@hawaii.gov) if you have any questions or concerns regarding this letter.

Aloha,

Theresa K. Donham  
Acting Archaeology Branch Chief  
Historic Preservation Division

# THE VILLAGES OF AINA LE'A

## ECOBLOX™ Membrane Bioreactor (MBR) System Phase I Wastewater Treatment Plant (WWTP)



November, 2010

PREPARED FOR: DW Aina Le'a Development, LLC  
68-4747 Queen Kaahumanu Highway  
POB 383129  
Waikoloa, HI 96738

PREPARED BY: Peter J.K. Dahlberg, PE, LLC  
74-4920 Kiwi Street  
Kailua-Kona, HI 96740-9669  
(808) 896-6173  
[pdahlberg@hawaii.rr.com](mailto:pdahlberg@hawaii.rr.com)

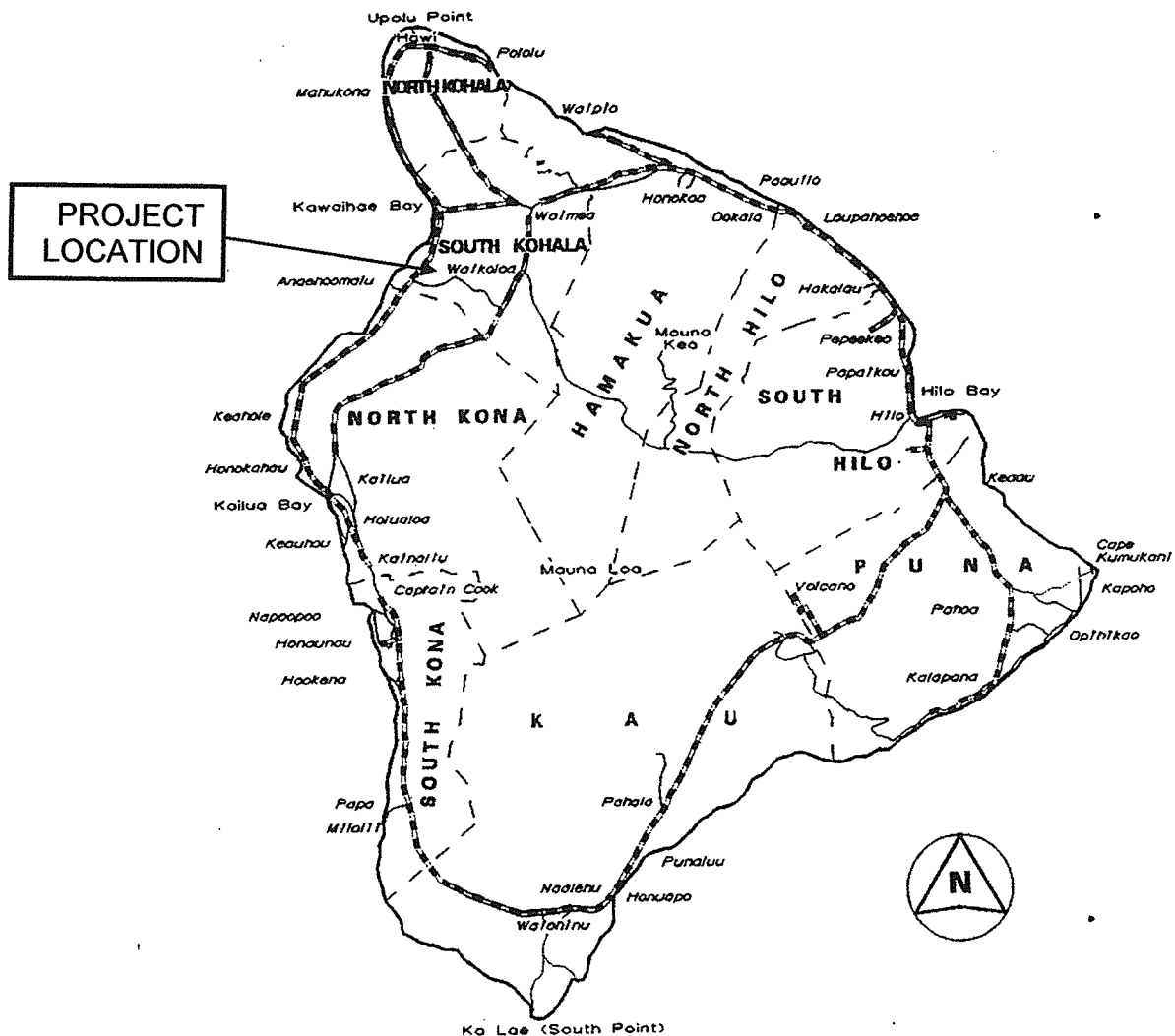
# TABLE OF CONTENTS

PROJECT DESCRIPTION	1 - 7
ENGINEER'S DECLARATION	Attachment 1A
OWNER'S CERTIFICATION (2 pages)	Attachment 1B
EXHIBIT A – ECOBLOX Specification (submitted under separate cover, 15 November 2010)	
EXHIBIT B – MASTER PLAN (sheet size: _____)	
EXHIBIT C – DEVELOPMENT PLANS (SEWER) (sheet size: <u>8.5" x 11"</u> , 13 sheets including cover) Civil Engineering Advance Copy (not for construction)	
EXHIBIT D – REUSE PLAN (sheet size: _____)	
EXHIBIT E – Notice of Intent for General Permit for Treatment Works (WWB – NOI Form B) (sheet size: <u>8.5" x 11"</u> , 9 sheets including cover)	

## Project Description

The Villages of Aina Le'a is a master planned golf course community located on the South Kohala Coast of the Big Island (Island and County of Hawaii, State of Hawaii). The location of the project is shown in Figure 1. General project information is provided in the table below:

Facility Name:	Aina Le'a WWTP (Phase I)
Facility Address:	68-4747 Queen Kaahumanu Highway
Tax Map Key (TMK) of facility:	(3) 6 - 8 - 001 - 025
Facility Owner:	DW Aina Le'a Development, LLC POB 383129 Waikoloa, HI 96738



**FIGURE 1 – PROJECT LOCATION**  
(SCALE = NONE)

**PETER J.K. DAHLBERG, P.E.**

[PDAHLBERG@HAWAII.RR.COM](mailto:PDAHLBERG@HAWAII.RR.COM)  
(808) 895-6173

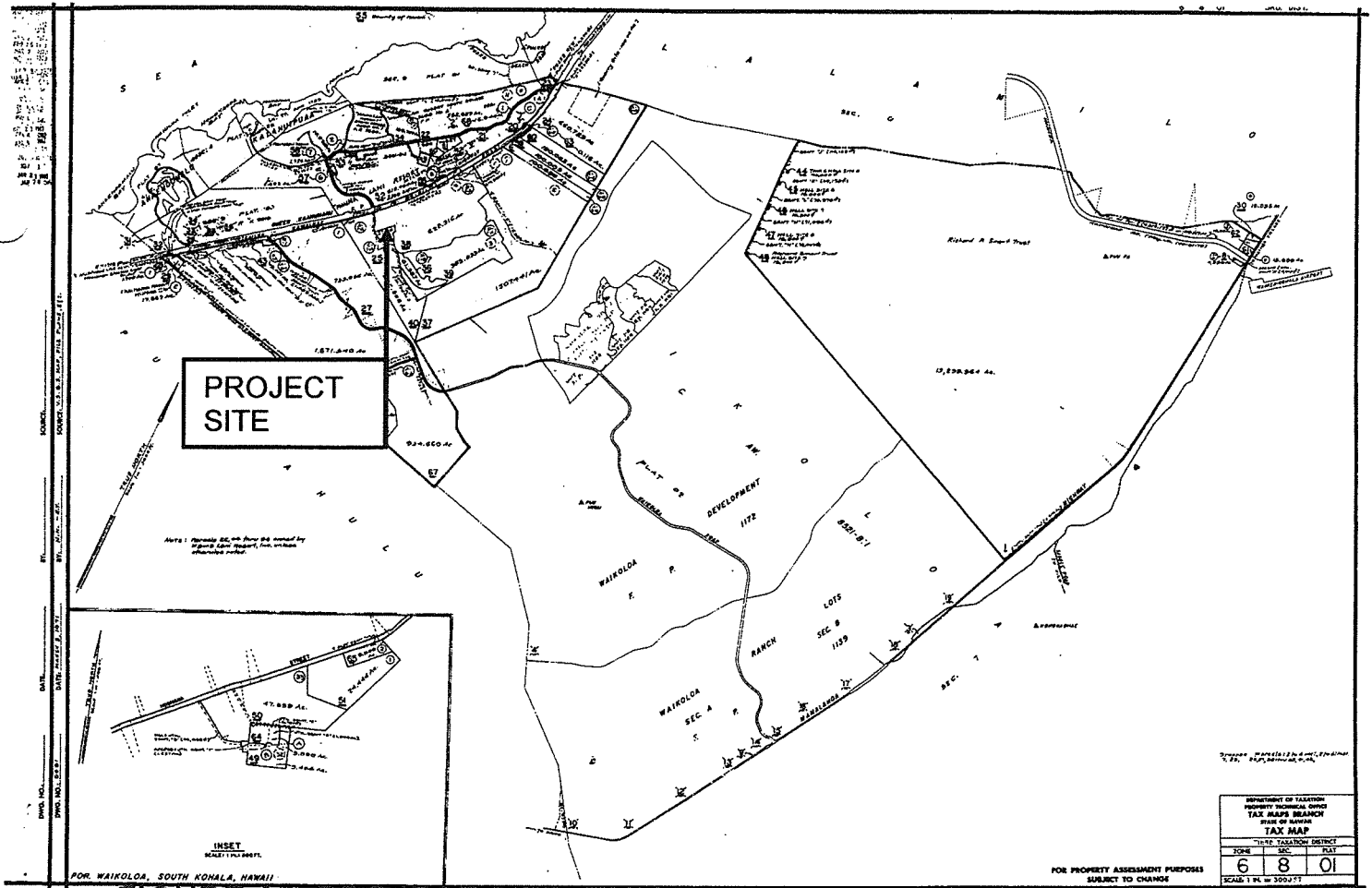
**PROJECT DESCRIPTION**  
Phase I WWTP  
DW Aina Le'a Development, LLC

**1**

The development comprises approximately 1,092 of a total 3000 acres over a number of TMKs (see table below) and is located mauka (inland, or towards the mountains) of Queen Ka'ahumanu (Queen K.) Highway, and makai (towards the ocean) of Waikoloa Village, as shown in Figures 2 and 3. The Queen K. Highway delineates the underground injection control (UIC) line for this part of the island, which means that the development lies above a protected aquifer and will not be allowed injection wells for effluent disposal. The parcels included within the development area are:

District	Zone	Section	Plat	Parcel	Size (acres and land class)
(3)	6	8	001:	025	27.016 commercial
(3)	6	8	001:	036	61.387 apartment <i>residential</i>
(3)	6	8	001:	037	1507.441 agricultural
(3)	6	8	001:	038	447.149 agricultural 181.167 apartment <i>residential</i>
(3)	6	8	001:	039	230.02 agricultural 153.013 apartment <i>residential</i>
(3)	6	8	001:	040	392.808 agricultural

The County of Hawaii Tax Map is provided below in Figure 2.



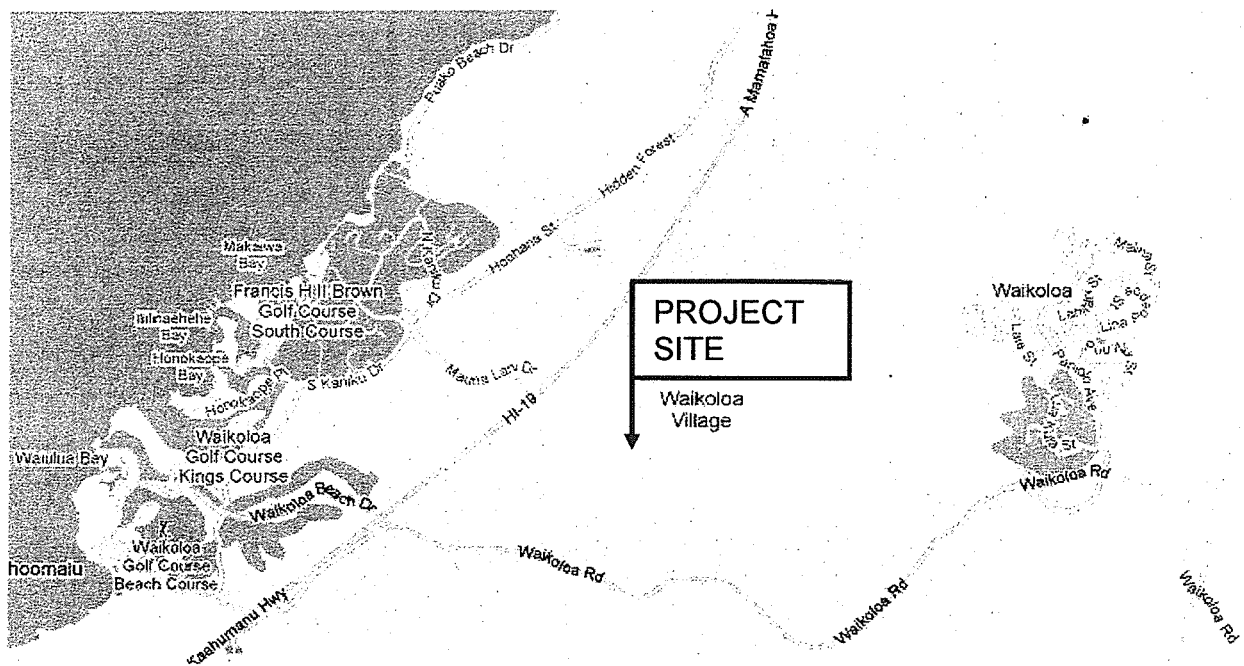
**FIGURE 2 – PROJECT SITE (TMK MAP)**  
(SCALE = NONE)

**PETER J.K. DAHLBERG, P.E.**

[PDAHLBERG@HAWAII.RR.COM](mailto:PDAHLBERG@HAWAII.RR.COM)  
(808) 895-6173

**PROJECT DESCRIPTION**  
Phase I WWTP  
DW Aina Le'a Development, LLC

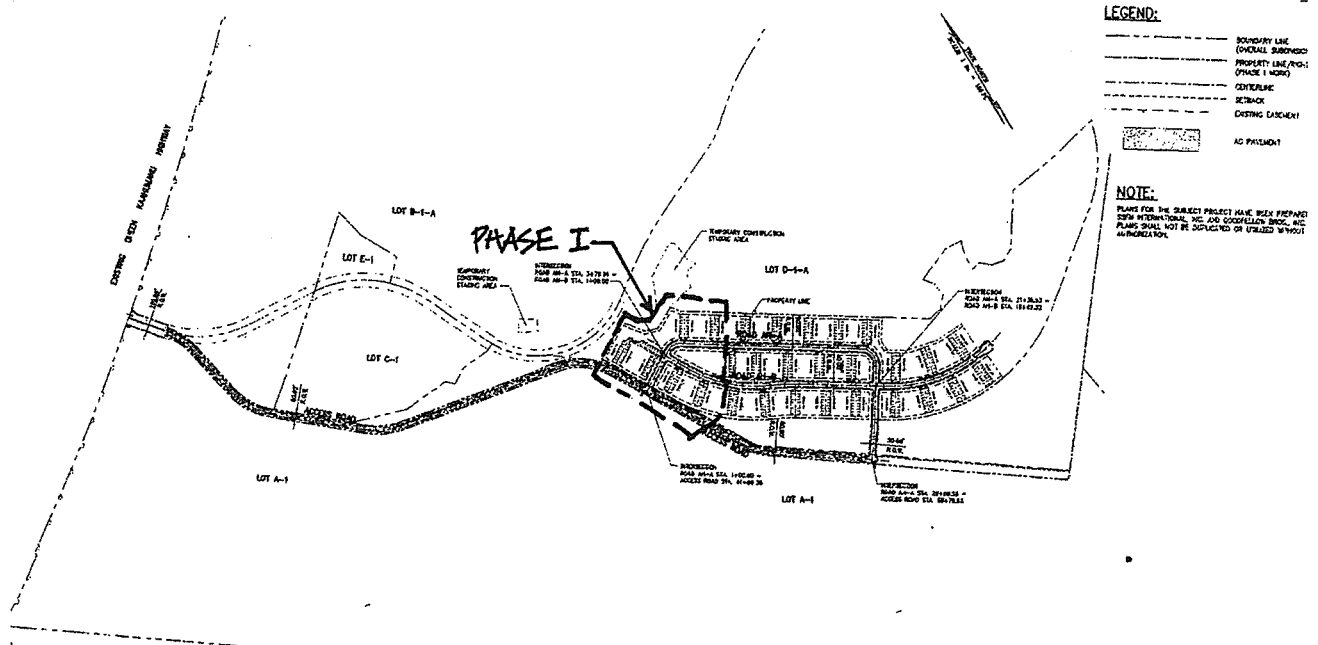
**2**



**FIGURE 3 – PROJECT SITE (VICINITY MAP)**

(SCALE = NONE)

As shown on Figure 2, the project site (Phase I WWTP) is proposed to occur on parcel 025, to service construction to occur on parcel 036. Phase I building construction is scheduled to produce 10 building units (numbered units 41A,B; 42A,B; 43A,B; 44A,B; and 67A,B). As shown in Figures 4, 5.



**FIGURE 4 – PHASE I DEVELOPMENT PLAN (PORTION)**

(SCALE = NONE)

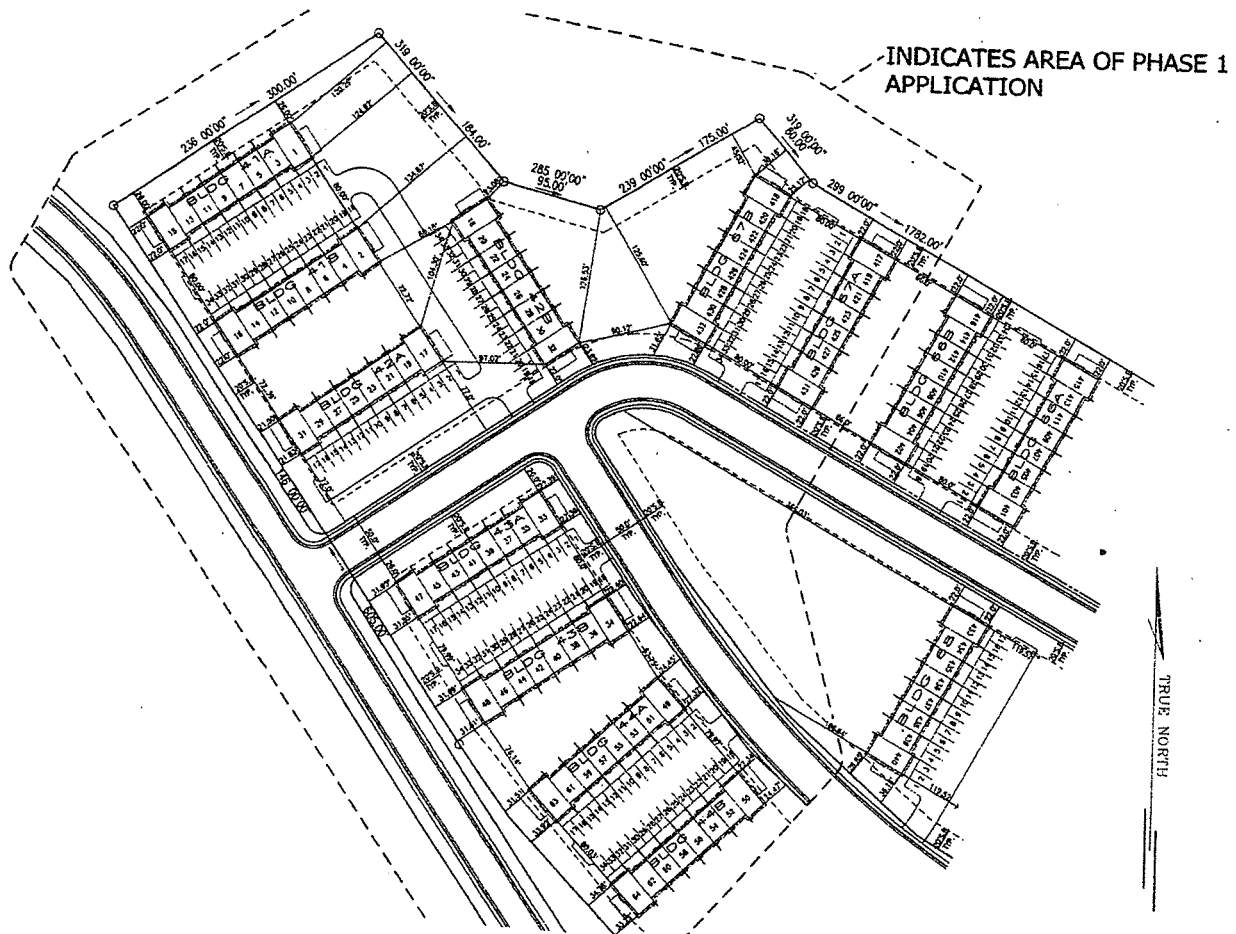
**PETER J.K. DAHLBERG, P.E.**

[PDAHLBERG@HAWAII.RR.COM](mailto:PDAHLBERG@HAWAII.RR.COM)

(808) 895-6173

**PROJECT DESCRIPTION**  
Phase I WWTP  
DW Aina Le'a Development, LLC

**3**



**FIGURE 5 – PHASE I DEVELOPMENT (ENLARGED)**

(SCALE = NONE)

Numbered units 41A,B; 42A,B; 43A,B; 44A,B; and 67A,B are two story structures containing 6 each 3 bedroom (BDR) and 2 each 4 BDR town home type construction, as shown in Figures 6, 7.

BLDG No.	3 BDR UNITS	4 BDR UNITS	Occ. Per 3BDR	Occ. Per 4BDR	Total Occ. Per BLDG	Total Flow per BLDG (GPD)
41A	6	2	24	8	32	2560
41B	6	2	24	8	32	2560
42A	6	2	24	8	32	2560
42B	6	2	24	8	32	2560
43A	6	2	24	8	32	2560
43B	6	2	24	8	32	2560
44A	6	2	24	8	32	2560
44B	6	2	24	8	32	2560
67A	6	2	24	8	32	2560
67B	6	2	24	8	32	2560
Ph. I SUM	60	20	240	80	320	25600

**TABLE 1 – PHASE I DEVELOPMENT WASTEWATER FLOW PROJECTION**

**PETER J.K. DAHLBERG, P.E.**

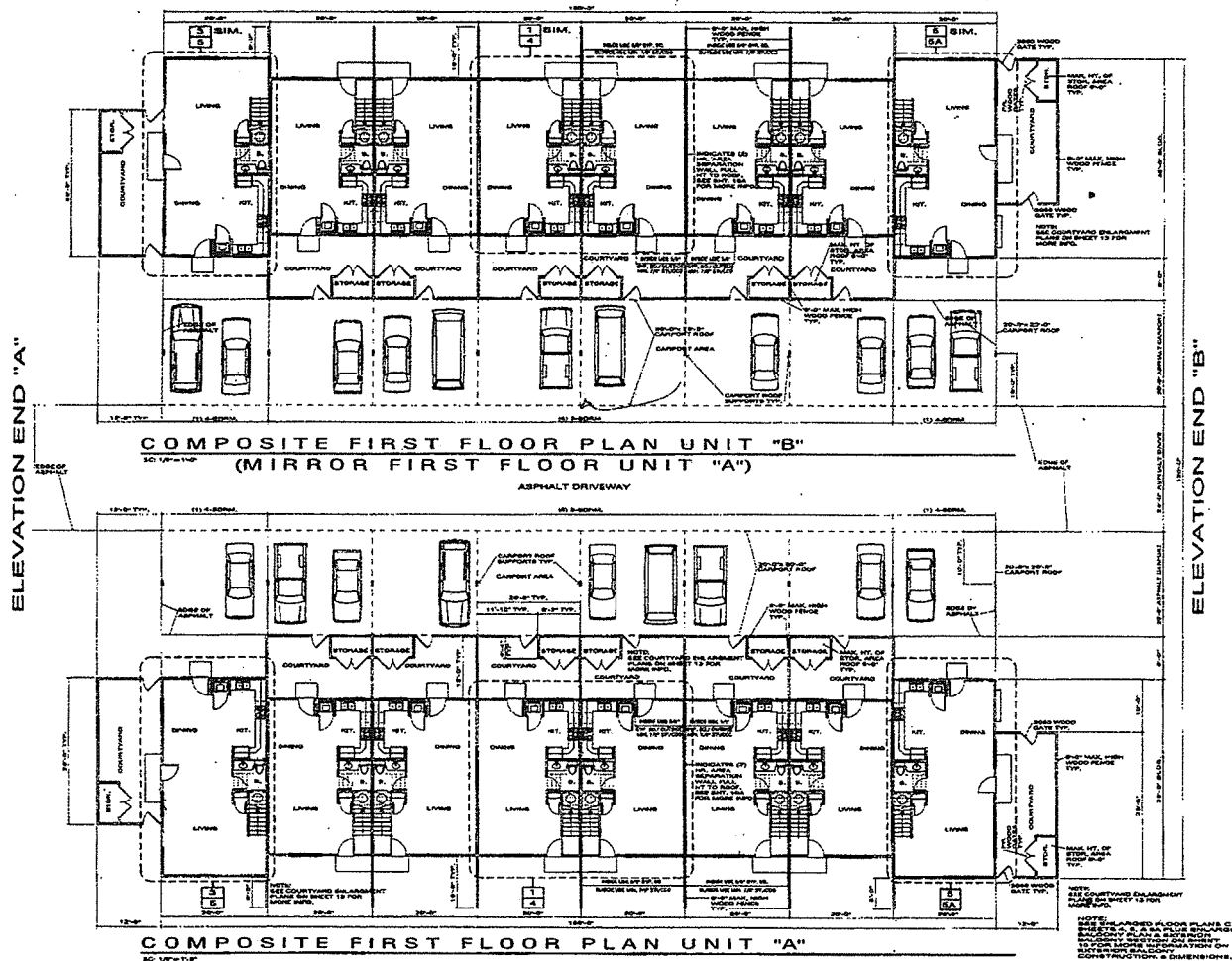
[PDAHLBERG@HAWAII.RR.COM](mailto:PDAHLBERG@HAWAII.RR.COM)  
(808) 895-6173

**PROJECT DESCRIPTION**  
Phase I WWTP  
DW Aina Le'a Development, LLC

**4**



Table 1 identifies Phase I development wastewater flow projections following the "Design Standards of the Department of Wastewater Management" (Volume 1, July, 1993, City and County of Honolulu, State of Hawaii), Chapter 22 (Quantity of Wastewater), Section 22.2.1 (Average Daily Flows) the projected wastewater flow is 80 gallons per capita per day (gpcd) with a residential occupancy density of 4 persons per home. Please note the abbreviations used in Table 1, BDR = bedrooms, BLDG = building, GPD = gallons per day, Occ. = occupants.



**FIGURE 6 – TYPICAL FIRST FLOOR PLAN (UNIT A & B)**  
(SCALE = NONE)

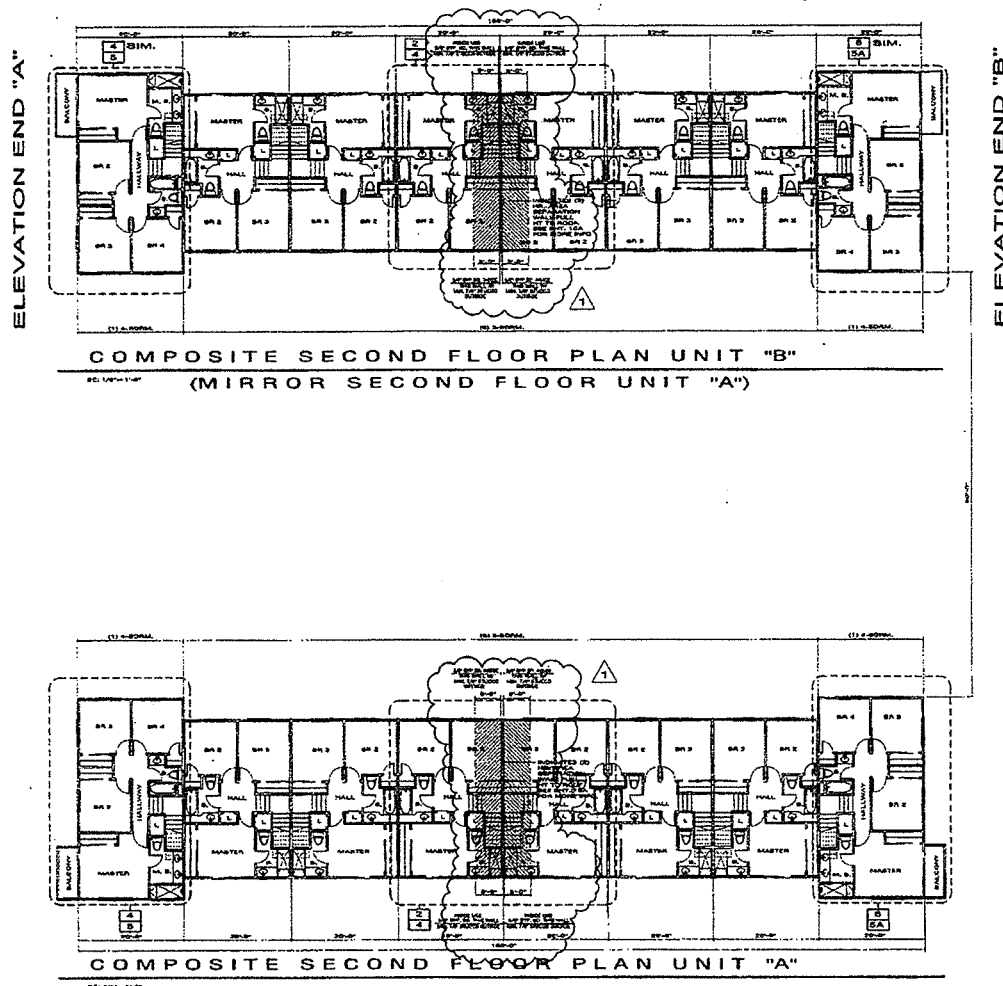
Phase I development will allow the project owner to develop as financing allows and to show progress towards the overall master plan which is to consist of parks, community sporting facilities, a lodge, single-family homes, condominiums, affordable town homes, a golf course, spa, commercial offices, medical facilities, shopping and village centers across from the Mauna Lani Resort. Phase I will provide affordable homes to be marketed and sold. The conceptual master plan is provided as *Exhibit B*. The master plan proposes a full project build-out of 432 condominiums, 1,945 single-family homes and 400,000 square feet of commercial facilities.

**PETER J.K. DAHLBERG, P.E.**

[PDAHLBERG@HAWAII.RR.COM](mailto:PDAHLBERG@HAWAII.RR.COM)  
(808) 895-6173

**PROJECT DESCRIPTION**  
Phase I WWTP  
DW Aina Le'a Development, LLC.

**5**



**FIGURE 7 – TYPICAL SECOND FLOOR PLAN (UNIT A & B)**  
(SCALE = NONE)

*Exhibit A, Aina Le'a ECOBLOX Specification Binder* provided by the WWTP manufacturer (OVIVO Project CAW46, dated 3 November 2010) was delivered to the State of Hawaii, Department of Health, Wastewater Branch my mail 15 November 2010 signature confirmation number: 2307 2390 0000 1495 3031. This binder details the equipment inventory, piping and instrumentation drawings, control strategy, start-up instructions, operations and maintenance manual.

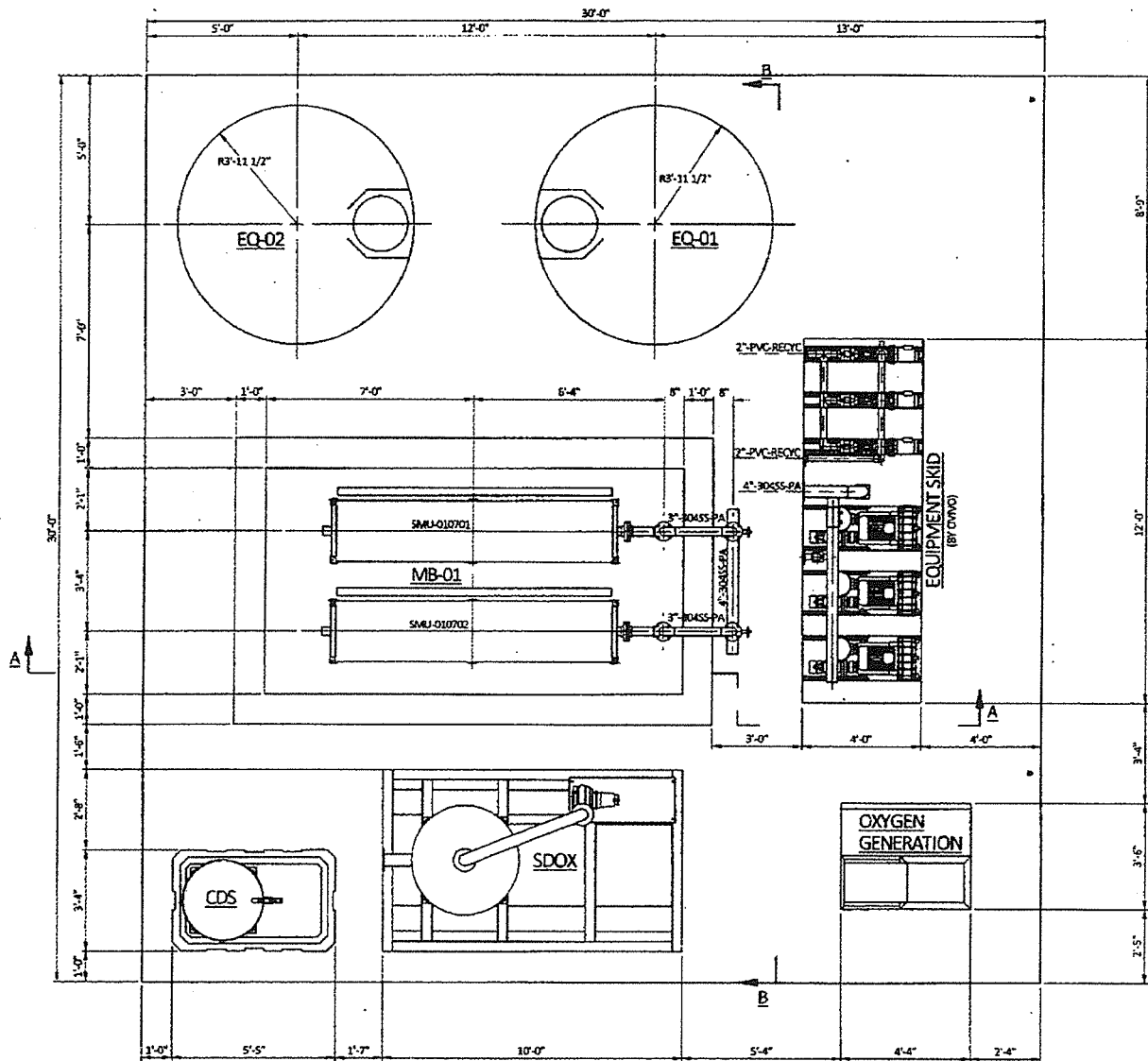
A plan view of the Phase 1 WWTP is shown in Figure 8. The unit is capable of treating design flows up to 40,000 GPD without the need for additional membrane units or increase in air supply. The system is scheduled to treat a start-up flow of 15,000 GPD (as units are occupied) with an ultimate projected daily flow of 25,600 GPD as calculated in Table 1.

**PETER J.K. DAHLBERG, P.E.**

[PDAHLBERG@HAWAII.RR.COM](mailto:PDAHLBERG@HAWAII.RR.COM)  
(808) 895-6173

**PROJECT DESCRIPTION**  
Phase I WWTP  
DW Aina Le'a Development, LLC

**6**



**FIGURE 8 – PHASE I WWTP (25,000 – 40,000 GPD ADF)**

(SCALE = NONE)

Parameter (unit)	Influent	Average Effluent	Notes
BOD <sub>5</sub> (mg/L)	450	<5	Average based on 4 or more composites
TSS (mg/L)	450	<5	Average based on 4 or more composites
TKN-N (mg/L)	45	<10	Average based on 4 or more composites
NO <sub>3</sub> -N (mg/L)	0	<10	Average based on 4 or more composites
Turbidity (NTU)	-	<0.2	95% of time, not to exceed 0.5 NTU

**TABLE 2 – ANTICIPATED INFLUENT AND EFFLUENT CHARACTERISTICS**

Reference: Aina Le'a ECOBLOX Specification, OVIVO Project CAW46, 3 November 2010

*Exhibit C*, has been provided to show the proposed sewer master plan.

*Exhibit D*, details the proposed irrigation re-use and back-up disposal plan.

**PETER J.K. DAHLBERG, P.E.**

[PDAHLBERG@HAWAII.RR.COM](mailto:PDAHLBERG@HAWAII.RR.COM)  
(808) 895-6173

**PROJECT DESCRIPTION**  
Phase I WWTP  
DW Aina Le'a Development, LLC

**7**

## Engineer's Declaration

Per Hawaii Administrative Rules (HAR) 11-62-23.1 "*Specific requirements for wastewater treatment works*," the following documents shall be submitted to the director prior to approval to construct the treatment works:

(1) A written declaration signed and dated by the engineer that the proposed treatment works was designed to meet all applicable effluent requirements of sections 11-62-26 and 11-62-27.

11-62-26 "*Wastewater effluent requirements, recycled water quality, and monitoring requirements applicable to treatment works treating domestic wastewater.*"

11-62-26(1) (B) For wastewater treatment works with design flows less than 100,000 gallons per day, the owner or operator shall perform grab sampling at least monthly.

(D) The BOD<sub>5</sub> in the effluent from a treatment works shall not exceed 60 milligrams per liter based on a grab sample. (2) (B) For wastewater treatment works with design flows less than 100,000 gallons per day, the owner or operator shall perform grab sampling at least monthly.

(D) The suspended solids (TSS) in the effluent from a treatment works shall not exceed 60 milligrams per liter based on a grab sample.

Parameter (unit)	Influent	Average Effluent	Notes
BOD <sub>5</sub> (mg/L)	450	<5	Average based on 4 or more composites
TSS (mg/L)	450	<5	Average based on 4 or more composites
TKN-N (mg/L)	45	<10	Average based on 4 or more composites
NO <sub>3</sub> -N (mg/L)	0	<10	Average based on 4 or more composites
Turbidity (NTU)	-	<0.2	95% of time, not to exceed 0.5 NTU

### ANTICIPATED INFLUENT AND EFFLUENT CHARACTERISTICS<sup>1</sup>

The Owner shall be responsible to provide for reporting, operations and maintenance in accordance with Attachment 1B (Owner's Certification)

11-62-27 "*Recycled water systems.*"

*Exhibit D*, details the proposed irrigation re-use and back-up disposal plan.

THIS WORK HAS BEEN  
PREPARED BY ME OR UNDER  
MY SUPERVISION, AND CONSTRUCTION  
OF THIS PROJECT WILL BE UNDER  
MY OBSERVATION (LIC. EXP 4/30/2012)

\_\_\_\_\_  
Engineer's Signature & Stamp

<sup>1</sup> Aina Le'a ECOBLOX Specification, OVIVO Project CAW46, 3 November 2010

<b>PETER J.K. DAHLBERG, P.E.</b> <u>PDAHLBERG@HAWAII.RR.COM</u> (808) 895-6173	<b>ENGINEER'S DECLARATION</b> <b>AINA LEA, LLC</b>	<b>1A</b>
--	---	-----------

## Owner's Certification

Per Hawaii Administrative Rules (HAR) 11-62-23.1 "Specific requirements for wastewater treatment works," the following documents shall be submitted to the director prior to approval to construct the treatment works:

(2) Certification by the owner of a proposed treatment works that the treatment works shall be operated and maintained in accordance with all of the provisions of the operation and maintenance manual developed pursuant to subsection (d)(2). The owner shall certify that the operation and maintenance manual shall be available to the operator of the treatment works and shall further certify that, upon sale or transfer of ownership of the treatment works, the sale or transfer will include construction drawings, equipment manuals, operational data collected, and the appropriate transfer documents and provisions binding the new owner to the operation and maintenance manual.

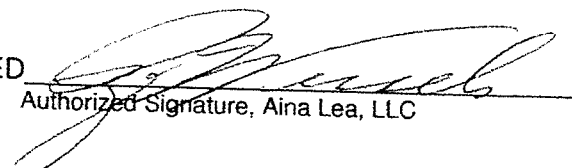
THE OWNER HAS BEEN PROVIDED WITH THE MANUFACTURER'S INSTALLATION, OPERATION, AND MAINTENANCE MANUAL. THE OWNER WILL BE PROVIDED WITH A DETAILED AS BUILT OPERATIONS AND MAINTENANCE MANUAL DEVELOPED IN CONJUNCTION WITH THE ENGINEER, MANUFACTURER, INSTALLATION CONTRACTOR, AND THE OPERATION AND MAINTENANCE CONTRACTOR. THE AS-BUILT O&M MANUAL SHALL BE DELIVERED TO THE OWNER AND THE STATE OF HAWAII, DEPARTMENT OF HEALTH (DOH) NO LATER THAN 30 DAYS PRIOR SYSTEM OPERATION, AND SHALL ADDRESS THE FOLLOWING:

1. Operation and maintenance instructions for treatment unit or process under normal and emergency conditions such as power outage and equipment malfunction;
2. Operation and maintenance instructions for the disposal system including procedures for purging or chemical "shock loading" to prevent or eliminate biological growth in the subsurface disposal system;
3. Sampling frequency - MONTHLY
  - a. The BOD<sub>5</sub> in the effluent from a treatment works shall not exceed 60 milligrams per liter based on the arithmetic average of the results of the analyses of grab samples.
  - b. The TSS in the effluent from a treatment works shall not exceed 60 milligrams per liter based on a grab sample.
  - c. The dissolved oxygen, pH, and 30 minutes settleability of the contents of the aeration tank shall be sampled and analyzed at least weekly.
  - d. Effluent chlorine residual, if any, shall be sampled and analyzed at least weekly.
  - e. Total daily flow shall be monitored at least weekly.
  - f. The volume of wastewater sludge wasted, the solids concentration of wastewater sludge wasted, the name of the wastewater sludge pumping and hauling firm, and the dates of pumping and hauling, if applicable, shall be recorded. Sludge is to be disposed of as applicable per *HAR Chapter 62, Subchapter 4 - 11.62.41(a) 1 (5)*. Hauler to be identified and registered with owner/operator per *11.62.50 (b)(4)*.

<b>PETER J.K. DAHLBERG, P.E.</b> <u>PDAHLBERG@HAWAII.HR.COM</u> (808) 895-6173	<b>OWNER'S CERTIFICATION</b> <b>AINA LEA, LLC</b>	<b>1B</b> 1 of 2
--	--	---------------------

4. Troubleshooting, corrective, and preventive measures to be taken to maintain process control and treatment performance;
5. Start-up procedures;
6. Manpower requirements needed to operate and maintain the treatment works;
7. List of critical parts of the treatment works;
8. "As-built" drawings of the treatment works;
9. List of required daily activities, access instructions, checks and observations;
10. Logs or report forms for all operation and maintenance activities performed;
11. Flow schematic diagrams with details of piping and valving;
12. Plot plan of the treatment works and project site including all collection lines and equipment;
13. Details on all safety equipment at the treatment works site, any applicable spare parts, maintenance and operation instructions; and
14. Details on all monitoring equipment including spare parts, maintenance and operating instructions.

I, **AINA LEA, LLC**, certify that WE are the OWNERS of the subject property and the proposed treatment works. WE certify that the AS-BUILT operation and maintenance manual AS DEFINED ABOVE shall be available to DOH 30 DAYS PRIOR TO SYSTEM OPERATION and to the operator of the treatment works and shall further certify that, upon sale or transfer of ownership of the treatment works, the sale or transfer will include construction drawings, equipment manuals, operational data collected, and the appropriate transfer documents and provisions binding the new owner to the operation and maintenance manual. Failure to comply with the governing Hawaii Administrative Rules (HAR) 11-62 (Wastewater Systems) can lead to imposition of the penalties and remedies as provided for in HAR Sec 11-62-42, penalties and remedies.

SIGNED  DATED 10/6/2010  
 Authorized Signature, Aina Lea, LLC

<b>PETER J.K. DAHLBERG, P.E.</b> <u>PDAHLBERG@HAWAII.RR.COM</u> (808) 895-6173	<b>OWNER'S CERTIFICATION</b> <b>AINA LEA, LLC</b>	<b>1B</b> 2 of 2
--	--	---------------------

# EXHIBIT C

## The Villages of Aina Lea Phase I Civil Engineering Construction Drawings (selected sheets)

The following 12 pages have been selected from the Advance Copy as provided by SSFM International.

C0.02	Civil Notes – 1 and Drawing Index
C2.20	Overall Sewer Plan
C5.01-5.04	Plan and Profiles: Sewer and Water – Road AH-A
C5.05-5.07	Plan and Profiles: Sewer and Water – Road AH-B
C5.08-5.10	Plan and Profiles: Sewer and Water – Access Road

The selected sheets have been provided in 8.5" x 11" format and as such are not to scale as referenced on the drawings.

<b>PETER J.K. DAHLBERG, P.E.</b> <a href="mailto:PDAHLBERG@HAWAII.RR.COM">PDAHLBERG@HAWAII.RR.COM</a> (808) 895-6173	<b>EXHIBIT C</b> <b>SEWER MASTER PLAN</b> Phase I WWTP DW Aina Le'a Development, LLC	<b>COVER</b> <b>PAGE</b> 1 of 13
--	---	--

MODELLING FOR RILMOLOGY: CHOICES OF INTERPRETATION ON PLANTS.

6. ALL LOOK-UPS TO EXISTING MATERIALS SHALL BE DONE BY THE DEPARTMENT OF WATER SUPPLY. THE CONTRACTOR SHALL PROVIDE ALL EXCAVATION, BACKFILL, ROAD REPAIR, TRAFFIC CONTROL, ETC.

5. ALL HOOK-UPS TO EXISTING WATERLINES SHALL BE DONE BY THE DEPARTMENT OF WATER SUPPLY. THE CONTRACTOR SHALL PROVIDE ALL EXCAVATION, BACKFILL, ROAD REPAIR, TRAFFIC CONTROL, ETC.

---

ADVANCED COPY  
SUBJECT TO CHANGE


---


DATE  
JANUARY 2000  
PACIFIC NUMBER  
C0.02



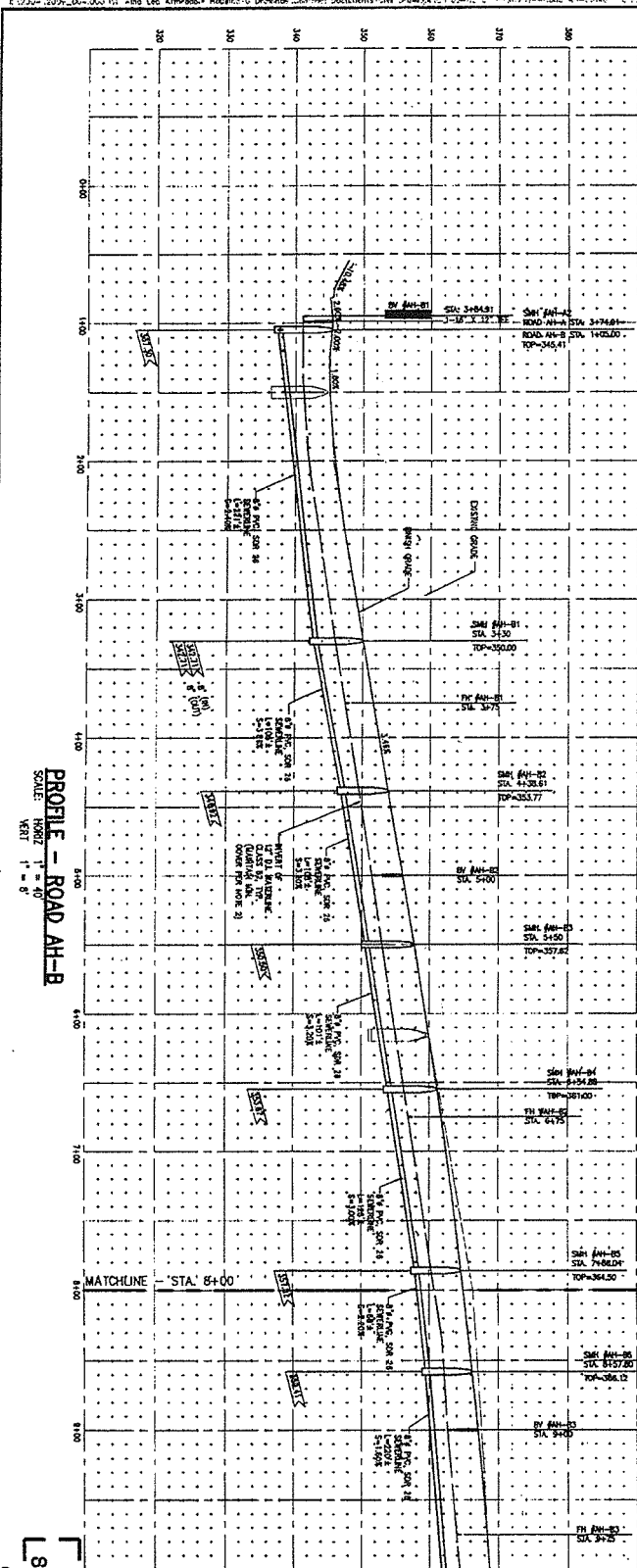




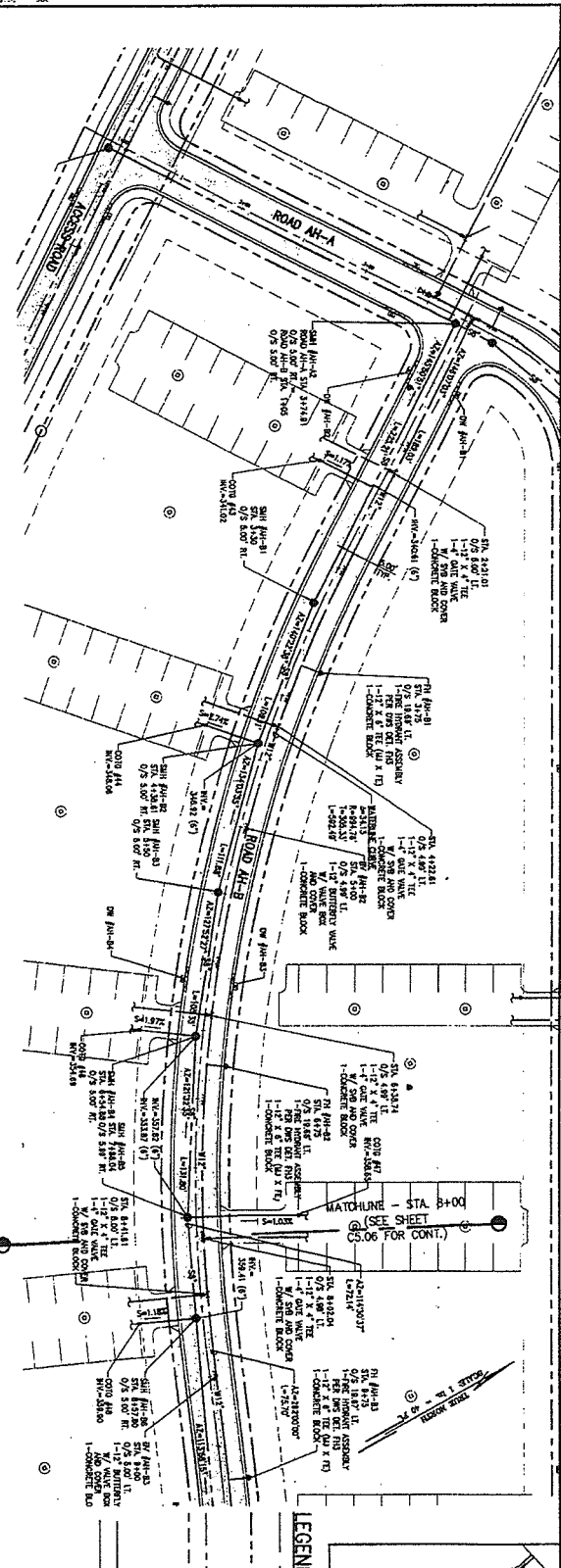
 <p><b>SSFM</b> INTERNATIONAL</p>	<p>This bid is prepared by us on basis of information and conditions, as presented in the advertisement and specifications, and is subject to the terms and conditions of the contract to be awarded by the client. We shall not be held responsible for any errors or omissions in the advertisement, specifications, drawings, and drawings included.</p>	
<p><b>GOODFELLOW BROS., INC.</b> GENERAL CONTRACTOR</p> <p>..... 875-151-0628 / 875-151-0629</p>	<p>4/30/70</p> <p>signature</p> <p>position title of the Firm</p>	
<p>NOTE: Contractor to obtain and verify dimensions of all items and materials.</p>		

DATE 05/03 OF 05/03/70	PLAN AND PROFILE SEWER AND WATER - ROAD A-H-A STA. 14100 TO 21400	PROJECT The Villages of Aina Lea Phase 1 Waikoloa, Big Island, Hawaii	5/22/70	COORDINATION DRAWING	CDD	DMI	 <p>SSFM INTERNATIONAL</p> <p>GOODFELLOW BROS., INC. GENERAL CONTRACTOR</p> <p>4/26/70</p> <p>at the Office of</p> <p>SSFM</p> <p>SSFM: Designer to draw and verify          drawings in accordance with all Hawaii Department of Public Works          specifications.</p>
			REVISION DATE DESCRIPTION MADE BY APPROVED	5/22/70	COORDINATION DRAWING	CDD	





PLAN  
SCALE: 1" = 40'



**NOTE:**

1. PLANS FOR THE SUBJECT PROJECT HAVE BEEN PREPARED BY SSM INTERNATIONAL, INC. THESE PLANS SHALL NOT BE DUPLICATED OR USED WITHOUT PROPER AUTHORIZATION.
2. WATERING MATERIAL COVER SHALL BE PER TABLE 100-1 OF THE 2002 WATER SYSTEM STANDARDS.
3. VALVE BOX FOR: a. GATE VALVE 6" AND SMALLER SHALL BE PER DWS STD DET. V14 b. BUTTERFLY VALVES 12" AND LARGER SHALL BE PER DWS STD DET. V15 c. VALVE BOX COVER SHALL BE PER DWS STD DET. V16
4. SEE SHEETS 0410 TO 0413 FOR UTILITY LOCATIONS IN T.O.S.

**GRAPHIC SCALE**

SCALE: 1" = 40'

SCALE: 1" = 8'

GRAPHIC SCALE TO BE USED FOR REDUCED COPIES

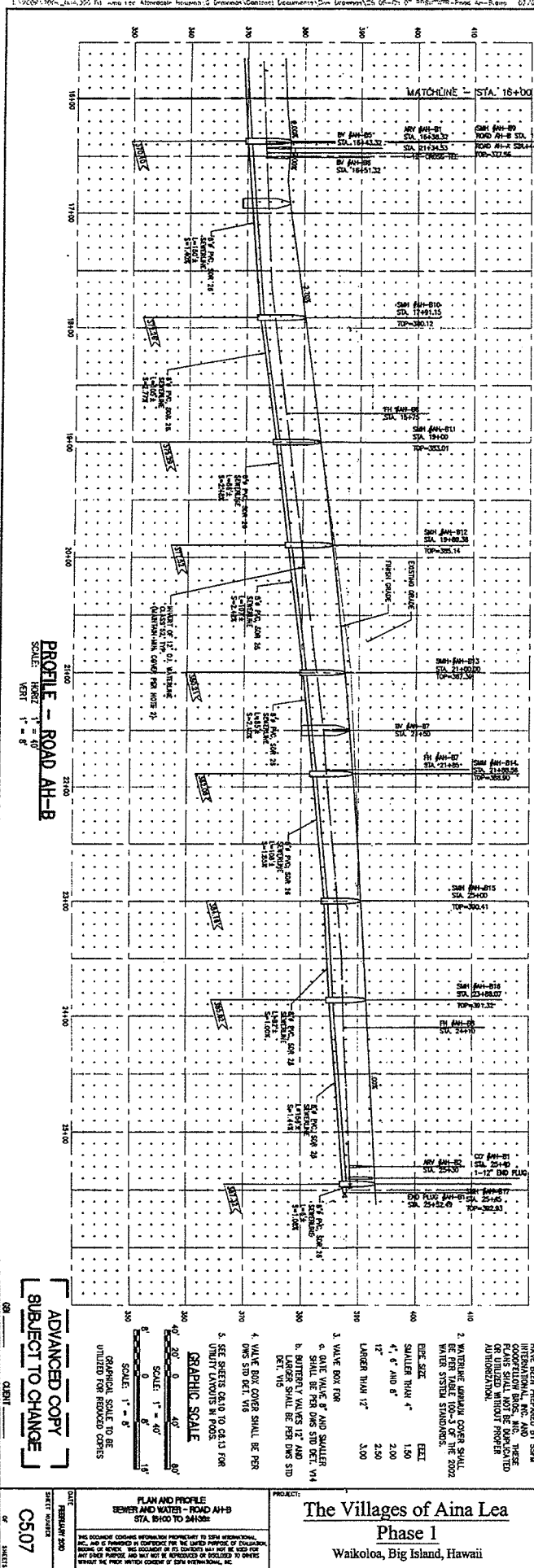
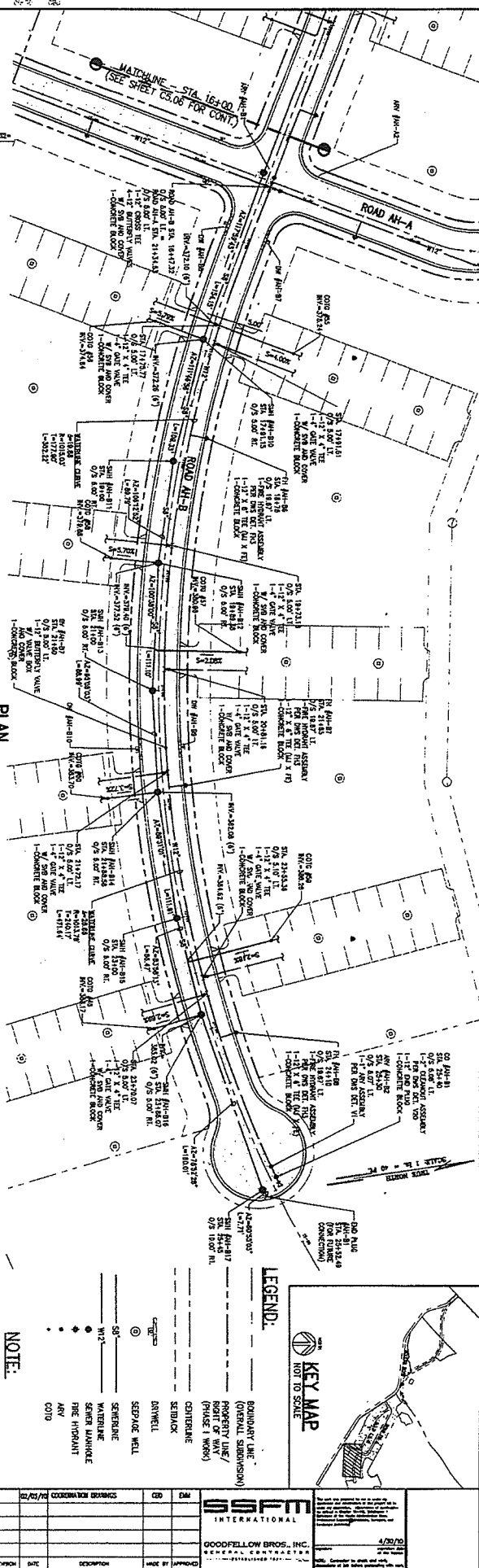
**LEGEND:**

- BOUNDARY LINE (OVERALL SUBDIVISION)
- PROPERTY LINE / RIGHT OF WAY (PRIVATE / PUBLIC)
- CENTERLINE
- SETBACK
- SEWERAGE WELL
- SEWERLINE
- WATERLINE
- SEWER MANHOLE
- PIPE HYDRANT
- MAN
- CULVERT

**KEY MAP**

NOT TO SCALE

[illegible]

OF  
SWEETS

0507

FEBRUARY 2010

THE  
INC., A  
ANY OF  
ST-HOU

88

**FL  
RAN  
STA**

AND  
KATE  
HOO

OFFICE  
- FROM  
24-HR  
STAFF  
- UNIT  
WORKING  
LOCAL  
- 0-217

AT-

HOW  
EVALU  
ED F  
ONE

PRO

CT:

ne

vi  
aik

ag  
P  
da,

S  
as  
ig 1

$$\frac{1}{f(A)}$$

Have

i

1

--

1000

25/10

10-11-2011

THE DRA

3



[illegible]

**5**  
**NT**  
**DDF**  
**EA**  
**1991**

LOW  
C  
9475

ON  
ROS  
F. H. A.  
672.

INC.  
D A  
by law

[illegible]

to the  
labor

4/30

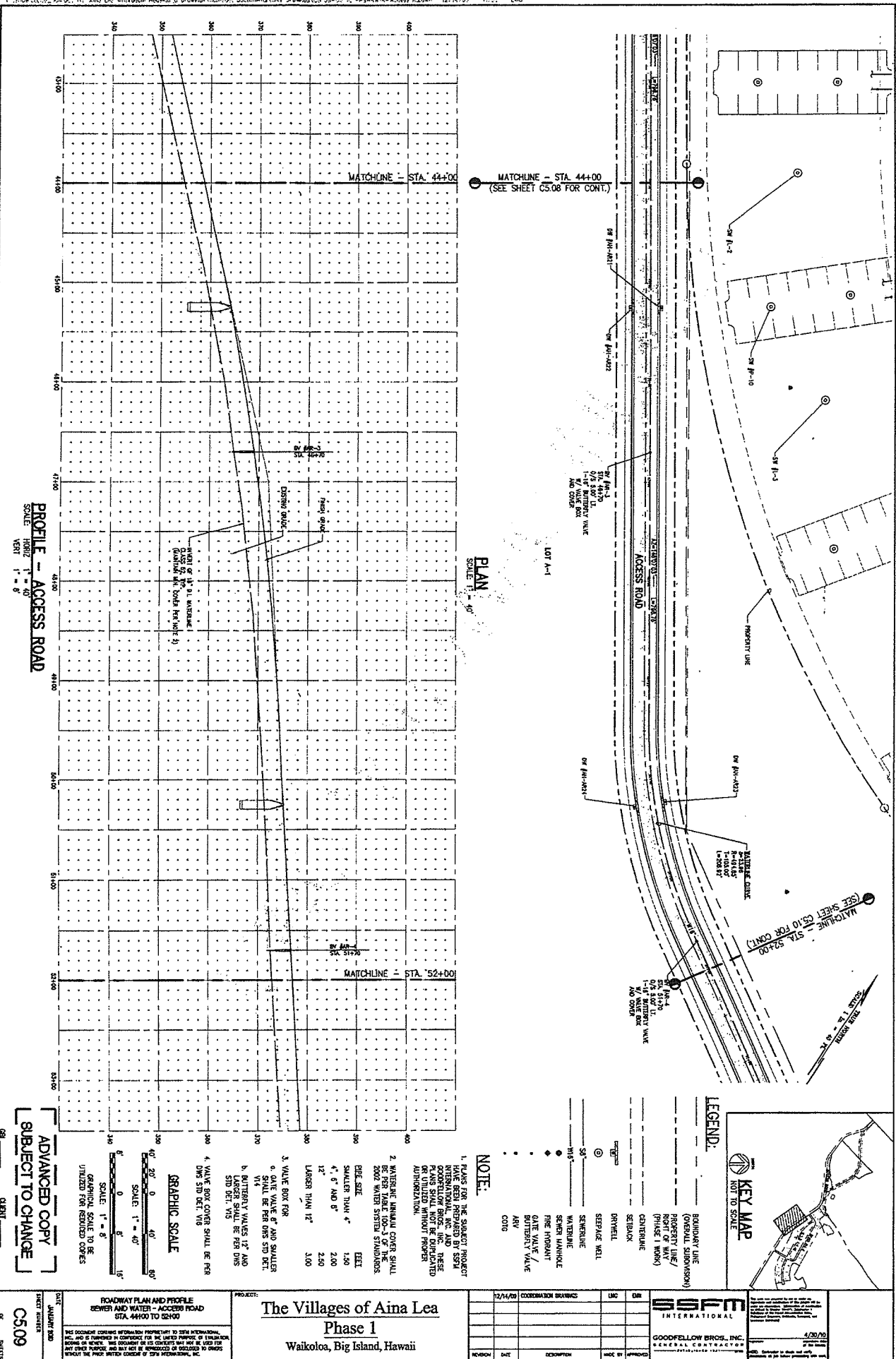
--	--

---

---









## EXHIBIT D

The Villages of Aina Lea  
ECOBLOX™ Membrane Bioreactor (MBR) System  
Phase I Wastewater Treatment Plant (WWTP)  
Reuse and Disposal Plan

(1) R-1 water disinfection requirements.

(A) For chlorine disinfection process. The disinfection process shall provide a CT (the product of total chlorine residual and modal contact time measured at the same point) value of not less than 450 milligrams-minutes per liter at all times with a modal contact time of at least ninety minutes based on peak dry weather design flow; or

(B) For non-chlorine disinfection processes. The disinfection process shall demonstrate to the director's satisfaction that the inactivation and removal of 99.999 per cent of the plaque forming units of F-specific bacteriophage MS2 or polio virus in the wastewater.

(3) Monitoring shall be by grab samples that shall be taken at a point following disinfection.

(d) In addition to subsection (b) and (c), treatment works producing R-1 water or R-2 water for recycled water systems shall meet the following daily fecal coliform requirements unless other sampling frequencies are approved by the director. Monitoring shall be by grab samples that shall be taken at a point following disinfection.

(1) R-1 water.

(A) The median density measured in the disinfected effluent shall not exceed 2.2/100 milliliters using the bacteriological results of the last seven days for which analyses have been completed;

(B) The density shall not exceed 23/100 milliliters in more than one sample in any thirty day period; and

(C) The density in any one sample shall not exceed 200/100 milliliters.

(e) In addition to subsections (b) through (d), treatment works producing R-1 water for recycled water systems shall provide continuous turbidity monitoring and recording prior to the filtration process and at a point after the filters and before application of the disinfectant. For granular media filtration units, the effluent turbidity shall not exceed 2.0

<p><b>PETER J.K. DAHLBERG, P.E.</b> <u>PDAHLBERG@HAWAII.RR.COM</u> (808) 895-6173</p>	<p><b>EXHIBIT D</b> <b>REUSE AND DISPOSAL PLAN</b> Phase I WWTP DW Aina Le'a Development, LLC</p>	<p><b>COVER PAGE</b></p>
---	---	------------------------------

nephelometric turbidity units (NTUs). For membrane filtration units, the effluent turbidity limitations shall be determined by the director on a case by case basis.

(f) The analysis, including the handling and preservation of samples, to determine compliance with effluent requirements shall be performed in accordance with Standard Methods or EPA's Methods for Chemical Analysis of Water and Wastes. The director may approve alternative methods for analyzing the effluent limits of this section. The alternative test methods when approved, may be used by the director to determine compliance with effluent limits as stated in this rule.

**§11-62-27 Recycled water systems.**

(a) No recycled water system shall be constructed, used, or modified without written approval by the director.

(b) In reviewing recycled water systems and in addition to these rules, the director shall be guided by the Reuse Guidelines.

(c) Before using recycled water, the owner of the recycled water system shall submit to the director the following information:

(1) Name, address, and phone number of the owner and party responsible for the application of recycled water at the site (if different from the owner);

(2) Clear identification of the people who will actually operate and maintain the system, if different from paragraph (1);

(3) Detailed site information on the water recycling application site and its surroundings, including site name, address, and tax map key number(s), a map indicating specific areas of use, areas of public access, surrounding land use, location of all wells within a one-fourth mile radius, description of nearest housing or public area, setbacks, general location of existing and proposed water and sewer lines, the direction of drainage with a description of how the drainage will flow and the depth to groundwater underlying the irrigated area with a description of the ground water quality; and

(4) Information sufficient to show compliance with the requirements of subsection (h), and identification of best management practices.

<b>PETER J.K. DAHLBERG, P.E.</b> <u><a href="mailto:PDAHLBERG@HAWAII.RR.COM">PDAHLBERG@HAWAII.RR.COM</a></u> (808) 895-6173	<b>EXHIBIT D</b> <b>REUSE AND DISPOSAL PLAN.</b> <b>Phase I WWTP</b> <b>DW Aina Le'a Development, LLC</b>	<b>COVER</b> <b>PAGE</b>
---	--	-----------------------------

(d) Before using recycled water, the owner of the recycled water system shall also submit to the director for approval an engineering report. The report shall include the following information and shall clearly identify all best management practices to be implemented:

(1) An irrigation use plan that includes information on application rates, intended uses and schedules for recycled water use. The irrigation use plan shall also include information on types of vegetation, types and methods of irrigation, proposed irrigation schedules, vegetative consumption rates, water balance calculations, nutrient balance calculations, and the corresponding acreage to be used for irrigation;

(2) An overflow control plan that includes detailed best management practices to control or minimize runoff or ponding or recycled water;

(3) A management plan that includes establishment and delineation of the responsibilities of operation and maintenance of the recycled water system;

(4) A public information and access plan, to minimize public contact with the recycled water, that includes methods to adequately inform the public that recycled water is being used, and that the recycled water is unfit for human consumption; and methods to control public access to the recycled water system and areas of recycled water use;

(5) A labeling plan to distinguish piping and appurtenances which carry or contain recycled water from those for potable water;

(6) An employee training plan that describes the training that the employees will receive to ensure compliance with these rules and any other features specified by the director;

(7) A vector control plan (if applicable); and

(8) A groundwater monitoring plan (if applicable) including formulation of a strategy for the observation and surveillance of groundwater for possible sources of pollution.

(e) For existing users of recycled water, the owner of the recycled water system shall submit the information and plans required in subsections (c) and (d), except for the

<b>PETER J.K. DAHLBERG, P.E.</b> <u><a href="mailto:PDAHLBERG@HAWAII.RR.COM">PDAHLBERG@HAWAII.RR.COM</a></u> (808) 895-6173	<b>EXHIBIT D</b> <b>REUSE AND DISPOSAL PLAN</b> <b>Phase I WWTP</b> <b>DW Aina Le'a Development, LLC</b>	<b>COVER PAGE</b>
---	---	-----------------------

information contained in subsection (d)(1) regarding the vegetative consumption rates and water balance, and subsection (d)(8) regarding groundwater monitoring. For users of non R-1 recycled water spray irrigation systems, the owner shall also describe the methods and controls used to ensure that public contact with aerosols are minimized.

(f) For recycled distribution water systems, the owner of the recycled water distribution system shall submit an engineering report containing the following information:

(1) Name, address, and phone number of the owner and party responsible for the recycled water distribution system (if different from the owner);

(2) Information about the treatment works supplying the recycled water, including the name, address, tax map key number, and owner's name;

(3) Maps showing the location of the distribution system layout. The maps shall also include the location of all water and sewer lines;

(4) A labeling plan to distinguish piping and appurtenances which carry or contain recycled water from those for potable water; and

(5) A description of how the distribution system complies with these rules and the Reuse Guidelines.

(g) The engineering report required in subsection (d), (e), or (f) plus any other submittals shall contain sufficient information to assure the director that the degree of treatment and reliability is commensurate with the proposed use, that the distribution and use of the recycled water will not create a health hazard or nuisance, and that the director is able to make decisions in accordance with subsection (b).

(h) For recycled water systems that use recycled water, the owner of the recycled water system shall operate the system in accordance with the requirements of this chapter and to the maximum extent practicable shall:

(1) Irrigate at a rate not greater than the plants use it;

(2) Minimize recycled water runoff and ponding on the ground;

<b>PETER J.K. DAHLBERG, P.E.</b>	<b>EXHIBIT D</b> <b>REUSE AND DISPOSAL PLAN</b> <b>Phase I WWTP</b> <b>DW Aina Le'a Development, LLC</b>	<b>COVER</b> <b>PAGE</b>
<u>PDAHLBERG@HAWAII.RR.COM</u> (808) 895-6173		

- (3) Post signs or other devices warning the public not to drink, swim, or otherwise come into contact with the recycled water;
- (4) Keep the public away from the areas being irrigated with recycled water;
- (5) Clearly mark pipes, tanks, valves, and equipment used in recycled water use systems such that they are easily differentiated from potable water systems;
- (6) Provide training to employees such that they are aware of these rules and any conditions the director imposed on the recycled water use system;
- (7) Provide control measures to minimize vector nuisances; and
- (8) Monitor groundwater as required by the director.

(i) The owners of new, proposed, or modified recycled water systems, where applicable, shall provide adequate storage basin(s) or a backup disposal system to prevent any overflows or discharges from the system when the irrigation system is not in operation or when recycled water quantities exceed the irrigation requirements.

(j) Spills, overflows, and discharges ("spills") of recycled water shall be responded to as required by section 11-62-06(g) and (h) and appendix C entitled Responses for Wastewater Spills, Overflows, and Discharges ("Spills"), dated April 15, 1997.

(k) For recycled water systems, the owner or the owner's duly authorized agent shall, unless otherwise directed, report the following information to the director:

(1) The volume of recycled water used, the volume of recycled water stored, the volume and location of any recycled water spills, and details on the irrigated areas including water budgets, precipitation, evaporation, application rates, and monitoring of best management practices; and

(2) Reported information shall be submitted by February 19 of each year and shall be in a monthly summary format for the preceding calendar year unless otherwise specified or agreed to by the director.

§11-62-28 Additional monitoring, recordkeeping, and reporting.

(a) The owners of treatment works or the owners' duly authorized agents shall maintain complete records of operation and maintenance, repairs, replacements, and improvements performed or installed at the treatment works.

<b>PETER J.K. DAHLBERG, P.E.</b> <u>PDAHLBERG@HAWAII.RR.COM</u> (808) 895-6173	<b>EXHIBIT D</b> <b>REUSE AND DISPOSAL PLAN</b> <b>Phase I WWTP</b> <b>DW Aina Le'a Development, LLC</b>	<b>COVER PAGE</b>
--	---	-----------------------



(b) The monitoring results, reports, and all records required in sections 11-62-26 and 11-26-27, this section, and appendix C entitled Responses for Wastewater Spills, Overflows, and Discharges ("Spills"), dated April 15, 1997, located at the end of this chapter shall be kept on site and available for the director's inspection for at least five years and a copy made available to the director without charge upon the director's request.

**PETER J.K. DAHLBERG, P.E.**

[PDAHLBERG@HAWAII.RR.COM](mailto:PDAHLBERG@HAWAII.RR.COM)  
(808) 895-6173

**EXHIBIT D**  
**REUSE AND DISPOSAL PLAN**  
**Phase I WWTP**  
**DW Aina Le'a Development, LLC**

**COVER  
PAGE**



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

In reply, please refer to:  
File:

581

February 3, 2011

Mr. Peter J.K. Dahlberg, P.E.  
74-4920 Kiwi Street  
Kailua-Kona, Hawaii 96740-9669

Dear Mr. Dahlberg:

Subject: **Basis of Design and Engineering Report  
DW Aina Le'a Development Wastewater Treatment Works  
68-4747 Queen Kaahumanu Highway, Waikoloa, Hawaii  
TMK: (3) 6-8-001:025  
WTW File No.: 581**


The Department of Health (Department) acknowledges receipt of your letter dated January 19, 2011, in response to the Department's letter of January 7, 2011 for the subject facility. The Department reviewed your responses and additional information as it applied to the conformance of the applicable provisions of Hawaii Administrative Rules (HAR), Chapter 11-62 and the Department's *Guidelines for the Treatment and Use of Recycled Water*, dated May 15, 2002. After reviewing your responses, the Department has determined that further information and submittals are necessary to satisfactorily address the Department's concerns.

The following items are requested and must be addressed before the Department can concur with the proposed project:

1. Provide construction plans and PI&D of the proposed wastewater treatment plant. The diagrams submitted in an earlier submittal are not adequate and do not show the UV system. Title sheet, construction notes, civil, mechanical, and electrical sheets were not provided. The PI&D sheets previously submitted does not show the UV system, turbidity meters, flow meters, diversion valves, and effluent and reject flow.
2. Describe and provide drawings showing how reject water will be handled. Define the term "high turbidity" used in your response to describe when the effluent is diverted to the leach field.
3. There are other conditions when effluent should be diverted to the leach field. Discuss these conditions and describe and provide drawings showing how the reject water will be diverted.
4. Provide a wastewater sludge plan. The facility must have a permanent plan for sludge handling. A sludge plan that is dependent upon the contracted operator is not permanent.

Should you have any questions or concerns, please feel free to contact Stuart Shoji of our Branch at 586-4294.

Sincerely,

  
MARSHALL LUM, P.E., ACTING CHIEF  
Wastewater Branch

SKS:cle

10

THE VILLAGES OF  
'Āina Le'a  
BIG ISLAND, HAWAII

January 13, 2014

Mr. Stuart Yamada  
Chief Environmental Management Division  
Safe Drinking Water Branch

Subject: The Villages of Aina Le'a, Phase I  
Underground Injection Control  
UIC Application No. UH-2787  
Fifty Drainage Injection Wells

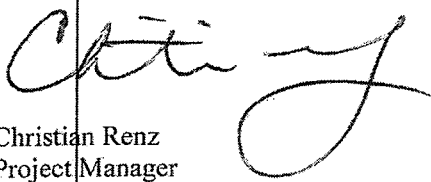
Dear Mr. Yamada,

On behalf of Aina Le'a, Inc, I would like to kindly request your consideration and acceptance of Aina Le'a, Inc.'s request to renew the Underground Inject Control permit as approved originally on March 10<sup>th</sup>, 2010. Please accept this Request for an Extension to the above referenced application.

Similar to the previously mentioned unforeseen complications and delays as mentioned in the last Request for Time Extension dated January 18<sup>th</sup>, 2012, Aina Le'a, Inc. has continued to endure complications throughout the more stringent economic period. Due to the continuing circumstances Aina Le'a, Inc will not be able to complete the construction and final report in regards to the 50 Underground Injection Wells. Currently we are preparing to commence construction in the immediate future with our contractors, and there are no changes to the currently approved UIC plans. Once completed, we fully intend on presenting the final report to the SDWB Environmental Division in strict compliance with the conditions set forth in the previous Approval of Time Extension dated 1/30/2012.

If you have any questions, please contact me at (808) 339-0610 or [Christian@ainalea.com](mailto:Christian@ainalea.com). Your consideration is greatly appreciated and I appreciate your time.

Sincerely,

  
Christian Renz  
Project Manager  
Aina Le'a, Inc.

68-4747 Queen Ka'ahumanu Highway • Kamuela, Hawaii 96743  
Phone - (808) 896-2808 • Fax (808) 443-0016 • Email - [info@ainalea.com](mailto:info@ainalea.com)

NEIL ABERCROMBIE  
GOVERNOR OF HAWAII



GARY L. GILL  
ACTING DIRECTOR OF HEALTH

STATE OF HAWAII  
DEPARTMENT OF HEALTH  
SAFE DRINKING WATER BRANCH  
919 ALA MOANA BLVD., ROOM 308  
HONOLULU, HI 96814-4920

In reply, please refer to:  
File: SDWB  
2787Jan01.doc

January 21, 2014

Mr. Christian Renz  
Project Manager  
'Aina Le'a, Inc.  
68-4747 Queen Kaahumanu Highway  
Kamuela, Hawaii 96743

Dear Mr. Renz:

SUBJECT: OUR REPLY TO YOUR 1/13/2014 LETTER  
REQUESTING ANOTHER TIME EXTENSION FOR THE  
APPROVAL-TO-CONSTRUCT EXPIRING ON 1/31/2014 FOR  
**THE VILLAGES OF 'AINA LE'A, PHASE 1**  
UNDERGROUND INJECTION CONTROL (UIC)  
UIC APPLICATION NO. UH-2787

You are hereby granted a time extension until 1/31/2016.

Please be advised that all the applicable conditions stated in the original approval-to-construct, dated 3/30/2010, still remain effective.

1. If further construction is anticipated after 1/31/2016, you are required to obtain another time extension. However, time extensions are not guaranteed;
2. A request for a time extension should occur **at least 30 days** before the expiration date. If a time extension is not requested by the expiration date, we reserve the authority to cancel the approval-to-construct; and
3. The final report is due 60 days after the completion of injection well construction and testing.

If you have any question, please call Mr. Jaime Rimando of the UIC Program, Safe Drinking Water Branch at 586-4258 (Honolulu) or call from Big Island the direct toll free number 974-4000, ext. 64258.

Sincerely,

A handwritten signature in black ink, appearing to read "Stuart Yamada".

STUART YAMADA, P.E., CHIEF  
Environmental Management Division

JR:nbp

c: Mr. Geoffrey L. Casburn, P.E.  
SSFM International, Inc.

NEIL ABERCROMBIE  
GOVERNOR OF HAWAII



LORETTA J. FUDDY, A.C.S.W., M.P.H.  
DIRECTOR OF HEALTH

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

In reply, please refer to:  
File: SDWB  
2787Jan01.HJR

January 30, 2012

Mr. Joe Bennett  
Construction Coordinator  
DW 'Aina Le'a Development, LLC  
P. O. Box 383129  
Waikoloa, Hawaii 96738

Dear Mr. Bennett:

SUBJECT: OUR REPLY TO YOUR 1/18/2012 LETTER REQUESTING A TIME EXTENSION  
FOR THE APPROVAL-TO-CONSTRUCT EXPIRATION DATE FOR  
**THE VILLAGES OF 'AINA LE'A, PHASE I**  
50 DRAINAGE INJECTION WELLS  
UNDERGROUND INJECTION CONTROL (UIC)  
UIC APPLICATION NO. UH-2787

You are granted a time extension until 1/31/2014.

All the applicable conditions stated in the original approval-to-construct, dated 3/30/2010, still remain effective. Listed below are additional conditions.

1. If further construction delay is anticipated after 1/31/2014, you are required to obtain another time extension. However, time extensions are not guaranteed;
2. A request for a time extension should occur **at least 30 days** before the expiration date. If a time extension is not requested by the expiration date, we reserve the authority to cancel the approval-to-construct; and
3. The final report is due 60 days after the completion of injection well construction and testing.

If you have any question, please call Jaime Rimando of the UIC Program, Safe Drinking Water Branch at 586-4258 (Honolulu) or call from Big Island the direct toll free number 974-4000, ext. 64258.

Sincerely,

A handwritten signature in black ink, appearing to read "Stuart Yamada".

STUART YAMADA, P.E., CHIEF  
Environmental Management Division

JR:nbp

c: Mr. Geoffrey L. Casburn, P.E.  
SSFM International, Inc.

LINDA LINGLE  
GOVERNOR OF HAWAII



STATE OF HAWAII  
DEPARTMENT OF HEALTH  
SAFE DRINKING WATER BRANCH  
919 Ala Moana Boulevard, Room 308  
Honolulu, Hawaii 96814

SSP INTERNATIONAL, INC.  
RECEIVED  
APR 02 2010

gc  
dyu  
FILE

CHIYOME L. FUKINO, M.D.  
DIRECTOR OF HEALTH

In reply, please refer to:  
File: SDWB

March 30, 2010

Mr. Steve Dunnington  
Managing Partner  
DW 'Aina Le'a Development, LLC  
Waikoloa, Hawai'i 96788

**FILE COPY**

Dear Mr. Dunnington:

SUBJECT: THE VILLAGES OF 'AINA LE'A, PHASE I;  
UNDERGROUND INJECTION CONTROL (UIC)  
UIC APPLICATION NO. UH-2787,  
GRANTED APPROVAL-TO-CONSTRUCT (ATC)  
FIFTY DRAINAGE INJECTION WELLS

This ATC is hereby granted to you, the applicant, strictly based on the following 12 conditions. These conditions, unless identified as a recommendation, are enforceable under HAR 11-23-07(c) and (d). Enforcement may include, and not be limited to, monetary penalties and corrective action paid by the applicant.

1. Only applicable are the information, specifications, and plans that were provided in the UIC application dated 12/31/2009, and received by the Department of Health on 1/05/2010 and the revisions received by the Department on 1/25/2010. All other types or forms of information/materials are not applicable unless acknowledged and approved by this ATC;

2. The injection well (IW) amount per the application is fifty (50).

The approximate diameter and depth below ground surface of the injection wells are 6 feet in diameter, maximum depth of 56 feet:

IW # AH-A1 to AH-A14  
IW # AH-B1 to AH-B10  
IW # AH-AR1 to AH-AR26

The proposed injectant is generally categorized as surface runoff generated from rainfall over roadways and open land areas whether altered or unaltered by property improvements;

3. Any modification or revision to the drainage injection well's particulars, including the facility and application, shall not occur unless such proposals are first submitted to the UIC program for review, concurrence, and written approval under this ATC. Any modification, revision, or construction involving the injection well done without written authorization will constitute a violation of Chapter 11-23;

See page 3

Mr. Steve Dunnington

March 30, 2010

Page 2

4. • Operation of the drainage injection well is not automatically authorized by this ATC. Furthermore, construction and testing of the drainage injection well does not guarantee that the drainage injection well will be authorized for operation under a UIC permit. Depending on the information obtained during and from construction and testing, a UIC permit may or may not be issued;
5. The applicant is responsible to identify all drinking water sources around the injection wells in order to prevent injection well siting within one-quarter mile of any existing drinking water source. Identifying water sources may require field activities as well as records research. Noncompliance with this requirement may result in improper injection well siting needing corrective action by the applicant which includes proper backfilling and abandonment of the injection well;
6. If an artesian groundwater condition is encountered during the injection well drilling/construction, drilling shall immediately stop and not proceed until the artesian condition is assessed by the Department. The applicant is required to promptly notify the Department for an assessment. An artesian groundwater condition may warrant a redesign of the injection well in order to protect the artesian aquifer as an underground source of drinking water. For reference, artesian aquifer requirements and restrictions are described under Section 11-23-10;
7. If a void, such as a lava tube or solution cavity, 3 feet or more in diameter or vertical measurement is encountered during injection well drilling/construction, drilling shall immediately stop and not proceed until the void is assessed by the Department. The applicant is required to promptly notify the Department for an assessment. A void may warrant a redesign of the injection well in order to prevent unacceptable migration of the injectant or to prevent direct injection into the void. For reference, voids are described under Section 11-23-09 (f);
8. Each drainage injection well shall be constructed to allow for the following continuous or periodic, permit-required activities related to operating and maintaining a drainage injection well: injection well access, injection well depth and diameter measurement, injectant flow measurement (quantity metering) when applicable, injectant pressure measurement (metering) when applicable, and injection performance testing;
9. Pursuant to Section 11-23-13, submit the final report for the enclosed outline: "Final Report Form For Drainage Injection Wells." This report shall be made and signed by a geologist and a professional engineer, including the P.E. stamp. The engineer and geologist shall be responsible for monitoring the proper construction of the injection well and for obtaining the information needed to complete the final report. Please remember that the drainage injection well must be inspected by the geologist before any liners or concrete rings are installed. This inspection is necessary to produce the lithologic log of the drainage injection well;



Mr. Steve Dunnington  
March 30, 2010  
Page 3

- 3/30/2012*
10. The final report is due by two years from the date of this ATC letter. The final report shall be fully complete and satisfactory. Unless the final report is submitted by the due-date, this ATC automatically expires and is void. A late final report may subject the applicant to an enforcement action/penalty or corrective measures, including a permit reapplication. If more time beyond the due-date is needed to complete the final report, a written request with reasons for a time extension must be submitted at least 60 days before the due-date. Time extensions are not guaranteed, and if granted, may contain restrictive conditions;
  11. Backfilling and abandonment of an injection well, should such an activity become necessary, whether during construction or after full well completion, may only occur under the instructions from the Department. An abandonment application must first be submitted, and specific abandonment instructions will be issued by the Department. Drilling contractors under their own discretion should not backfill and abandon an injection well; and
  12. Rainfall runoff flowing into a newly constructed drainage injection well might occur, and such a condition does not necessarily trigger a violation for using the injection well without a UIC permit. However, unless the applicant proceeds expeditiously in completing the application requirements to obtain the UIC permit, the Department of Health may pursue corrective measures and penalties through enforcement.

If you have any questions about the final report, or the processing of your application, please contact Jaime Rimando of the Safe Drinking Water Branch at 808-586-4258 (Honolulu) or call from Big Island the direct toll free number 974-4000, ext. 64258.

Sincerely,

*Wilfred K. Nagamine*  
WILFRED K. NAGAMINE, P.E., ACTING CHIEF  
Environmental Management Division

*Stuart Yamada*  
JR:nbp *Stuart YAMADA, Chief, Environmental Management Division*

Enclosure: Final Report Form For Drainage Injection Wells

c: Mr. Geoffrey L. Casburn, P.E.  
SSFM International, Inc.  
501 Sumner Street, Suite 620  
Honolulu, HI 96817 (w/encl.)

*Request for improving and no changes to the plans -*

**FINAL REPORT FORM FOR DRAINAGE INJECTION WELLS  
UNDERGROUND INJECTION CONTROL (UIC)  
UIC APPLICATION NO. UH-278  
(July 2004)**

1. Facility Name: THE VILLAGES OF 'AINA LE'A, PHASE I  
\_\_\_\_\_  
Address: \_\_\_\_\_  
\_\_\_\_\_
2. Project's TMK: \_\_\_\_\_  
Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_
3. Name of Owner: \_\_\_\_\_  
Address: \_\_\_\_\_
4. Name of Operator: \_\_\_\_\_  
Address: \_\_\_\_\_
5. Drainage Injection Well System:  
Number of Drainage Injection Wells: \_\_\_\_\_  
Design Capacity: \_\_\_\_\_  
Date(s) of Construction: \_\_\_\_\_
- Injection Well Dedication: ☐ yes ☐ no To: \_\_\_\_\_
- Describe any changes from original proposal: \_\_\_\_\_
- | Drainage Injection | As-Blt.<br><u>Diameter</u> | As-Blt.<br><u>Depth</u> | Grd. Well No.<br><u>Elev.</u> |
|--------------------|----------------------------|-------------------------|-------------------------------|
| _____              | _____                      | _____                   | _____                         |
| _____              | _____                      | _____                   | _____                         |
| _____              | _____                      | _____                   | _____                         |
| _____              | _____                      | _____                   | _____                         |
| _____              | _____                      | _____                   | _____                         |

6. Hydrogeologic Characteristics: **Attach the following to this report:**

- a. Lithology (geologic profile including soil and rock descriptions, and geologic conditions of significance) of drainage injection wells:

DW #AH-AR-1, AH-AR6, AH-AR10, AH-AR14, AH-AR17, AH-AR20

AH-AR24, AH-AR13, AH-B4, AH-B6, AH-B10, AH-A5 and AH-A9

*SH 3/24/10*

- b. Injection test results which shall include a brief description of the test and shall state the maximum rate of discharge into the drainage injection wells. Injection testing shall be conducted on drainage injection wells:

DW #AH-AR-1, AH-AR6, AH-AR10, AH-AR14, AH-AR17, AH-AR20

AH-AR24, AH-AR13, AH-B4, AH-B6, AH-B10, AH-A5 and AH-A9

*SH 3/24/10*

7. **Attach the following to this report:**

- a. An as-built drainage injection well location plan on an 11" x 17" paper.

Label the drainage injection wells.

8. This report shall include the Department's "Signatory and Certification Statement" signed and dated by the operator or legal representative of the facility.

9. This report must be signed by the geologist and licensed engineer and shall bear the engineer's stamp.

The date of this Final Report is \_\_\_\_\_.

THE VILLAGES OF  
'Aina Le'a  
BIG ISLAND, HAWAII

Mr. Stuart Yamada  
Chief Environmental Management Division  
Safe Drinking Water Branch

Dear Mr. Yamada,

If you have any questions, please feel free to contact me at 702-806-7179 or [joe@ainalea.com](mailto:joe@ainalea.com)

Your consideration is deeply appreciated.

Cordially,

Joe Bennett  
DW Aina Le'a Development, LLC  
Construction Coordinator

7011 2000 0002 1602 0681

U.S. Postal Service  
**CERTIFIED MAIL**  
 (Domestic Mail Only) No Insurance

For delivery information visit us at  
 HDPOI.U.S. PS - 06814

Postage \$  
 Certified Fee \$  
 Return Receipt Fee (Endowment Required) \$  
 Restricted Delivery Fee (Endowment Required) \$  
 Total Postage & Fees \$

Shirley Ann  
 No. 1  
 or PO Box No. 210  
 Slatersburg, VT 05676

JUL 2012

Shirley Ann No. 1  
 or PO Box No. 210  
 Slatersburg, VT 05676

UNDERGROUND INJECTION CONTROL (UIC)

Department of Health  
State of Hawai'i

**DRAINAGE INJECTION WELL**

General Application For A UIC Permit To Operate

(Reference: Chapter 23 of Title 11, Hawai'i Administrative Rules,  
Titled Underground Injection Control)

**\$100.00 Filing Fee Required**  
(July 2003)

<p>Submit Application and attachments to:</p> <p>Safe Drinking Water Branch Environmental Management Division Department of Health 919 Ala Moana Blvd., Room 308 Honolulu, Hawai'i 96814</p>	<p>For Office Use:</p> <p>File No. _____</p> <p>_____</p> <p><input type="checkbox"/> New injection well construction <input type="checkbox"/> Injection well modification <input type="checkbox"/> Permit condition revision</p>
--	---

1. Facility Name: The Villages of Aina Lea, Phase 1

2. Facility Description (Check all that are applicable.):

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Agriculture   | <input type="checkbox"/> Golf Course            | <input type="checkbox"/> School           |
| <input type="checkbox"/> Airport       | <input type="checkbox"/> Industrial             | <input type="checkbox"/> Shipyard, Harbor |
| <input type="checkbox"/> Commercial    | <input type="checkbox"/> Military               | <input type="checkbox"/> Utility          |
| <input type="checkbox"/> Field or Park | <input checked="" type="checkbox"/> Residential | <input type="checkbox"/> Other _____      |

Describe the characteristics of the facility (For public notification purposes, this information must be satisfactorily complete.):

The Villages at Aina Lea and, Phase 1 is a condominium, townhouse residential development specifically designed for the affordable housing market. Approximately 440 units would be constructed on the 53.8 acre site. An additional 11.5 acre parcel would be encumbered by the project access road right-of-way connecting the Queen K Highway. to the project site. Roadways are being constructed to County of Hawaii (COH) standards so that these roads may be dedicated to the County for maintenance. Drainage from the residential areas of the project would be contained in shallow, (i.e., exempt from UIC permitting) seepage walls located within the developed areas. This permit application covers only the road right of ways and adjacent graded slope areas. Current Zoning is residential multiple (MR).

3. Facility Location:

a. Street Address Mauka of the intersection of Queen-Kaahumanu Highway and Mauna Lani Dr.

Town Waikoloa District South Kohala

Island Hawaii State HI Zip Code 96743

b. Attach island map showing the general location of the facility.

c. Attach TMK map highlighting the property and showing the location of injection well(s).

Tax Map Key No. (3) 6-8-001:039, -040 & -025

d. Attach Site Plan.

e. Attach USGS topographic map (scale 1:24,000) showing the location of the property, the injection well(s), and drinking water sources within 1/4 mile of the facility.

No potable wells within 1/4 mile.

f. Coordinates: (centralized), under the ~~Old Hawaiian Datum~~ NAD 83

Latitude 19 ° 55 ' 47.49 " N Longitude 155 ° 50 ' 6.72 " W

4. Owner of the facility: Aina Le'a, LLC  
P.O. Box 383129, Waikoloa, HI 96738  
Managing Partner

5. Operator of the facility: DW Aina Le'a Development, LLC  
(Repeat the entry even P.O. Box 383129, Waikoloa, HI 96738  
if same as item No. 4) \_\_\_\_\_

6. Legal contact or official contact person for the facility (Note: person the correspondence will be addressed to; contractors and managing agents are not applicable.):

Full Name Steve Dunnington

Position Managing Partner

Company DW Aina Le'a Development, LLC

Permanent Address P.O. Box 383129, Waikoloa, HI 96738

Telephone Number (808)-896-4458 FAX Number \_\_\_\_\_

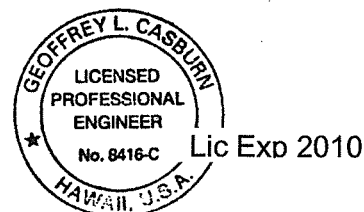
7. Check appropriate box.

- ☒ Fee Simple property. Owner: Aina Le'a, LLC  
P.O. Box 383129, Waikoloa, HI 96738
- ☐ Leasehold property. Owner (Lessor): N/A

If the facility is on leasehold property, attach a written acknowledgement and consent of this application from the fee simple owner (lessor) of the property. (An acknowledgement/consent form is attached.)

8. Consultant servicing this application:

Contact person Geoffrey Casburn, P.E. Affix P.E. stamp here, for engineers:  
Position Hydraulic Engineer  
Company Name SSFM International, Inc.  
Address 501 Sumner Street, Suite 620  
Honolulu, HI 96817  
Telephone Number (808) 961-9142 FAX Number (808) 443-0243



9. Injection System:

- a. Number of injection wells 50 drywells serving the public streets only
- b. Source of injected fluid (check appropriate box):
- ☒ Rainfall Runoff Water ☐ Potable Water
- ☐ Other \_\_\_\_\_

c. Identify the surface areas from which the runoff will be generated and estimate the percent contribution (totaling 100%):

- |   |  |
|---|--|
| <input type="checkbox"/> Parking Lot _____ %            | <input type="checkbox"/> Roof _____ %                  |
| <input type="checkbox"/> Pavement _____ %               | <input type="checkbox"/> Yard or Field _____ %         |
| <input checked="" type="checkbox"/> Roadway <u>51</u> % | <input checked="" type="checkbox"/> Other: <u>49</u> % |

Note: UIC permit for public roads and tributary unpaved area adjacent to the road only.

10. Proposed Injection for the Entire Drainage System: Manner, Rate, Pressure, Duration, and Quantity. Provide more information for clarity, if needed.

Injection Manner: <u>continuous</u> , <u>intermittent</u> , or <u>other</u> (please specify).	Intermittent
Injection Rate: <u>fixed</u> or <u>variable</u> .	Variable
Injection Pressure: <u>gravity fed</u> or <u>pump fed</u> .	Gravity
Wellhead: <u>open to atmosphere</u> (vented), or <u>closed to atmosphere</u> (unvented).	Open (vented)
If injection is via pump fed pressure, maximum injection pressure in pounds per square inch (psig) at the wellhead:	N/A

When estimating runoff using the "Rational Formula" ( $Q=CIA$ ):

Drainage Area in acres (A):	See Attached Tables 1, 2 & 3
Runoff Coefficient (C):	
Storm recurrence interval ( $T_m$ ):	
Intensity of 1-hr Rainfall (inches):	
Time of Concentration ( $T_c$ ):	
Adjusted Rainfall Intensity (I):	
Peak Discharge in cfs (Q):	

OR, When estimating runoff using (identify): N/A

Maximum Injection Rate in gallons per minute (gpm):	
Maximum Injection Duration in hours per day:	
Maximum Injection Quantity in gallons per day (gpd):	



11. Proposed injection well construction method:  
Well Construction: DeLima's Drilling, Inc. will drill the drywell shafts using a Watson 3110 Truck Mounted Drill Rig (120,000 ft\*lb torque, 40,000 lb hoist, 50,000 lb crowd). Toolings include core barrels, drill bits, core cracker and bailing buckets in 4', 5' and other diameters. Construction sequence: excavate to solid rock with hydraulic excavator; pour plain concrete waste slab; set precast drywell rings and temporary upper casing; backfill to provide drill rig access; drill shaft to required depth; log and test; remove temporary upper casing; construct drop inlet structure.
12. Describe proposed injection test.  
  
Injection Testing: Geolabs, Inc. will perform geotech monitoring of drywell excavation and shaft drilling (all drywells will be logged/inspected) as per description in attached (See Attachment B). Injection testing would normally be performed on the specific drywells designated by DOH. Contact Satoshi Tanaka at 349-6325 for any required additional information.
13. \$100.00 Filing Fee:    ☒ Attached        ☐ Not required, operated by government agency.
14. Date of this application:        December , 2009
15. Complete the "Diagram For Drainage Injection Well Dimensions"; OR provide a detailed cross-sectional drawing of the injection well having the equivalent information.
16. Attach Signatory and Certification Statement. Fill all items completely.

SIGNATORY AND CERTIFICATION STATEMENT  
FOR UNDERGROUND INJECTION CONTROL (UIC) SUBMITTALS  
(submitted Statement shall bear an original signature and date -  
photocopy signatures are unsatisfactory.)

I certify that:

(for a partnership or sole proprietorship)

I am a general partner (partnership) or a proprietor (sole proprietorship).

\*\*\*\*\*

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Description of Document

Application

Type of Organization (please circle):

1. sole proprietorship      ☒ 2. partnership      3. corporation  
4. municipal      5. state, federal or other public agency

Signature \_\_\_\_\_

Name (Print) Steve Dunnington

Title Managing Partner

Date \_\_\_\_\_

Company Name DW Aina Le'a Development, LLC

Address P.O. Box 383129, Waikoloa, HI 96738

Phone Number (808)-896-4458

FAX Number (     ) \_\_\_\_\_

CONSENT OF THE FEE SIMPLE LAND OWNER FOR AN UNDERGROUND INJECTION  
CONTROL (UIC) APPLICATION

This form represents the consent of the fee simple land owner that the applicant and its facility are submitting an Underground Injection Control (UIC) application for: (Check the appropriate proposed action)

- ☒ New injection well construction
- ☐ Permit modification
- ☐ Permit renewal
- ☐ Change-of-Operator
- ☐ Facility-Name-Change
- ☐ Existing Injection Well needing permit registration
- ☐ Abandonment of a Registered Injection Well
- ☐ Abandonment of an Unregistered Injection Well

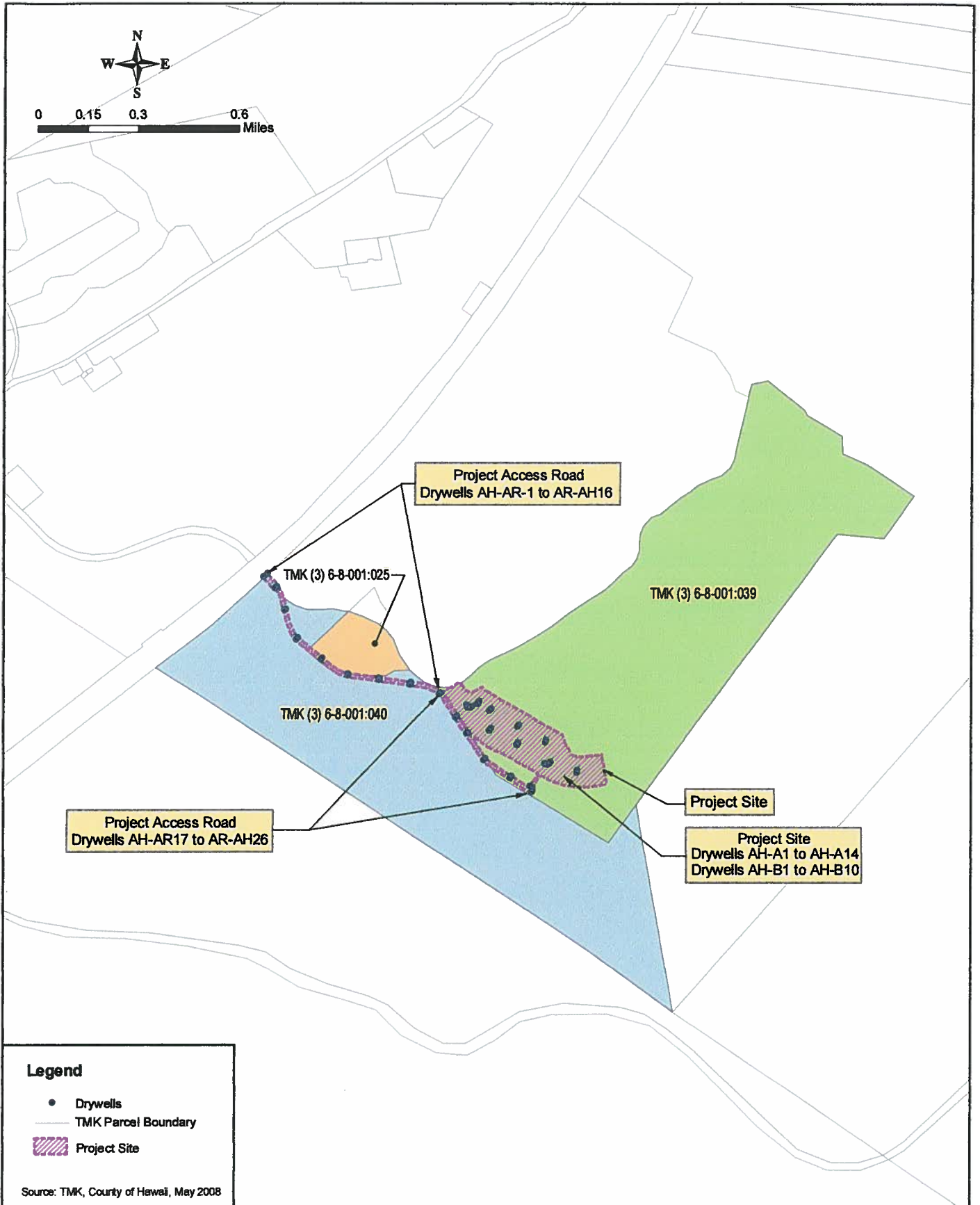
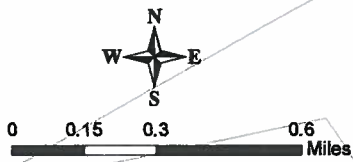
Facility Name: The Villages of Aina Lea, Phase 1  
UIC Permit No. (if issued): N/A  
Address: Mauka of the intersection of Queen-Kaahumanu Highway and Mauna Lani Dr.  
South Kohala HI TMK No. (3) 6-8-001:039. -040 & -025

Applicant: DW Aina Le'a Development, LLC  
P.O. Box 383129, Waikoloa, HI 96738

Fee Simple Land Owner's Name: Aina Le'a, LLC  
Mailing Address: P.O. Box 383129, Waikoloa, HI 96738

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

Note: The purpose of this form is to show, for the purpose of UIC application processing, that the fee simple land owner is aware and consents to the proposed action of the applicant. This form may be substituted by a written consent from the involved entities, if different wording is preferred. However, be sure to be current, accurate, and clear about the proposed action.



**Legend**

- Drywells
- TMK Parcel Boundary
- Project Site

Source: TMK, County of Hawaii, May 2008

**SSFM**  
INTERNATIONAL

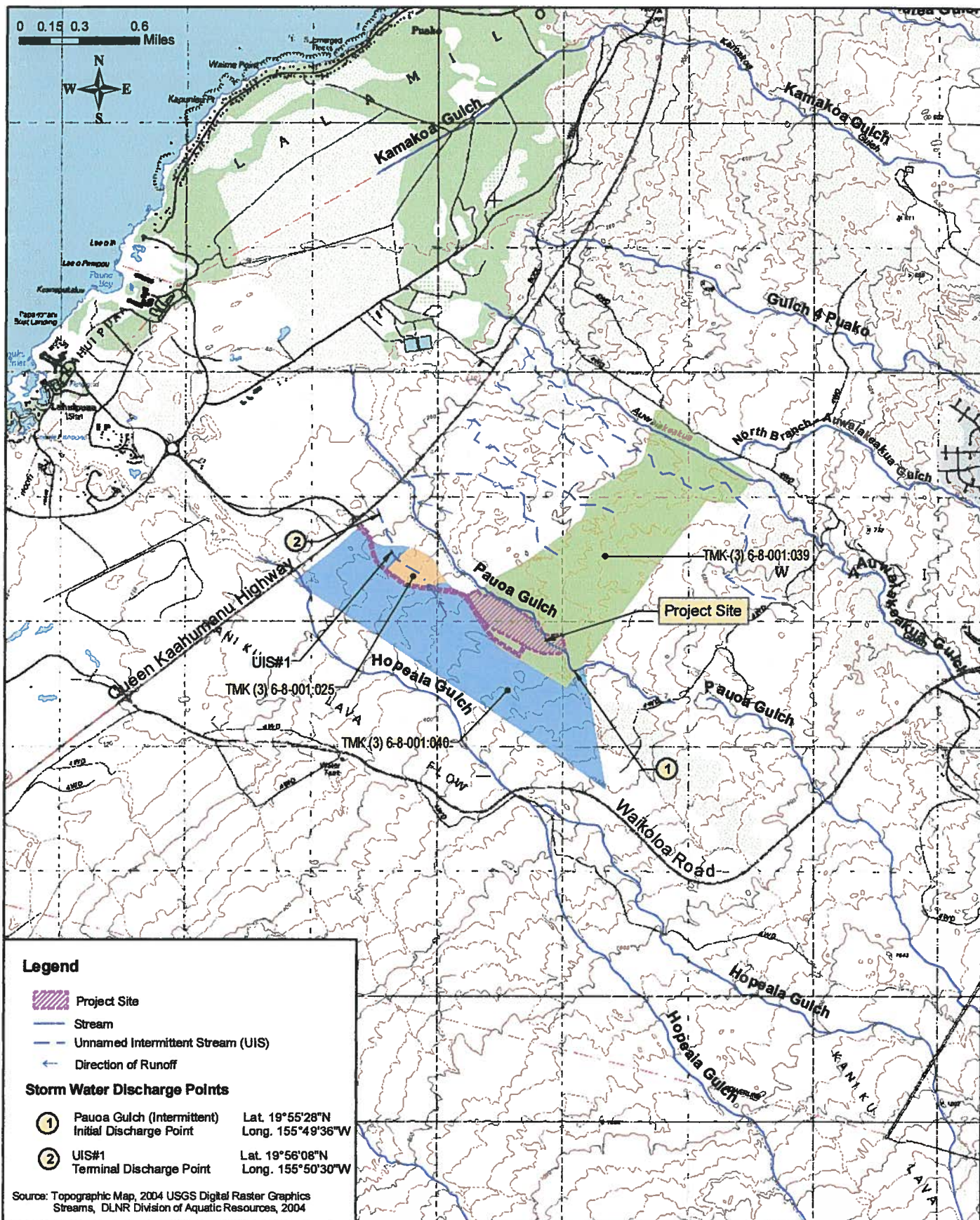
SSFM International, Inc.  
501 Summer Street, Suite 620  
Honolulu, Hawaii 96817

The Villages of Aina Le'a  
**ITEM 3.c**  
**TMK MAP**

SCALE: 1:24,000

DATE: DECEMBER 2009





**SSFM**  
INTERNATIONAL

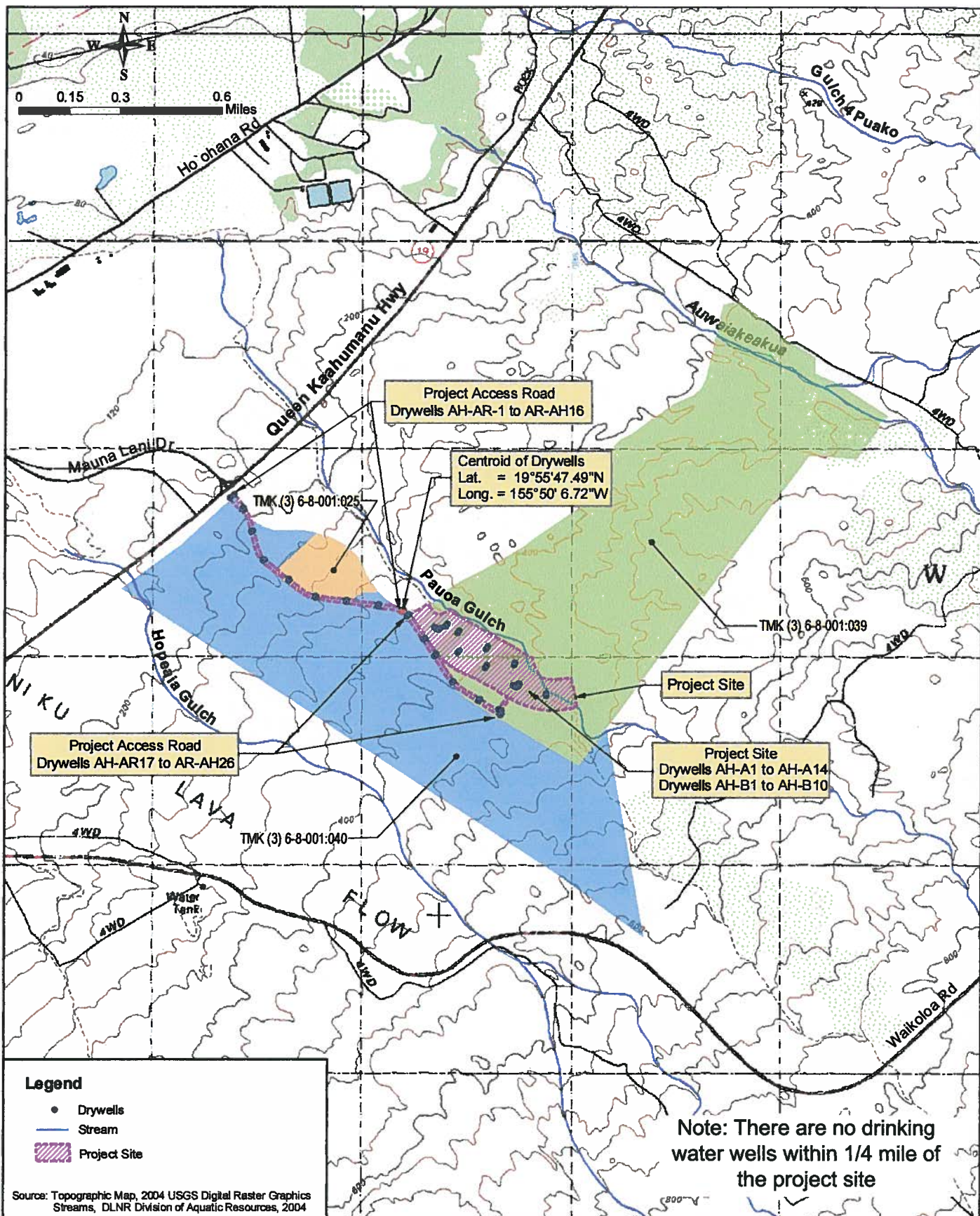
SSFM International, Inc.  
501 Summer Street, Suite 620  
Honolulu, Hawaii 96817

The Villages of Aina Le'a  
ITEM 3.e  
**TOPOGRAPHIC MAP - 1**

SCALE: 1:40,000

DATE: DECEMBER 2009





**SSFM**  
INTERNATIONAL

SSFM International, Inc.  
501 Summer Street, Suite 620  
Honolulu, Hawaii 96817

The Villages of Aina Le'a  
ITEM 3.e  
**TOPOGRAPHIC MAP - 2**

SCALE: 1:24,000

DATE: DECEMBER 2009

**Villages at Aina Lea - Phase 1**  
**UIC Permit for Public Roads**  
**Paved and Unpaved Areas in Acres**  
**Table 1**

Road	Paved Area (AC)	Unpaved Area (Ac)	Total Area (Ac)
Road AH-A	2.57	1.70	4.27
Road AH-B	2.35	1.14	3.49
Access Road	4.91	6.60	11.51
Totals	9.83	9.44	19.27
	51%	49%	100%

# Villages of Aina Lea - Phase 1

## Public Road Drywell Detail

### Table 2

NUMBER OF PUBLIC ROAD DRYWELLS					
Road AH-A			Total Q (cfs)	No. of Drywells	
Paved	9.8	cfs	12.6	14	
Unpaved	2.8	cfs			
Road AH-B					
Paved	8.9	cfs	10.8	10	
Unpaved	1.9	cfs			
Access Road					
Paved	18.7	cfs	25.2	26	
Unpaved	6.5	cfs			
			TOTAL	48.5	50

Note:

1. Off-street areas, including living units and related grassed and parking areas will drain to privately maintained shallow drywells.
2. Flows from the off-street area are not included in the total flow for the public road drywells.
3. Shallow drywells would have a depth less than the diameter of the drywell.



# Villages at Aina Lea, Phase 1

## DIAGRAM FOR DRAINAGE INJECTION WELL DIMENSIONS

Ground Surface Elevation 156.2 to 388.6 ft., msl.  
(give range, if more than one)

Top of Cover

Inside Diameter

Diameter of Hole (Excavation) 108 (+/-) in.

Solid Casing: ☒ Yes or No ☐ No  
Length 5 ft.  
Inside Dimension 6'-8" by 5'-6" in.  
Wall Thickness 8 in.  
Material Cast Inplace Concrete

Perforated Casing: ☒ Yes or No ☐ No  
Length 20 ft.  
Inside Diameter 72 in.  
Wall Thickness 4.5 in.  
Material Pre-cast Concrete

Conc. Footing

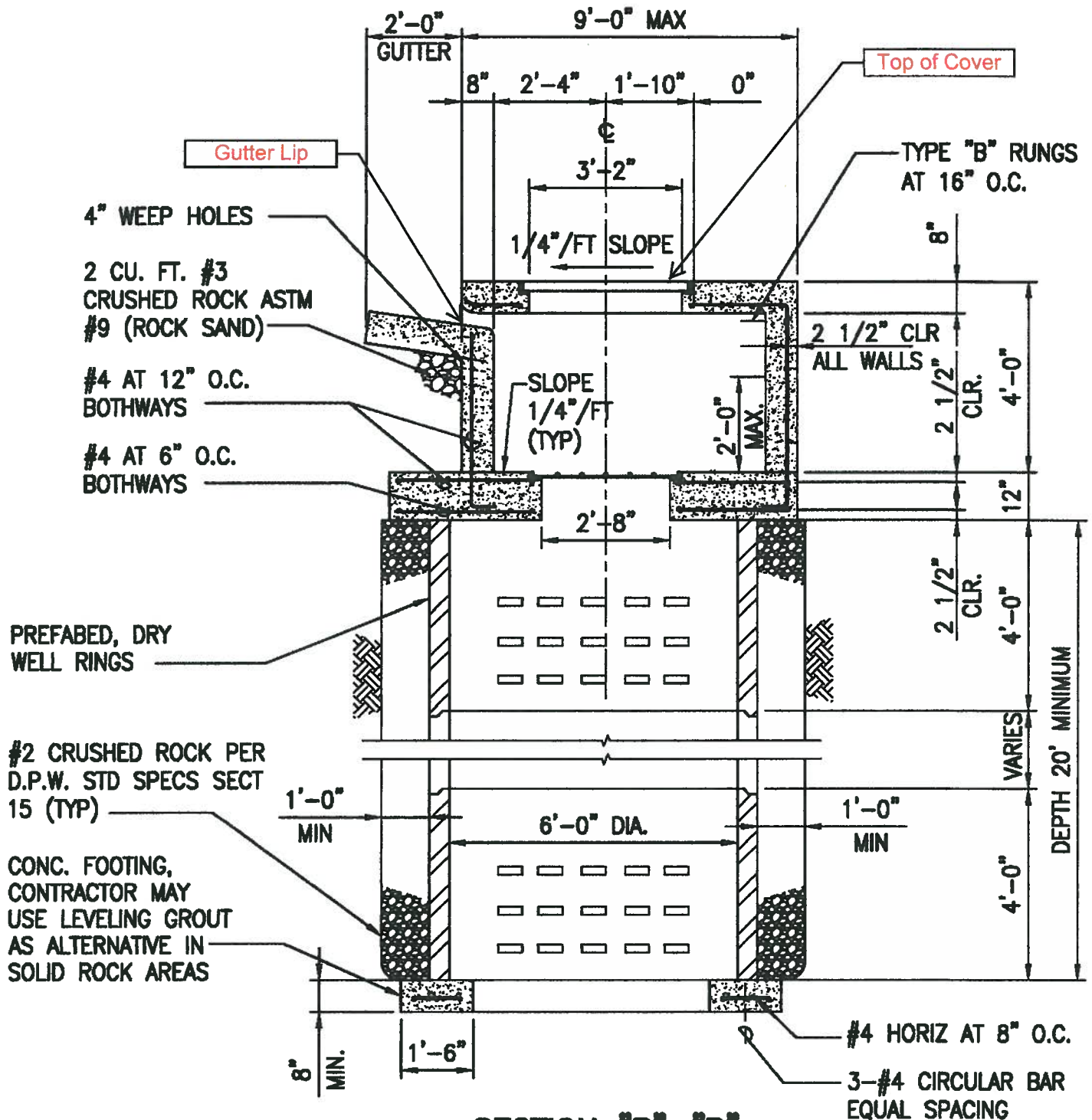
8" min. (See note 1 below)

Open Hole: ☒ Yes or No ☐ No  
Length 2 ft.  
Diameter 60 in.

Total Depth of Hole (Excavation) 25 (min) ft.  
(may be drilled deeper)  
Bottom Elevation 129.2 to 361.6 ft., msl.

### Notes:

1. Contractor may use leveling grout as alternative in solid rock areas.
2. See attached diagram and tabular data sheet for specific well information.



Villages at Aina Lea -- Phase 1  
Drywell Detail From Plans

**Villages at Aina Lea - Phase 1**  
**Tabulated Drywell Characteristics**  
**Table 3**

Drywell ID	Min. Depth	Inside Diameter	Excavation Diameter	Gutter Lip Elevation	Top of Cover Elevation*	Bottom Elevation	Depth of Excavation	Watershed ID	Proposed Discharge
	ft	ft	ft	ft	ft	ft	ft		cfs
<b>Road AH-A</b>									
AH-A1	25.0	6	9 (+/-)	344.9	345.8	320.8	25.0	R-7, R-8	1.02
AH-A2	25.0	6	9 (+/-)	344.9	345.8	320.8	25.0	R-7, R-8	1.02
AH-A3	25.0	6	9 (+/-)	345.8	346.7	321.7	25.0	R-6	0.48
AH-A4	25.0	6	9 (+/-)	345.3	346.2	321.2	25.0	R-6	0.48
AH-A5	25.0	6	9 (+/-)	350.5	351.4	326.4	25.0	R-5	1.15
AH-A6	25.0	6	9 (+/-)	350.5	351.4	326.4	25.0	R-5	1.15
AH-A7	25.0	6	9 (+/-)	365.0	365.9	340.9	25.0	R-4	1.17
AH-A8	25.0	6	9 (+/-)	365.0	365.9	340.9	25.0	R-4	1.17
AH-A9	25.0	6	9 (+/-)	371.6	372.5	347.5	25.0	R-3	1.31
AH-A10	25.0	6	9 (+/-)	371.6	372.5	347.5	25.0	R-3	1.31
AH-A11	25.0	6	9 (+/-)	377.4	378.3	353.3	25.0	R-2	1.21
AH-A12	25.0	6	9 (+/-)	377.9	378.8	353.8	25.0	R-2	1.21
AH-A13	25.0	6	9 (+/-)	382.2	383.1	358.1	25.0	R-1	0.14
AH-A14	25.0	6	9 (+/-)	382.2	383.1	358.1	25.0	R-1	0.14
<b>Road AH-B</b>									
AH-B1	25.0	6	9 (+/-)	343.9	344.8	319.8	25.0	R-13	1.07
AH-B2	25.0	6	9 (+/-)	343.9	344.8	319.8	25.0	R-13	1.07
AH-B3	25.0	6	9 (+/-)	358.7	359.6	334.6	25.0	R-12	1.26
AH-B4	25.0	6	9 (+/-)	359.2	360.1	335.1	25.0	R-12	1.26
AH-B5	25.0	6	9 (+/-)	369.3	370.2	345.2	25.0	R-11	1.18
AH-B6	25.0	6	9 (+/-)	369.3	370.2	345.2	25.0	R-11	1.18
AH-B7	25.0	6	9 (+/-)	376.9	377.8	352.8	25.0	R-10	1.09
AH-B8	25.0	6	9 (+/-)	376.7	377.6	352.6	25.0	R-10	1.09
AH-B9	25.0	6	9 (+/-)	387.6	388.5	363.5	25.0	R-9	0.96
AH-B10	25.0	6	9 (+/-)	387.7	388.6	363.6	25.0	R-9	0.96

# Villages at Aina Lea - Phase 1

## Tabulated Drywell Characteristics

### Table 3

Drywell ID	Min. Depth	Inside Diameter	Excavation Diameter	Gutter Lip Elevation	Top of Cover Elevation*	Bottom Elevation	Depth of Excavation	Watershed ID	Proposed Discharge
<b>Access Road</b>									
AH-AR1	25.0	6	9 (+/-)	155.3	156.2	131.2	25.0	R-26	0.70
AH-AR2	25.0	6	9 (+/-)	155.3	156.2	131.2	25.0	R-26	0.70
AH-AR3	25.0	6	9 (+/-)	173.2	174.1	149.1	25.0	R-25	0.99
AH-AR4	25.0	6	9 (+/-)	173.2	174.1	149.1	25.0	R-25	0.99
AH-AR5	25.0	6	9 (+/-)	204.3	205.2	180.2	25.0	R-24	1.21
AH-AR6	25.0	6	9 (+/-)	203.7	204.6	179.6	25.0	R-24	1.21
AH-AR7	25.0	6	9 (+/-)	225.7	226.6	201.6	25.0	R-23	1.46
AH-AR8	25.0	6	9 (+/-)	225.2	226.1	201.1	25.0	R-23	1.46
AH-AR9	25.0	6	9 (+/-)	246.3	247.2	222.2	25.0	R-22	1.65
AH-AR10	25.0	6	9 (+/-)	246.0	246.9	221.9	25.0	R-22	1.65
AH-AR11	25.0	6	9 (+/-)	271.8	272.7	247.7	25.0	R-21	1.27
AH-AR12	25.0	6	9 (+/-)	271.3	272.2	247.2	25.0	R-21	1.27
AH-AR13	25.0	6	9 (+/-)	286.4	287.3	262.3	25.0	R-20	1.33
AH-AR14	25.0	6	9 (+/-)	285.9	286.8	261.8	25.0	R-20	1.33
AH-AR15	25.0	6	9 (+/-)	308.5	309.4	284.4	25.0	R-19	1.39
AH-AR16	25.0	6	9 (+/-)	308.0	308.9	283.9	25.0	R-19	1.39
AH-AR17	25.0	6	9 (+/-)	330.5	331.4	306.4	25.0	R-18	1.10
AH-AR18	25.0	6	9 (+/-)	330.0	330.9	305.9	25.0	R-18	1.10
AH-AR19	25.0	6	9 (+/-)	350.1	351.0	326.0	25.0	R-17	0.81
AH-AR20	25.0	6	9 (+/-)	349.6	350.5	325.5	25.0	R-17	0.81
AH-AR21	25.0	6	9 (+/-)	363.4	364.3	339.3	25.0	R-16	1.47
AH-AR22	25.0	6	9 (+/-)	362.9	363.8	338.8	25.0	R-16	1.47
AH-AR23	25.0	6	9 (+/-)	374.6	375.5	350.5	25.0	R-15	1.30
AH-AR24	25.0	6	9 (+/-)	374.1	375.0	350.0	25.0	R-15	1.30
AH-AR25	25.0	6	9 (+/-)	379.6	380.5	355.5	25.0	R-14	0.88
AH-AR26	25.0	6	9 (+/-)	379.6	380.5	355.5	25.0	R-14	0.88

\* Top of cover elevation from design plans. Exact elevation to be set from construction plans.

## **Villages at Aina Lea – Phase 1**

### **Attachment B**

Injection Testing: Geolabs, Inc. will perform geotech monitoring of drywell excavation and shaft drilling (all drywells will be logged/inspected) as per description in attached (See Attachment B). Injection testing would normally be performed on the specific drywells designated by DOH. Contact Satoshi Tanaka at 349-6325 for any required additional information.

Geolabs, Inc. Drywell Injection Testing Services:

1. Geologic logging of state designated drywells during excavation work and prior to the setting of concrete liner rings or casings by our field engineer/geologist. The excavation logging is required by the UIC regulations to obtain data for preparation of the Final Report for the UIC Permit to Operate.
2. Injection testing of state designated drywells in accordance with DOH requirements, after completion of the drywell construction. A source of water will be provided by GBI for injection testing (minimum 4,000-gallon water truck with pump or fire hydrant capable of flow averaging a minimum of 250 gpm) including, hoses, and fittings.
3. Provision of the necessary flow meter, pipes and water level sounding device to perform the injection testing. Coordination will be necessary to match our equipment with the available water source and hoses.
4. Analyses of the field data to prepare geotechnical findings of the drywell system.
5. Preparation of three copies of a UIC Final Report for Drywells summarizing our work on the project and presenting our findings. The report will be prepared in general accordance with the requirements outlined by the DOH for the final report format.
6. Coordination of our work on the project by our project engineer/geologist.

**End of Document**

11

**Appendix K**  
**Archaeological Burial Treatment Plan/SHPD Correspondence**  
**(Haun & Associates, February 2004)**

•

•

•



**BURIAL TREATMENT PLAN**

**SITE 15033**

**LAND OF WAIKOLOA , SOUTH KOHALA DISTRICT**

**ISLAND OF HAWAII (TMK: 6-8-01:37)**

**Haun & Associates**

Archaeological, Cultural, and Historical Resource Management Services  
HCR 1 Box 4730, Keaau, Hawaii 96749 Phone: 982-7755 Fax: 982-6343

**01000105**

**BURIAL TREATMENT PLAN**  
**SITE 15033**  
**LAND OF WAIKOLOA, SOUTH KOHALA DISTRICT**  
**ISLAND OF HAWAII (TMK: 6-8-01:37)**

By:

**Haun and Associates**

Prepared for:

**Bridge Aina Lea, LLC.**  
**c/o THY Development Inc.**  
**P.O. Box 6150**  
**Kamuela, Hawaii**  
**96743**

February 2004

**Haun & Associates**

Archaeological, Cultural, and Historical Resource Management Services  
HCR 1 Box 4730, Keaau, Hawaii 96749 Phone: 982-7755 Fax: 982-6343

**01000106**

## INTRODUCTION

### ***Project Identification***

This Burial Treatment Plan (BTP) has been prepared for Bridge Aina Lea, LLC in conjunction with the proposed development of TMK: 6-8-01:25, 36-42, Land of Waikoloa, South Kohala District, Island of Hawaii. The project area consists of a c. 3000-acre parcel that is bounded on the west by the Queen Ka'ahumanu Highway and by undeveloped land to the north, south and east. The project area ranges in elevation from 150-750 ft (*Figure 1*)

Bridge Aina Lea, LLC, is the applicant with regard to this proposed BTP. The mailing address of the applicant is as follows: Bridge Aina Lea, LLC, c/o THY Development Inc., p.O. Box 6150, Kamuela, Hawaii 96743.

### ***Plan Purpose and Organization***

The purpose of the BTP is to facilitate the proper treatment of human burial remains that have been identified at one site within the project area by achieving compliance with the applicable sections of Chapter 6E - Historic Preservation (Haw. Rev. St.; as amended), and the current administrative rules for the treatment of burial sites and human remains that were formally approved and adopted by the State of Hawai'i in September 1996 (DLNR 1996). More specifically, the purpose of the BTP is to provide the Hawaii Island Burial Council (HIBC) with the relevant information called for in Section 13-300-33: "Request for council determination to preserve or relocate Native Hawaiian burial sites". The information contained in this BTP is organized according to the following order of presentation: introduction; project background, identification of the burial sites, search for lineal and cultural descendants, proposed treatment of the burial site, and implementation of proposed BTP.

## PROJECT BACKGROUND

An inventory survey of the project area (Schilz and Shun 1992) identified 13 sites with 34 features. Only one of the 13 sites, the burial covered by this plan, was assigned an SIHP Site number (Site 15033). The remaining 12 sites and 33 features consisted of modern military training features consisting of cairns, wall shelters, rock mounds and C-shapes. Site 15033 is a modified lava tube containing human remains. A survey conducted by Kennedy (1987) in the west-central portion of the project area identified a walled cave that was interpreted as recently utilized. This site was also not assigned a SIHP Site number.

In the survey report, only the Site 15033 cave was assessed as significant for information content under Criterion "d" and for its cultural value under Criterion "e" due to the presence of human remains. Schilz and Shun (1992) recommended the preservation of Site 15033.

On January 29, 2004, Dr. Alan Haun and Project Supervisor Dave Henry, B.S. inspected Site 15033 to verify the presence of the remains and to determine the extent of unmapped portions of the cave. The remains were identified and minor modifications to the previous site map were completed.

01000107

## IDENTIFICATION OF THE BURIAL SITE

### Site 15033

Site 15033 is a lava tube located at c. 580 ft elevation (see *Figure 1*). The entrance to the cave is located on the southwestern side of a large natural depression that is c. 30.0 m in diameter and 15.0 m deep (*Figure 2*). The entrance to the cave is 5.2 m long and opens onto a linear passage that is 13.75 m long (north-northwest by south-southeast), 3.5 to 5.0 m wide and 1.5 m in height. The skeleton of a goat is located just inside the entrance.

A collapsed wall remnant of piled cobbles and small boulders is located at the northern end of the entrance passage. Beyond the wall remnant is an oval-shaped chamber that is 15.5 m long (north-northwest by south-southeast), and 10.0 m wide with ceiling heights that range from 2.0 to 3.3 m. The floor is bare lava and a natural channel extends across the northern end in an east-west direction. A goat skeleton and a fragment of burned wood are located in the northwest corner of this chamber.

A passage extends to the west and southwest from the oval-chamber a distance of 38.0 m. This passage is 4.0 to 7.2 m wide and 1.0 to 3.0 m in height, with a bare lava floor. Several fragments of burnt and unburned wood, and a worked wooden stick were observed on the cave floor. A narrow chamber extends to the northwest at the western end of this passage. A human cranium is present at the southern end of this passage, resting on a pile of roof fall. Several rib bones and a mandible are situated 2.0 m to the northwest of the cranium. This passage was examined by Haun & Associates and was determined to terminate 6.2 m northwest of the cranium. This passage is choked with roof fall and a section of a wooden log is present along the northeastern side.

Haun & Associates also identified a previously unrecorded passage that extends to the south at the western end of the main cave. This passage could not be explored as it is only 0.2 m in height; however, light could be seen through the passage, and the area outside of the cave was examined. Three skylight openings leading to a linear passage were identified. This passage is 20.0 m long (east-west), 1.2 to 2.5 m wide and 1.0 to 1.2 m in height. The floor in this chamber is bare lava and no cultural remains were observed.

## SEARCH FOR LINEAL AND CULTURAL DESCENDANTS

### Documentary Research

It was not until 1867 that the current *ahupua'a* of Waikoloa was established, legally separated from the lands of Puako, Kalahuipua'a, and Anaeho'omalu. Supreme Court Justice G.M. Robertson states that, "...no cattle or sheep was in this country when the grant [of land from Kamehameha I to Issac Davis] was made, and land yielded what revenue could be derived from wild birds and *pili* grass" (Barrere (1971:112). He further states that Davis' land was "so bound to include scarcely and land fit for cultivation (Barrere 1971:112).

The Government Survey Map of 1901 indicates that Waikoloa was purchased by the Parker Ranch for cattle grazing (Barrere 1971:113). Portions of the Parker Ranch lands were subsequently used as training areas during World War II. In 1971, Waikoloa was subdivided and by 1972, the current project area was owned by Signal Properties (Schilz and Shun 1992).

Schilz and Shun indicate that the project area was likely of limited interest to Hawaiians likely due to the inhospitable terrain, arid conditions and general lack of soil (1992:10, 21). No pre-contact trails inland of the coast are present on maps of the area examined by Schilz and Shun (1992), suggesting that the project area was little used.

01000108

## ***Publication of Legal Notices -***

Legal notices were published in newspapers of local and statewide distribution. The notices contained (a) project name and location information, (b) identification of several contact persons, and (c) the landowner/applicant's intent to preserve the burial in place. Copies of each Affidavit of Publication are attached to this plan. Notices were published as follows:

1. *West Hawaii Today* – January 30, 2004 (Friday), February 1, 2004 (Sunday) and February 4, 2004 (Wednesday); and
2. *The Honolulu Advertiser* – January 30, 2004 (Friday), February 1, 2004 (Sunday) and February 4, 2004 (Wednesday).

The notices requested that any person having any information concerning the unmarked grave within the project area should contact Mrs. Ruby McDonald, Liaison, OHA (West Hawaii); Mr. Alan Haun, Haun & Associates; and/or Mr. Keola Lindsey, Burials Sites Program, DLNR-SHPD.

## ***Consultations***

No individuals claiming lineal descent have responded to the notices. Historic documentary evidence indicates that historic and pre-contact use of the project area was very limited and was likely comprised of the bird hunting and *pili* grass collection. Historic use was primarily for pasture.

## **PROPOSED TREATMENT OF THE BURIAL SITES**

### ***General Proposal: Preservation in Place***

Preservation in place is the general treatment proposed for the burial that has been identified within the project area. In place preservation would be achieved through the establishment of a defined preservation buffer (described below).

### ***Preservation Site Buffers***

A buffer zone of 20 feet will be established around the perimeter of the cave interior on the ground surface. No land disturbing activity will occur within the buffer zone.

### ***Short-Term Preservation***

Short-term preservation will consist of the following general protective measures:

1. The site will be plotted accurately on grading plans and construction plans prior to the initiation of any grading, grubbing, and/or construction activities;
2. A temporary buffer zone of 50 ft shall be identified and marked around the site perimeter. The buffer zone boundary will be delineated with orange plastic fencing. An archaeologist will verify that the fencing is correctly in place prior to any land alteration. The verification will be documented in a letter to DLNR-SHPD. No activity will be allowed within the temporary buffer zone until the permanent buffer wall is constructed; and
3. Construction supervisors will be explicitly notified as to the nature and location of the site, the significance of the buffer zone, and the meaning of the buffer zone marking.

01000109

## ***Preservation Buffers***

Long term in place preservation of the identified burial site would be achieved through the establishment of a permanent preservation buffer zone of 20 ft surrounding the burial cave on all sides. With the exception of appropriate cultural activities and periodic maintenance, no land modification, or other activities of any type would be permitted to occur within the preservation buffer. The interior surface area of the buffers will be left in a natural state. The buffer boundary will be delineated by a low stone wall approximately 2 ft in height. The wall will be built to resemble traditional Hawaiian structures using local stone. The wall will have a dry stacked appearance with a concealed concrete core for stability. A narrow opening through the wall will provide access for recognized descendants and maintenance.

## ***Signage***

A small sign of durable material would be placed beside the site. The following signage text is suggested:

### **HE WAHI KAPU**

This is a culturally sensitive native Hawaiian site.  
Please do not disturb the site.

Damage to the site is punishable under  
Chapter 6E, Hawai'i Revised Statutes.

## ***Ownership, Maintenance, and Security***

Responsibility for maintenance and security of the burial site would lie with the landowner. Long term/permanent in place preservation would be achieved by a restrictive covenant that would be incorporated into the deed of the property. The covenant would include the appropriate requirements and restrictions relating to physical improvements, maintenance, security, and access by recognized lineal and/or cultural descendants.

## ***Access for Lineal and/or Cultural Descendants***

Access to the burial site for appropriate cultural activities would be permitted to any lineal and/or cultural descendant formally recognized by the HIBC or DNLR-SHPD in accordance with the administration procedures contained within Section 13-300-35: "Recognition of lineal and cultural descendants" (DLNR 1996). Specific arrangements for access would be made by direct, mutual agreement between the landowner and recognized lineal and/or cultural descendants.

01000110

## IMPLEMENTATION OF THE BURIAL TREATMENT PLAN

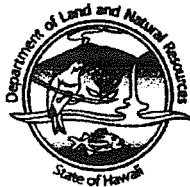
• Preservation measures contained in the BTP would be implemented by the landowner within one year following receipt by the applicant of DLNR written confirmation of mutual agreement to these measures. All requirements and restrictions of the restrictive covenant including a metes and bounds description of the preservation buffer zones would be incorporated into the property deed and recorded with the Bureau of Conveyances.

## REFERENCES CITED

- Barrere, D.  
1971 Appendix A. *Anaehoomalu - A Reconstruction of Its History*. *Anaehoomalu: A Hawaiian Oasis*, by W. Barrera Jr., Anthropological Trends No. 15. Dept. of Anthropology, B.P. Bishop Museum.
- DLNR  
1996 Department of Land and Natural Resources, Historic Preservation Division, Rules of Practice and Procedure Relating to Burial Sites and Human Remains.
- Kennedy, J.  
1987 An Archaeological Reconnaissance Survey at TMK: 6-8-01-25, 36-42, District of South Kohala, Ahupuaa of Waikoloa, Island of Hawaii. Archaeological Consultants of Hawaii report prepared for Signal Puako Corp., Irvine California.
- Schilz, A. and K. Shun  
1992 Final Report: Archaeological Survey and Evaluation, Puako Residential Golf Community, South Kohala, Hawaii Island, Golf Course Portion. Ogden Environmental and Energy Services report prepared for Puako Hawaii Properties, Kamuela, Hawaii.
- Welsh, D.  
1988 Archaeological Investigations at Pauoa Bay (Ritz-Carlton Mauna Lani Resort), South Kohala, Hawaii. IARII Ms. Report prepared for Belt Collins and Associates, Honolulu.

01000111

LINDA LINGLE  
GOVERNOR OF HAWAII



PETER T. YOUNG  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE MANAGEMENT

DAN DAVIDSON  
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU  
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES  
BOATING AND OCEAN RECREATION  
BUREAU OF CONVEYANCES  
COMMISSION ON WATER RESOURCE MANAGEMENT  
CONSERVATION AND COASTAL LANDS  
CONSERVATION AND RESOURCES ENFORCEMENT  
ENGINEERING  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
KAHOOLAWE ISLAND RESERVE COMMISSION  
LAND  
STATE PARKS

**STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES**

HISTORIC PRESERVATION DIVISION  
KAKUHIHEWA BUILDING, ROOM 555  
601 KAMOKILA BOULEVARD  
KAPOLEI, HAWAII 96707

January 20, 2004

Mr. Jim Baldwin  
Bridge Aina Lea LLC  
2500 Kalakaua Ave. #2404  
Honolulu, Hawaii 96815

LOG NO: 2004.0016  
DOC NO: 0401PM01

Dear Mr. Baldwin:

**SUBJECT: Chapter 6E-42 Historic Preservation Review of the Status of Archaeological Survey and Mitigation for the Bridge Aina Lea LLC Project Area [County/Planning] Waikoloa, South Kohala, Hawaii Island  
TMK: (3) 6-8-01: 25 (por.), 36, 37, 38, 39 and 40**

Thank you for your letter of December 16, 2003 and attachments, which included a copy of the final archeological survey report for a portion of the subject area and a January 2002 report prepared by the US Army Corps of Engineers on the former Waikoloa Maneuver Area. This information was provided in response to the comments in our letter of October 30, 2003 (Log No. 2003.2223; Doc No. 0310PM11) regarding the status of historic preservation requirements related to the proposed development of the subject property.

As indicated in our previous letter, our office had no record that the 1991 archaeological inventory survey report entitled "Archaeological Survey and Evaluation Puako Residential Golf Community South Kohala, Hawaii Island" (Schilz and Shun 1991) had been approved by our office. It is now clear that the final revised report, dated August 1992, was in fact never submitted to our office. The final report, which has a slightly different title ("Archaeological Survey and Evaluation Puako Residential Golf Community South Kohala, Hawaii Island Golf Course Portion"), contains the information our office had previously requested regarding the amount of time and effort in conducting the survey. The final revised report meets with our approval.

In our previous letter we recommended additional archaeological survey to assess the adequacy of the 1991 survey and to collect more information about the twelve other "sites" (cairns and shelters that were described but not assigned State site numbers) that had been recorded in the 1991 survey and interpreted as modern features made by either the military during World War II, training exercises or hunters. We now believe that additional survey is unnecessary. First,

01000103

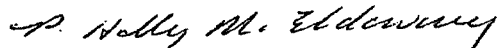


Mr. Jim Baldwin  
Page 2

survey coverage is no longer an issue now that we have a final report on the 1991 survey. Second, the January 2002 U.S. Army Corps of Engineers Report, entitled "Phase II Engineering Evaluation/Cost Analysis Former Waikoloa Maneuver Area and Nansay Sites Island of Hawai'i, Hawai'i," indicates that the subject area was used as an artillery firing range during the war. This information, though not as specific as we would like, adds credence to the view that the sites are modern and most probably related to military training exercises since the fractured and scarred boulders found in many of them are most likely the result of artillery firing. No further research on these "sites" will be required.

All of the historic preservation requirements for the subject parcels have now been fulfilled, except for the development and implementation of a Burial Treatment Plan for Site 50-10-11-15003. If you or your archaeological consultant should have any questions about the preparation of this plan please contact our Burials Program Director, Kai Markell, at (808) 587-0008.

Aloha,





P. Holly McEldowney, Administrator  
State Historic Preservation Division

- c. Chris Yuen, County of Hawaii Planning Department  
Kai Emler, County of Hawaii Department of Public Works  
Kai Markell, SHPD Burial Sites Program  
Chair, Hawai'i Island Burial Council

PM:ak

01000104

12

	<b>SOLID WASTE DIVISION</b> <b>DEPARTMENT OF ENVIRONMENTAL MANAGEMENT</b>	
<p>COUNTY OF HAWAII - 108 RAILROAD AVENUE - HILO, HI 96720          HILO (808) 961-8514    WAIMEA (808) 887-3018    KONA (808) 327-3507          Fax:                      961-8553                      887-3025                      327-3506</p>		

August 2, 2011

James M. Leonard, AICP  
 JM Leonard Planning, LLC  
 1100 Ainalako Road  
 Hilo, Hawai'i 96720

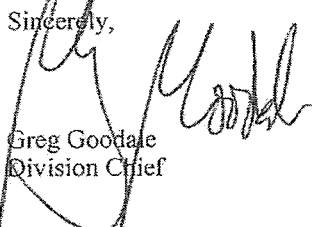
**Subject: Solid Waste Management Plan for**  
**The Village of Aina Le'a**  
**TMK: (3) 6-8-001:025, 036, 037, 038, 039, 040**

Aloha Mr. Leonard:

On behalf of the County of Hawai'i, Department of Environmental Management, we take no exception to the Solid Waste Management Plan submitted for the expansion of The Village of Aina Le'a, which was received by our department on August 1, 2011.

Should you have any questions or require additional information, please contact me at (808) 961-8058

Sincerely,

  
 Greg Goodale  
 Division Chief

cc: Bobby Jean Leithead Todd, Director, County of Hawai'i Planning Department  
 Dora Beck, Acting Director, Department of Environmental Management

*0317 of 93-153*

## J M LEONARD PLANNING, LLC

---

1100 Ainalako Road • Hilo, HI 96720 • Tel (808) 896-3459 • E-mail: jmleonard@mac.com

---

August 1, 2011

Ms. Dora Beck, P.E., Acting Director  
Department of Environmental Management  
County of Hawaii  
25 Aupuni Street  
Hilo, Hawaii 96720

**SUBJECT: SUBMITTAL OF THE SOLID WASTE MANAGEMENT PLAN FOR  
THE VILLAGE OF 'ĀINA LE'A**

Dear Ms. Beck:

On behalf of the owner and developer, DW 'Āina Le'a LLC, I am submitting the enclosed copy of the Solid Waste Management Plan for the Village of 'Āina Le'a (Plan) for your review and approval. This Plan is being submitted to meet a requirement of the zoning ordinance for the Village of 'Āina Le'a development. Specifically, Condition M of Ordinance No. 96-153 states:

“[(O)] (M) a solid waste management plan for the subject property shall be prepared meeting with the approval of the Department of Public Works prior to submitting plans for subdivision approval. Approved recommendations and mitigation measures shall be implemented [in a manner] meeting with the approval of the Department of Public Works;”

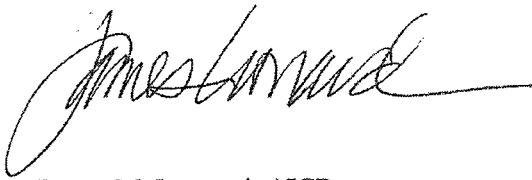
In that, since the enactment of Ordinance No. 96-153 in 1996 the Department of Environmental Management was created, in part, to assume the County's solid waste management functions from the Department of Public Works, the Plan is being submitted for your approval, rather than to the Director of Department of Public Works.

The Plan has been prepared in accordance with the Solid Waste Management Plan Guidelines, as set forth by the Department and seeks to meet the applicable goals of the County of Hawaii Integrated Resource and Solid Waste Management Plan.

4  
Ms. Dora Beck, P.E., Acting Director, DEM  
Village of 'Aina Le'a Solid Waste Management Plan  
August 1, 2011  
Phone - - (808) 896-2808 • Fax (808) 443-0016 • Email - info@ainalea.com  
68-4747 Queen Ka'ahumanu Highway, Hialeah, FL 33157

Should you have any questions regarding this submittal, please do not hesitate to contact me at the number or address provided above. I appreciate your attention to this matter.

Sincerely,



James M. Leonard, AICP  
JM Leonard Planning, LLC

Enclosure

Cc: Bobby Jean Leithead-Todd, Planning Director  
Steve Dunnington, DW 'Aina Le'a LLC  
Peter Dahlberg, PE, Peter J. K. Dahlberg, P.E., LLC  
Sid Fuke, Sidney Fuke Planning Consultant

# **THE VILLAGE OF 'ĀINA LE'A**

## **SOLID WASTE MANAGEMENT PLAN**

Prepared For: County of Hawaii, Department of Environment  
Management

*Prepared By: J M Leonard Planning, LLC  
Peter J K Dahlberg, PE, LLC*

*On Behalf of: DW 'Aina Le'a, LLC*

JULY 2011

## **Table of Contents**

- 1.0 Purpose and Objectives**
- 2.0 Concurrence with County of Hawaii Integrated Resources and Solid Waste Management Plan (IRSWMP)**
- 3.0 Description of Project Generated Waste**
  - 3.1 Construction Related Waste**
  - 3.2 Commercial and Residential Related Waste**
- 4.0 Solid Waste Transportation Related Impacts**
- 5.0 Planned Project-wide Waste Reduction, Source Separation, and Recycling Measures**
- 6.0 Concurrence with Federal, State, and County Laws, Regulations, and Rules**

## **Figures**

- Figure 1 – Project Location Map
- Figure 2 – TMK Map
- Figure 3 – Conceptual Master Plan

## **Appendices**

- Appendix A – SWMP Guidelines
- Appendix B – Trip Generation Calculations

## **1.0 PURPOSE AND OBJECTIVES**

The Solid Waste Management Plan (SWMP) for the Village of 'Āina Le'a (Project) has been prepared in response to the zoning approval requirements set forth by the County of Hawaii (County). Specifically, within the most recent zoning approval for the Project (Ordinance No. 96-153), Condition M states:

“[(O)] (M) a solid waste management plan for the subject property shall be prepared meeting with the approval of the Department of Public Works prior to submitting plans for subdivision approval. Approved recommendations and mitigation measures shall be implemented [in a manner] meeting with the approval of the Department of Public Works;”

It should be noted that since the adoption of Ordinance No. 96-153, the roles and responsibilities for the management of solid waste in Hawaii County has been assigned to the newly created Department of Environmental Management (Department), which sets forth the guidelines and oversees the review and approval of solid waste management plans prepared by and for developments. These guidelines are contained within the Solid Waste Management Plan Guidelines (February 12, 2009), which are made available by the Department and are included for reference as Appendix A of this Plan. This Plan has been prepared in conformance with the Solid Waste Management Plan Guidelines.

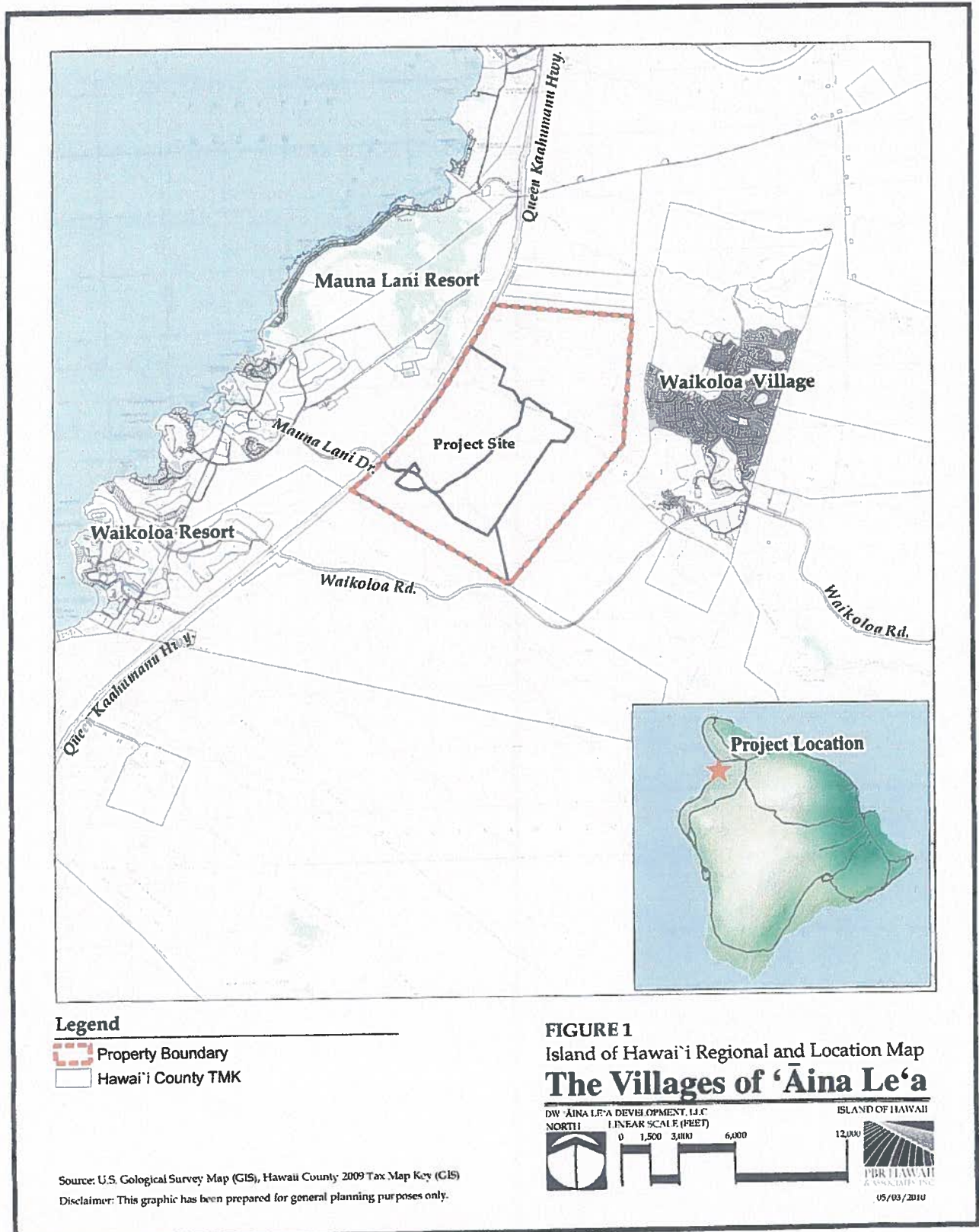
The Village of 'Āina Le'a is an approximately 1,141 acre master planned community located in South Kohala, Hawaii, in the area mauka of Queen Ka'ahumanu Highway between the Mauna Lani Resort, located makai of the Highway, and Waikoloa Village located approximately 1 mile mauka of the Project. (Refer to Figures 1 and 2, Location and TMK Maps)

The Project, as shown in Figure 3, is planned to include approximately 790 single family residential homes and 1,672 multi-family units, a golf course and golf lodge with up to 40 accommodation units, and a commercial village and mixed-use town center with a total of approximately 420,000 square feet of commercial space.

## **2.0 CONCURRENCE WITH THE COUNTY OF HAWAII INTEGRATED RESOURCES AND SOLID WASTE MANAGEMENT PLAN (IRSWMP)**

The goals of the County's IRSWMP were guided by the goals of moving towards sustainability; Zero Waste; development of programs that are efficient and affordable; minimizing environmental pollution, including illegal dumping on private and public lands; maintaining sound finances and appropriate incentives to move towards the IRSWMP goals; and provide customer service with Aloha. Those specific recommendations of the IRSWMP as they pertain to new development include:





 Property Boundary

Disclaimer: This graphic has been prepared for general planning purposes only.

## The Villages of 'Āina Le'a

[illegible]

**FBR HAWAII**  
 & ASSOCIATES, INC.

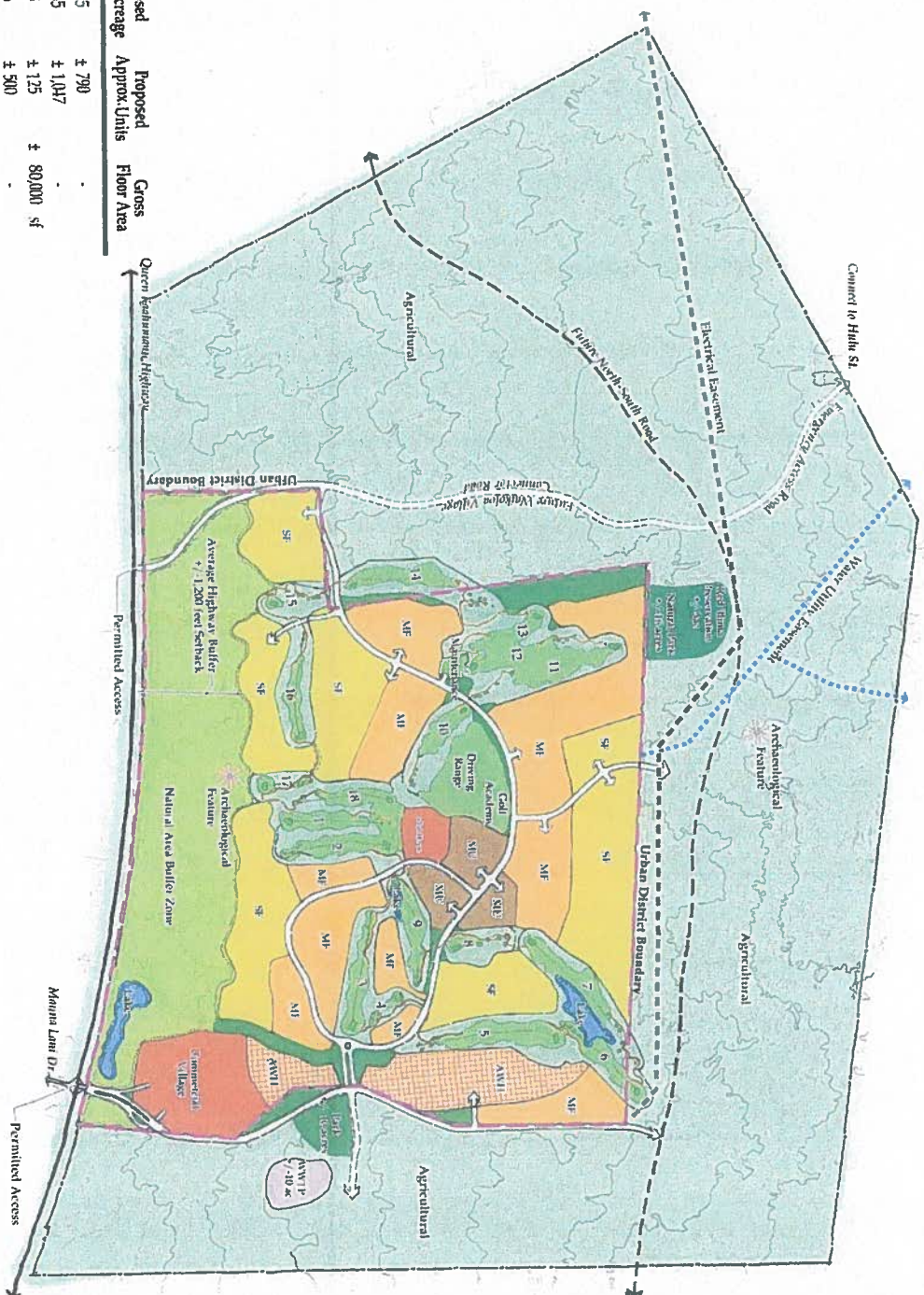
09/22/2030



Land Use Summary (Land Within Urban District)			
Land Use	Proposed Approx. Acreage	Proposed Approx. Units	Gross Floor Area
Single Family (SF)	± 255	± 790	-
Multi-Family (MF)	± 165	± 1,047	-
Mixed Use (MU)	± 25	± 125	± 80,000 sf
Affordable / Workforce Housing (AWH)	± 46	± 500	-
Commercial Village (C)	± 36	-	± 340,000 sf
Golf Course (GC)	± 218	-	-
Golf Course Club House	± 4	-	-
Highway Buffer	± 24	-	-
Parks / Open Space	± 37	-	-
Major Roadways	± 40	-	-
<b>Total</b>	<b>± 1,060 *</b>	<b>± 2,462</b>	<b>± 420,000 sf</b>

\* Note: The Village of 'Aina Le'a project area includes the use of lands outside the Urban District for infrastructure and active and passive park uses, for a total project area of approximately 1,128 Acres.

**FIGURE 3**  
**CONCEPTUAL MASTER PLAN**  
**The Villages of 'Aina Le'a**



- Expand the availability and increase the convenience of reuse and recycling opportunities available to both residents and businesses;
- Implement programs that firmly establish the path to Zero Waste within the County to increase public awareness of waste reduction and sustainable waste management practices;
- Implementing a variety of on-site composting programs; and
- Improve and expand the scope of educational programs within the County to increase public awareness of waste reduction and sustainable waste management practices.

The Village of 'Āina Le'a SWMP, integrated with the planning, design and operations for the development, is consistent with and supportive of the goals in the County IRSWMP Plan by implementing effective waste reduction and recycling practices in the construction process, expanding the availability and waste reduction and recycling opportunities available to both residents and businesses throughout the Project; providing for on-site composting of the common area and golf course green waste; and by supporting County public awareness programs for waste reduction and sustainable waste management practices.

### 3.0 DESCRIPTION OF PROJECT GENERATED SOLID WASTE

#### 3.1 Construction Related Solid Waste

Construction within the Project site is ongoing. Typical of most development in Hawaii, solid waste produced during the construction process consists primarily of green waste (generated during the site clearing process), wood, drywall, cardboard/paper, and metals. There is also a relatively small amount of wire and plastic waste generated, primarily containers and wrapping materials. However, as all the green waste from the Project is composted onsite, none of this would be part of the waste stream to the County landfill. Based on the waste generated from those units already constructed, and other projects of similar nature, the amount of waste generated on a per unit basis during construction, for residential construction is approximately 1.89 tons per unit for multi-family (MF) development and 2.36 tons per unit for single-family (SF) units. The amount of construction generated waste for commercial development, based on industry standards for commercial construction, is approximately 3.89 lbs per square foot<sup>1</sup>. Given the projected development of 670 single family units, 1672 multi-family units, and 420,000 square feet of commercial space, and an approximately 45,000 square feet of other commercial uses (golf and lodge), the total construction related waste to be generated, over the projected 20 year term of the development is estimated to be approximately 296.5 tons per year (TPY), as summarized in Table 1 (see next page).

---

<sup>1</sup> Characterization of Building Related Construction and Demolition Debris in the U.S., EPA, June 1998

TABLE 1 – Construction Waste Estimates

Use	Units	Square Feet	Lbs/unit or Sq.Ft.	Total Volume
MF	1672	-	1.89 Tons/unit	3,160 Tons
SF	790	-	2.36 Tons/unit	1,866 Tons
Commercial/Retail	-	420,000	3.89 lbs/ Sq. Ft.	816.9 Tons
Other	-	45,000	3.89 lbs/ Sq. Ft	<u>87.52 Tons</u>
Total =				5,930.4 Tons
Annual Construction Waste (Based on a 20 year dev. period) =				<u>296.5 TPY</u>

### 3.2 Residential and Commercial Generated Solid Waste

For a mixed-use development, the typical range of per capita solid waste generated from residential and commercial sources are generally estimated to be from 2 to 5 pounds per capita per day. A study conducted for the County from 2000 to 2003 of waste generated by communities in the Project area, determined that the solid waste generated on a per capita basis averaged less than 2.5 lbs/person/day, as shown below.

TABLE 2 – Solid Waste Per Capita

Area	Population	Tons/Year	Tons/Cap/Yr.	Lbs/Year	Lbs/Day
Kailua-Kona	2,100	8,021	0.3280	764	2.09
Puako	5,600	2,297	0.4102	820	2.25
Waimea	11,700	5,160	0.4410	882	2.42

With the increasing public awareness of recycling opportunities, bolstered by the County's efforts in providing additional recycling facilities and waste reduction education programs, it is anticipated that the average generation rate for the Project will be within the rate of 2.5 lbs/capita/day generated from nearby communities. With a total projected population of 5,780 at build-out, the total solid waste generated from the Project is estimated to be in the order of 7.23 tons per day for residential uses; and an additional 0.0057 pounds per square foot per day for commercial uses<sup>2</sup>, which equates to approximately 1.32 tons per day at build out, for a projected total of approximately 8.6 tons of Project generated solid waste per day. This estimate is based on current waste generation rates and does not take into consideration the additional solid waste reduction that would result from increased public participation in waste reduction and recycling efforts that would be supported by the County's continued efforts in meeting the goals of the IRSWMP in conjunction with the Project related measures, as outlined in this Plan.

The composition of the Project generated solid waste is expected to be similar to that generated from other communities in the area. According to an analysis of the solid waste stream to the West Hawaii Landfill that was conducted for the Hawaii County IRSWMP, the general composition of the residential and commercial waste stream is comprised of the following.

<sup>2</sup> Santa Barbara Environmental Thresholds and Guidelines Manual (Rev.), Oct. 2008, P. 161

TABLE 3 – Solid Waste Stream Analysis (West Hawaii Landfill)

<u>Waste Component</u>	<u>Percentage</u>
Organics	35.3
Paper	22.6
Construction and Demolition Materials	22.1
Plastics	8.5
Metals	7.7
Glass	1.7
Household Hazardous Waste	.2
Other	1.9

#### 4.0 SOLID WASTE TRANSPORTATION RELATED IMPACTS

The primary transportation related impacts related to solid waste disposal from any development are the traffic and energy related impacts. There are other secondary environmental impacts associated with vehicle emissions, however, these are relatively insignificant and are best addressed through the public education, waste reduction and recycling support measures proposed in this Plan that are expected to have a proportionate impact in reducing all transportation related impacts.

The traffic related impacts are derived from a projection of the commercial and private trips to the County's West Hawaii Sanitary Landfill (Pu'uuanahulu Landfill), which is located nearby, approximately 2.7 miles from the Project (between the #77 and #78 mile markers on Queen Ka'ahumanu Highway, turning mauka onto Pu'u Pohaku Road). While the Project is planned to include provisions for curbside pick-up of single-family areas with centrally located areas for waste separation (recycling) within the multi-family clusters, it is assumed that only half of all single family occupants will use commercial trash pick up. The others will elect to bring their trash to the landfill individually. As noted previously, at build-out, the Project would consist of approximately 670 single-family homes, 1,672 multi-family units, 420,000 sq. ft. of commercial space, a golf course, and a golf lodge consisting of up to 40 accommodation units.

As stated above, it is assumed that nearly all solid waste will be picked up by commercial haulers, with the exception of approximately half (335) of single family residents that elect to personally dispose and/or recycle their household waste at the nearby landfill. Using an average of one trip per household a week, this would equate to approximately 48 residential trips per day for those who elect to dispose of their own waste. For commercial pick up of single-family waste, this is picked up by a truck that can accommodate up to a thousand (1,000) homes per weekly pick-up, which, for 335 homes, would be less than one vehicle (garbage truck) pick up per day. For the multi-family units planned within the Project, these would include an estimated 432 townhome units that would have individual pickup by a commercial hauler, and 1,240 units that would have a centralized pickup with the use of centrally located trash bins with each building.

Based on figures provided by commercial haulers currently providing service to the Waikoloa Village and summarized in the table below, the projected trip generation from the Project by

individual and commercial trash haulers would be a maximum of 52 trips (vehicle and garbage trucks) per day, as shown in following table (Table 4 – Solid Waste Trip Generation).

**Table 4 – Solid Waste Trip Generation<sup>3</sup>**

Use	No. Units	Trips/Unit (daily) <sup>4</sup>	Trips/Day
A. Single Family (SF) --Individual Disposal	335	0.143	48 Vehicles
B. Single Family (SF) – Commercial Pick-up	335	0.0004	<1 Truck
C. Multi-family (MF) Commercial, Individual Pick-up	432	0.0003	<1 Truck
D. Multi-family (MF) --Commercial, Group Pick-up	1,240	0.0003	< 1 Truck
E. Commercial - Commercial Pickup	46.5	0.0003 (per 10,000 sq. ft/ day)	< 1 Truck
<b>TOTALS</b>			<b>48-52 Trips/Day</b>

## **5.0 PROJECT-WIDE SOLID WASTE REDUCTION, SOURCE SEPARATION, AND RECYCLING MEASURES**

It is interesting to note that, based on the County's analysis of the waste stream composition, shown in Table 3 previously, the majority of the solid waste going to the landfills is comprised of organics, paper, and construction and demolition wastes (Organics-35.3%, Paper-22.6%, and C&D – 22.1%). Together these make up over three quarters of the total volume of the waste stream to the County landfills. Consequently, these are the areas where it has been found the greatest potential for reducing the volume of solid waste from the Project that would otherwise end up in the County landfill.

The proposed measures that would be part of the development are described below related to construction, community design and operation related measures. With construction already underway at the Project, several of the construction related measures have been implemented as part of the construction process and have proven to be effective measures in reducing Project generated solid waste.

### **5.1 Construction Related Solid Waste Reduction Measures**

Those measures that are currently being implemented as part of the construction process include the following:

<sup>3</sup> Calculations based on projected commercial pick rates provided by commercial waste haulers currently serving the Waikoloa Area (PFI Rubbish Service and Superior Sanitation)

<sup>4</sup> Trip Generation Ratio Calculations are shown in Appendix B

- On site composting of all green waste from grubbing/clearing;
- Use of panelized construction in multi-family unit construction;
- Source separation and recycling of cardboard waste;
- Source separation of gypsum waste from drywall construction;
- Re-use of solid wood and drywall cut-off, where practical;
- Recycling/redemption of aluminum cans, glass and plastic bottles.

## **5.2 Planning and Operational Related Solid Waste Reduction Measures**

Those measures that are planned as part of the master planning, design and operational aspects of the Project include the following:

- Inclusion of a broad mix of multi-family housing, comprising over 2/3 of all residential units;
- On-site composting of golf course and common area green waste;
- Provision for curbside pick-up with areas for multiple-bin recycling throughout the single-family residential areas;
- Providing areas for multiple-bin recycling in multi-family and commercial areas.

The location of the areas for multi-bin pick up will be developed and identified in conjunction with design plans for each development area, as these are prepared.

From an operational perspective, the developer, DW 'Aina Le'a, LLC (DWA), and its successor community organization will coordinate with the County in promoting waste reduction and recycling within the development and supporting programs aimed at minimizing illegal dumping and the proper disposal of household and construction related hazardous wastes.

## **6.0 CONCURRENCE WITH FEDERAL, STATE, AND COUNTY SOLID WASTE LAWS, REGULATIONS AND RULES**

In that this Plan is aimed at promoting the practice of sustainable waste management practices, including the proper handling and disposal of construction related and household hazardous wastes, and adherence to the County's goals for Integrated Resources and Solid Waste Management, it is assumed consistent with County, State and Federal policies, rules and regulations related to solid waste. The Plan has been certified by the engineering firm of Peter J. K. Dahlberg, PE, LLC, as endorsed below.

Signed: \_\_\_\_\_  
Peter J. K. Dahlberg, PE, LLC

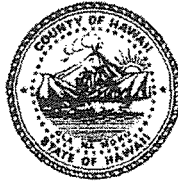
Date: \_\_\_\_\_



**APPENDIX A**

**COUNTY OF HAWAII  
SOLID WASTE MANAGEMENT PLAN GUIDELINES**

William P. Kenoi  
Mayor



Lono A. Tyson  
Director

Ivan M. Torigoe  
Deputy Director

**County of Hawai'i**  
**DEPARTMENT OF ENVIRONMENTAL MANAGEMENT**

25 Aupuni Street • Hilo, Hawai'i 96720  
(808) 961-8083 • Fax (808) 961-8086  
[http://co.hawaii.hi.us/directory/dir\\_envmng.htm](http://co.hawaii.hi.us/directory/dir_envmng.htm)

February 12, 2009

**SOLID WASTE MANAGEMENT PLAN**  
**Guidelines**

**INTENT AND PURPOSE**

This is to establish guidelines for reviewing solid waste management plans, for which special conditions are placed on developments. The solid waste management plan will be used to: (1) promotes and implement recycling and recycling programs, (2) predict the waste generated by the proposed development to anticipate the loading on County solid waste management facilities, and (3) predict the additional vehicular traffic being generated because of waste and recycling transfers. A qualified consultant shall prepare a suitable solid waste management plan for review by the Department of Environmental Management.

**REPORT**

The Solid Waste Management Plan will contain the following:

1. Description of the project and the potential waste it may be generating: i.e. analysis of anticipated waste volume and composition. This includes waste generated during the construction and operational or maintenance phases. Waste types shall include (but not be limited to):
  - A. Organics (including food waste and green wastes);
  - B. Construction and Demolition;
  - C. Paper (including cardboard);
  - D. Metal (including ferrous and non-ferrous metals);
  - E. Plastic;
  - F. Special (including ash, sludge, treated medical, bulky items, tires);
  - G. Household Hazardous (including paint, vehicle fluids, oil, batteries); and
  - H. Glass.
2. Indicate onsite source separation facilities by waste type; i.e. source separation bins of glass, metal, plastic, cardboard, aluminum, etc. Provide ample and equal space for rubbish and recycling.
3. Identification and location of the proposed waste reduction, waste re-use, recycling facility or disposal site and associated transportation methods for the various components of the development's waste management system, including the number of

Solid Waste Management Plan Guidelines  
Page 2 of 2

- vehicle movements and associated routes that will be used to transport the waste and recycled materials.
- 4. The report will include identification of any impacts to County-operated waste management facilities, and the appropriate mitigation measures that will be implemented by the development to minimize these impacts.
- 5. Analysis will be based on the highest potential use or zoning of the development.

REQUIREMENTS AND CONDITIONS

1. A solid waste management plan will be prepared for all commercial developments, as defined under the policies of the Department of Environmental Management, Solid Waste Division.
  2. The Department of Environmental Management will require the developer to provide or resolve all recommendations and mitigation measures as outlined in the solid waste management plan; besides any conditions placed on the applicant herein.
  3. A State of Hawaii licensed engineer will draft and certify in writing the solid waste management plan as complying with applicable Federal, State and County of Hawaii solid waste laws, regulations, and administrative rules.
- Should you require additional information, please contact Michael Dworsky, P.E., Solid Waste Division Chief at 808-961-8515.

CONCUR:

*Lono A. Tyson*

Lono A. Tyson  
DIRECTOR

## APPENDIX B

### TRIP GENERATION CALCULATIONS

#### A. Single Family (SF) – Individual Disposal

335 Homes at 1 trip per week = 335 trips per week / 7 = 48 vehicle trips per day

Daily Trip Ratio = 48 trips/day / 335 homes = 0.1432 trips/unit/day

#### B. Single Family (SF) – Commercial Pick-up to Individual Single-Family Homes

2.5 lbs./person/day X 2.75<sup>5</sup> persons/home = 6.87 lbs/home/day

6.87 lbs/home/day X 335 homes = 2,303.13 lbs/day or 1.15 tons/day or 8.06 tons per week. Based on a Commercial Garbage Truck can accommodate 10 tons per load, 8.06 Tons/ 10 Tons per truck load = 1 trip per week.

Daily Trip Ratio = (1 truck load (trip) per week / 7) / 335 Units =

0.0004 trips/unit/day

#### C. Multi-Family (MF) – Commercial Pick-up to Individual Townhome Units

2.5 lbs./person/day X 2.75 persons/home = 6.87 lbs/townhome/day X 432 units =

2,968 lbs or 1.48 tons per day or 10.38 tons/week.

Based on a Commercial Garbage Truck capacity of 10 tons per load, 10.38 Tons/10 Tons per truck load = 2 trips per week.

Daily Trip Ratio = (2 truck loads (trips) per week/7) / 432 units =

0.0003 trips/unit/day

#### D. Multi-Family (MF) – Commercial Pick-up from Centralized Rubbish Containers

2.5 lbs./person/day X 2.75 persons/home = 6.87 lbs/unit/day X 1,240 units =

8,519 lbs or 4.26 tons per day or 29.81 tons/week.

Based on a Commercial Garbage Truck capacity of 10 tons per load, 29.81 Tons/ 10 Tons per truck load = 3 trips per week.

Daily Trip Ratio = (3 trips/week / 7) / 1,240 units = 0.0003 trips/unit/day

#### E. Commercial (C) – Commercial Pick-up from Centralized Compacting Containers

465,000 Sq. Ft. X .0057 lbs./sq. ft./day<sup>6</sup> = 2,650.5 lbs/day = 1.33 tons/day =

9.28 tons/week. Based on a truck capacity of 10 tons per load = 1 load/week.

Daily Trip Ratio (per 10,000 sq. ft. of commercial use) =

(1 trip per week/7) / 46.5<sup>7</sup> = 0.0003 trips/ 10,000 sq. ft./day

<sup>5</sup> U. S. Census Bureau, Census 2000 Table DP-1, Profile of General Demographic Characteristics (May 18, 2001)

<sup>6</sup> Santa Barbara Environmental Thresholds and Guidelines Manual (Rev.), Oct. 2008, P. 161

<sup>7</sup> Based on a development total of 465,000 Square Feet of Commercial Uses

13

**Appendix G1**  
**Botanical Preservation Plan/Agency Correspondence**  
**(Botanical Consultants, 2000)**

**botanical consultants**

240 makee, suite 7b honolulu, hawaii 96815 (808) 923-4193 fax (808) 923-4193

September 29, 2000

Mr. Thomas H. Yarnamoto  
Eugene A. McCain, Jr.  
Bridge Aina Lea, LLC.  
Post Office Box 548  
Kamuela, Hawaii 96743

Re: Botanical Preservation and Mitigation Plan for Endangered Species  
Found on the Proposed Villages of 'Aina Le'a Development Site

Gentlemen,

You have asked me to provide you with a botanical preservation and mitigation plan as called for in conditions to your development rights.

The following are my recommendations, which I believe constitute the best botanical preservation and mitigation program for your property at this time.

*Ophioglossum concinnum* Breck.

As noted in my 1991 report, we estimated the presence of some 60,000 individuals of this fern on the subject property. This fern has been found in great quantities at various locations within the Hawaiian Islands. In 1992, Warren Herbert Wagner, Jr., Ph.D. Professor of Biology and Natural Resources & Curator of Pteridophytes in the University Herbarium, University of Michigan and the world authority on fern taxonomy declared "Ophioglossum concinnum was far from being an Hawaiian endemic" and "there is no reason to regard it as endangered or threatened". Ophioglossum concinnum has since been de-listed and no longer requires a preservation plan.

*Abutilon menziesii* Seem.

I have recently conducted a search of the subject property to determine the presence of *Abutilon menziesii* Seem. As noted in the August 2000 report, the *Abutilon menziesii* Seem. appears to have succumbed to the severe drought and wind conditions at this location and cannot be found. Without the presence of the plant it is difficult to recommend a location as an appropriate habitat for a preservation site.

01000120

We do not know with certainty if there are viable seeds of the *Abutilon* in the seed bank which could produce new plants under more normal weather conditions. With this in mind, we are recommending that an area be set aside for the time being and another botanical survey be done when more normal weather conditions prevail. At the time of the next survey we can determine if *Abutilon menziesii* Seem. has survived. Based on new findings and if warranted, we can make new recommendations for the plants' preservation and a proper mitigation plan.

For now our recommended preservation and mitigation is for you to not disturb the land within 500 feet of the location where the *Abutilon menziesii* Seem. had been previously found and so noted on the map attached hereto. This "set aside" area includes the northwest corner TMK parcel 37 and the southwest corner of TMK parcel 36. The remaining parcels: TMK 3/6-8-1-25, 38, 39, and 40, are not effected by this plan.

I recommend that you allow the subject area to respond to the changing weather conditions. Within one year, and prior to any disturbance of the land in the area described above, you should undertake another botanical survey.

While there may be no federal requirement for you to involve the U.S.F.W.S., I recommend that the new report on the next survey be forwarded to them for their comments and recommendations.

Once their recommendations are received I would prepare a final preservation and mitigation plan which would incorporate their recommendations.

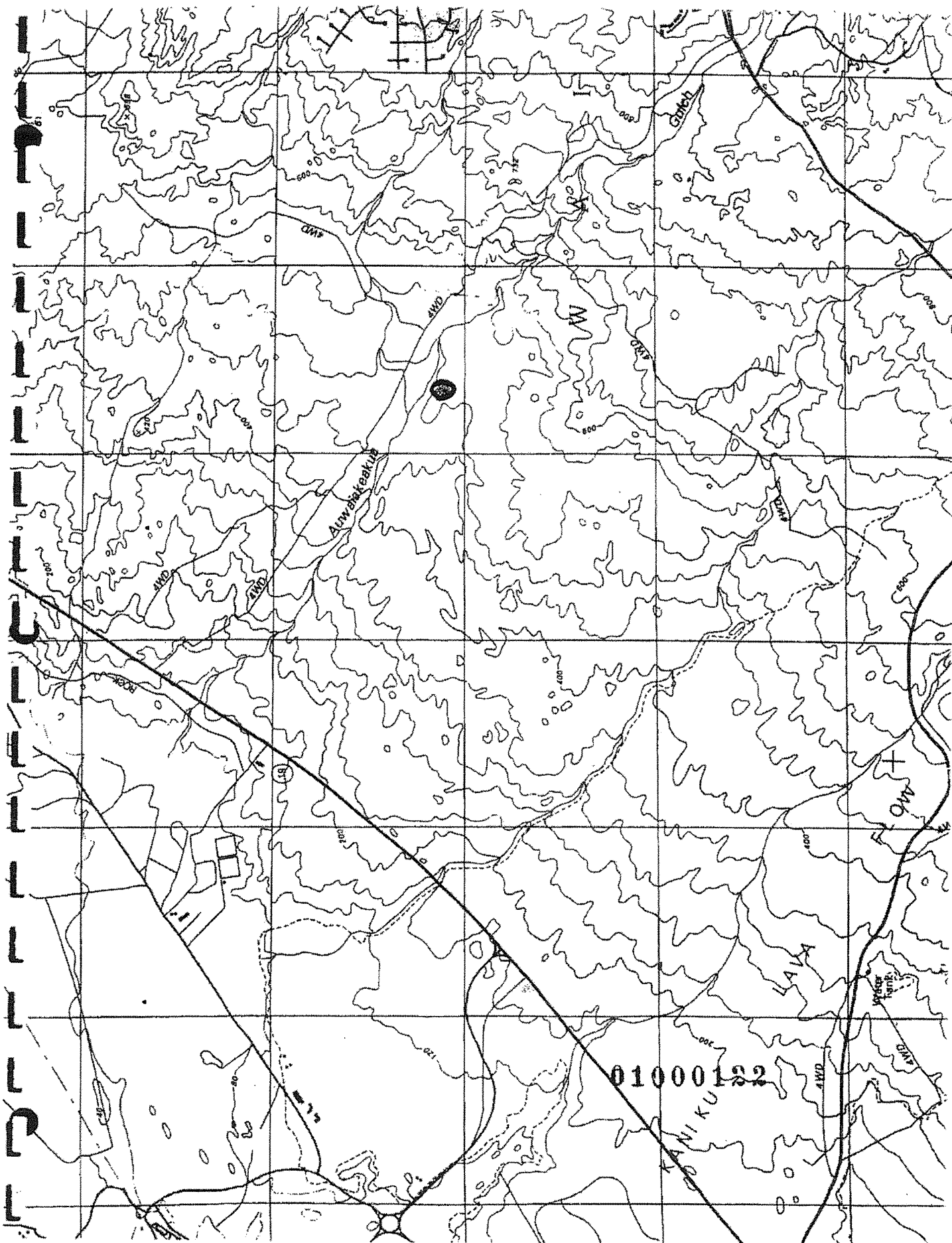
Thank you for the opportunity to assist you in this matter.

Yours Truly,

*Evangeline J Funk PhD*  
Evangeline J. Funk, Ph.D.  
Botanical Consultants

01000121







**Puako Hawaii Properties**

11/16/00 to Dec., P.C.

## Self-Defense: A Woman's Guide

North  
Scale 1" = 400'

**botanical consultants**

240 makee, suite 7b honolulu, hawaii 96815 (808) 923-4193 fax (808) 923-4193

---

August 21, 2000

Mr. Thomas H. Yamamoto  
Thomas H. Yamamoto Inc.  
Box 6150  
Kamuela, Hawaii 96741

Dear Mr. Yamamoto,

On August 18, 2000 my assistant and I searched that part of your Puako, Hi. Development site that resembled the area in which we had previously found the endangered *Abutilon menziesii* Seem. in Jan. 1991. The plant had been found growing among ilima (*Sida fallax* Walp.), uhaloa (*Waltheria indica* L.), and buffel grass (*Cenchrus ciliaris* L.) under a kiawe tree (*Prosopis pallida* Kunth.).

We found that three years of drought and the desiccating wind have left the vegetation of the Aina Le'a site either dead or dying. Even such drought resistant taxa as 'ilima, 'uhaloa, and buffel grass are crisp and dry. Many of the summer deciduous kiawe and wiliwili trees are dry and their bark is peeling off. Only very rarely did we encounter a kiawe tree with one or two green leaves.

After an exhaustive search we had to conclude that the *Abutilon menziesii* plants had probably succumbed to the hot dry conditions. It is possible, but unlikely that seeds may survive this long dry spell without water.

The following four photographs are included to illustrate our findings. The map shows about where the plants had been found.

Yours truly,

  
Evangeline J. Funk, Ph.D.

Cc: Sandy Marr  
1055 East Tropicana Ave., Suite 700  
Las Vegas, Nevada 89119

---

Botanical \* Wetland \* Environmental Studies

---

01000117



Figure 1. Vegetation of the *Abutilon menziesii* habitat is all dead.



Figure 2. Habitat of *Abutilon menziesii*.



Figure 3. Even the buffel grass is gray and dry.



Figure 4. Trunk of kiawe tree with peeling bark.



## United States Department of the Interior

### FISH AND WILDLIFE SERVICE

PACIFIC ISLANDS ECOREGION  
300 ALA MOANA BOULEVARD, ROOM 3108  
BOX 50088  
HONOLULU, HAWAII 96850  
PHONE: (808) 541-3441 FAX: (808) 541-3470

OCT 12 2000

In reply refer to: JMC

Mr. Eugene A. McCain, Jr.  
Mr. Thomas Yamamoto  
Bridge 'Aina Le'a LLC  
Post Office Box 548  
Kamuela, Hawaii 96743

Re: Preservation and Mitigation Plan for Endangered Species at Bridge 'Aina Le'a, South Kohala, Hawaii.

Dear Gentlemen:

The U.S. Fish and Wildlife Service (Service) has reviewed the September 29, 2000, "Botanical Preservation and Mitigation Plan for Endangered Species Found on the Proposed Villages of 'Aina Le'a Development Site" prepared by Dr. Evangeline Funk of Botanical Consultants and provided in Mr. McCain's October 6, 2000, facsimile transmittal. We have also reviewed an August 21, 2000 letter from Botanical Consultants to Mr. Yamamoto regarding their Aug. 18, 2000 site visit; information provided in a telephone conversation between Mr. McCain and Service biologist Mick Castillo on October 7, 2000; and information provided in a September 21, 2000, telephone conversation between Dr. Funk and Mr. Castillo.

The proposed Bridge 'Aina Le'a development project located mauka from Puako in the District of South Kohala includes the construction of low and medium-density family housing and a golf course with associated structures. As stated in Dr. Funk's report, conditions resulting from the current three-year drought in coastal South Kohala have left few woody plants alive. However, viable seed may occur within the seedbank where the population of 39 adult and seedling *Abutilon menziesii* (red 'ilima), a listed endangered species, were found in 1991. We have discussed the matter with Dr. Funk and support her recommendation to avoid disturbance within 500 ft. from the location where the red 'ilima were previously found until a subsequent survey can be conducted following a period of more normal weather conditions.


Concerning the *Ophioglossum concinnum*, we can confirm Dr. Funk's statement that this is not a listed plant and does not require a mitigation or preservation plan.

We look forward to receiving the report from the next survey and reviewing Dr. Funk's recommendations at that time. Meanwhile, we encourage any interest you have in incorporating

01000115

red 'ilima and other unique endemic dry forest plant species into your project either as artificially established wild populations or as horticultural use plants and will support such an effort in the way of technical assistance. Thank you for soliciting our comments on this project. We look forward to working with you in the future. If you have questions, please contact Fish and Wildlife Biologist Mick Castillo at (808) 541-3441.

Sincerely,

  
for Paul Henson  
Field Supervisor  
Ecological Services

cc: Vicki Caraway, Oahu DOFAW  
Lyman Perry, Hawaii DOFAW

01000116



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
DIVISION OF FORESTRY AND WILDLIFE

P.O. BOX 4848  
HILO, HAWAII 96720  
(808) 974-4221  
FAX (808) 974-4226

NOV 15 2000


Virginia Goldstein  
Planning Director  
Hawaii County Planning Department  
25 Aupuni Street, Room 109  
Hilo, Hawaii 96720

Madam,

The Department of Land and Natural Resources' Division of Forestry and Wildlife has reviewed the preservation and mitigation plan for the Aina Lea development in South Kohala. We agree with the U.S. Fish and Wildlife Service's comments regarding endangered plant species at this location. If the applicant will set aside the area demarcated by Dr. Evangeline Funk's botanical survey as habitat for the formerly occurring endangered *Abutilon menziesii* there should be no adverse impact to endangered plant species from this project.

If you should have additional questions about this endangered plant or other endangered plant issues please contact us: 974-4221 or 974-4226 fax.

Sincerely,

  
Jon Giffin  
Hawaii District Manager  
Division of Forestry and Wildlife  
19 E. Kawili Street  
Hilo, HI 96720

01000114



14

# INTERSECTION IMPROVEMENTS

DISTRICT OF SOUTH KOHALA, ISLAND OF HAWAII

Owner:

**DW Aina Le'a  
Development, LLC  
P.O. Box 383129  
Waikoloa, HI 63738**

**Design-Build Contractor:**

**GOODFELLOW BROS., INC.**  
GENERAL CONTRACTOR  
ESTABLISHED 1921

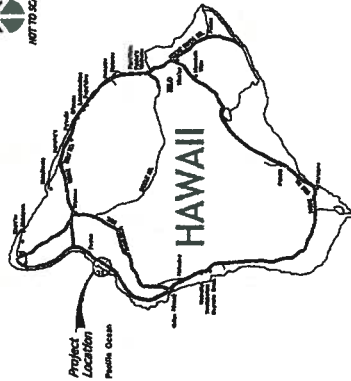
Prepared By:

**Wilson Okamoto**  
CORPORATION  
ENGINEERS • PLANNERS  
1907 S. Beretania St. Suite 400  
Honolulu, Hawaii 96826  
[www.wilsonokamoto.com](http://www.wilsonokamoto.com)

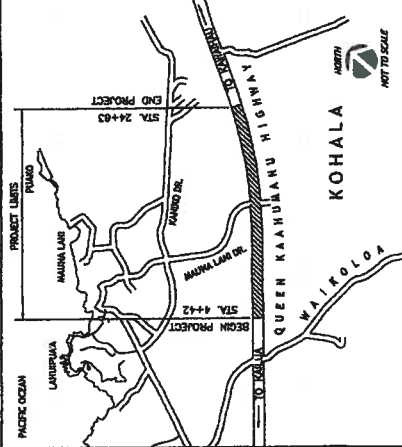
DESIGN DESIGNATION

	CURRENT ADT (2008)	DESIGN ADT (2026)
DHW	17,500	21,000
K	1,750	1,750
D	8.2	8.2
T	51/49	51/49
T <sub>24</sub>	5.7	5.7
V	34.8	34.8
	45	45

### LOCATION MAP



### VICINITY MAP



**SHEET TITLE**

DRAWING NO.	SHEET TITLE
T-1	TITLE SHEET
C-1 TO C-2	STANDARD PLANS SUMMARY
C-3 TO C-4	GENERAL NOTES
C-5	TYPICAL SECTIONS
C-6 TO C-9	RAHWAY PLAN
C-10	STREETS AND SIGNALS LEGEND AND NOTES
C-11 TO C-14	STREETS AND SIGNALS PLAN
C-15	TRAFFIC SIGNAL LEGEND AND NOTES
C-16	TRAFFIC SIGNAL PLAN
C-17	BISSONET SIGNAL DETAILS
C-18	BISSONET CONTROL PLAN
C-19	BISSONET CONTROL DETAILS
C-20	TRAFFIC CONTROL PLAN
C-21 TO C-23	GLORIALAND NOTES AND DETAILS
C-24 TO C-31	GLORIALAND CROSS SECTIONS
C-32	ANIMAL LANE DRIVE PROFILE
E-1	ELECTRICAL SYMBOL LIST AND CONSTRUCTION NOTES
E-2 TO E-3	ELECTRICAL SITE PLANS
E-4	REINFORCING LAYOUTS DETAILS
E-5	ONE LINE AND THERMAL LAYOUT DIAGRAMS

## APPROVALS

ADMINISTRATOR, MISSOURI DIVISION

Y

DATE
CHIEF, MISSOURI DIVISION
CHIEF, DEPT. OF TRANSPORTATION
PERSONNEL GRANTED FOR WORK WITHIN STATE (RIGHT-OF-WAY ONLY)
IN MO. LETTER OF APPOINTMENT NO. DATED

## STANDARD PLANS SUMMARY

STANDARD PLAN NO.	TITLE	DATE
B-41	NOTES & MISCELLANEOUS DETAILS	06/23/07
B-42	BACKFILL DETAILS AT EARTH RETAINING STRUCTURES	06/23/07
B-43	PRESTRESSED CONCRETE PILES AND COMPRESSION SPACE CAN DETAILS	06/23/07
B-12	PRESTRESSED CONCRETE PILES, PILE AND COMPRESSION SPACE CAN DETAILS AND NOTES	06/23/07
B-12A	PILE DRIBBLING DIAGRAM	06/23/07
B-12B	PILE DRIBBLING DIAGRAM	06/23/07
B-13	PRESTRESSED CONCRETE PILE BUILD-UP DETAILS	06/23/07
D-41	CANTILE GATE	06/23/07
D-42	CHAIN LINK FENCE WITH TYPICAL	06/23/07
D-43	CHAIN LINK FENCE WITHOUT TYPICAL	06/23/07
D-44	WIRE FENCE WITH METAL POSTS	06/23/07
D-45	TYPICAL DETAILS OF CURBS AND JOINTS	06/23/07
D-46	TYPICAL DETAIL OF REINFORCED CONCRETE DRIP DRAINWAY	06/23/07
D-47	CUTSLOPE AND REINFORCED SURVEY MONUMENTS	06/23/07
D-48	SURVEY MONUMENT	06/23/07
D-49	CONCRETE SPURALS	06/23/07
D-50	P.C.C. BASE PAD	06/23/07
D-51	P.C.C. BASE PAD	06/23/07
D-52	P.C.C. PARALLEL LAYOUT	06/23/07
D-53	P.C.C. PARALLEL W/ PERMANENT BASE JOINT DETAILS	06/23/07
D-54	P.C.C. PARALLEL W/ PERMANENT BASE JOINT DETAILS	06/23/07
D-55	P.C.C. LONGITUDINAL JOINT DETAILS	06/23/07
D-56	P.C.C. CONNECTION TO CURBS AND GUTTERS	06/23/07
D-57	JOINTS	06/23/07
H-41	TYPE A CATCH BASIN	06/23/07
H-42	TYPE B CATCH BASIN	06/23/07
H-43	TYPE C CATCH BASIN	06/23/07
H-44	TYPE D CATCH BASIN	06/23/07
H-45	CATCH BASIN SECTIONS	06/23/07
H-46	TYPE A1 CATCH BASIN	06/23/07
H-47	TYPE B1 CATCH BASIN	06/23/07
H-48	TYPE C1 CATCH BASIN	06/23/07
H-49	TYPE D1 CATCH BASIN	06/23/07
H-50	CATCH BASIN AND C SECTIONS	06/23/07
H-51	TYPE A, B, AND C SECTIONS	06/23/07
H-52	TYPE D SECTIONS	06/23/07
H-53	TYPICAL REINFORCING DETAILS FOR DRAINAGE STRUCTURES	06/23/07
H-54	TYPICAL REINFORCING DETAILS FOR DRAINAGE STRUCTURES	06/23/07
H-55	CATCH BASIN AND MANHOLE COVERS	06/23/07
H-56	TYPE A-1 AND A-2 SECTIONS	06/23/07
H-57	TYPE B-1 AND B-2 SECTIONS	06/23/07
H-58	TYPE C-1 AND C-2 SECTIONS	06/23/07
H-59	TYPE D-1 AND D-2 SECTIONS	06/23/07
H-60	TYPE E-1 AND E-2 SECTIONS	06/23/07
H-61	TYPE F-1 AND F-2 SECTIONS	06/23/07
H-62	TYPE G-1 AND G-2 SECTIONS	06/23/07
H-63	TYPE H-1 AND H-2 SECTIONS	06/23/07
H-64	TYPE I-1 AND I-2 SECTIONS	06/23/07
H-65	TYPE J-1 AND J-2 SECTIONS	06/23/07
H-66	TYPE K-1 AND K-2 SECTIONS	06/23/07
H-67	TYPE L-1 AND L-2 SECTIONS	06/23/07
H-68	TYPE M-1 AND M-2 SECTIONS	06/23/07
H-69	TYPE N-1 AND N-2 SECTIONS	06/23/07
H-70	TYPE O-1 AND O-2 SECTIONS	06/23/07
H-71	TYPE P-1 AND P-2 SECTIONS	06/23/07
H-72	TYPE Q-1 AND Q-2 SECTIONS	06/23/07
H-73	TYPE R-1 AND R-2 SECTIONS	06/23/07
H-74	TYPE S-1 AND S-2 SECTIONS	06/23/07
H-75	TYPE T-1 AND T-2 SECTIONS	06/23/07
H-76	TYPE U-1 AND U-2 SECTIONS	06/23/07
H-77	TYPE V-1 AND V-2 SECTIONS	06/23/07
H-78	TYPE W-1 AND W-2 SECTIONS	06/23/07
H-79	TYPE X-1 AND X-2 SECTIONS	06/23/07
H-80	TYPE Y-1 AND Y-2 SECTIONS	06/23/07
H-81	TYPE Z-1 AND Z-2 SECTIONS	06/23/07

[illegible]

STANDARD PLAN NO.	TITLE	DATE
E-40	INTERSTATE ROUTE WABER	06/27/07
E-41	STATE ROUTE WABER AND WILLOW WABERS	06/27/07
E-42	STATE ROUTE WABER AND WABER DETAIL FOR GAGE STOPS	06/27/07
E-43A	ROUTE SHI ASSUMES	06/27/07
E-43	SHEET NAME SHI ON LAST SHEET	06/27/07
E-44	WISCONSIN DETECTOR WABERS	06/27/07
E-45	ROUTE WABERS	06/27/07
E-46	MALE PLOTS	06/27/07
E-47A	CANTILEVER OVERHEAD SHI ELEVATION & DETAILS	06/27/07
E-47B	CANTILEVER SHI FRAME DETAIL AND SECTIONS	06/27/07
E-47C	CANTILEVER SHI FRAME DETAIL	06/27/07
E-47D	CANTILEVER SHI FRAME SECTIONS	06/27/07
E-47E	CANTILEVER SHI FRAME DETAILS	06/27/07
E-48A	WAB POST OVERHEAD SHI FRAME ELEVATIONS	06/27/07
E-48B	WAB POST SHI FRAME PLAN SECTION	06/27/07
E-48C	WAB POST SHI FRAME SECTIONS AND DETAILS	06/27/07
E-48D	WAB POST SHI FRAME DETAILS	06/27/07
E-48E	WAB POST SHI FRAME DETAILS	06/27/07
E-48A	OVERHEAD SHI FRAME SCHEDULE	06/27/07
E-48B	SHI POST BUILT SHAF FOUNDATION	06/27/07
E-48C	SPREAD FOOTING	06/27/07
E-48D	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48E	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48F	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48G	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48H	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48I	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48J	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48K	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48L	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48M	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48N	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48O	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48P	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48Q	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48R	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48S	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48T	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48U	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48V	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48W	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48X	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48Y	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48Z	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48AA	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48AB	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48AC	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48AD	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48AE	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48AF	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48AG	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48AH	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48AI	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48AJ	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48AK	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48AL	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48AM	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48AN	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48AO	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48AP	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48AQ	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48AR	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48AS	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48AT	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48AU	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48AV	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48AW	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48AX	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48AY	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48AZ	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48BA	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48BB	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48BC	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48BD	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48BE	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48BF	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48BG	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48BH	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48BI	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48BJ	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48BK	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48BL	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48BM	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48BN	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48BO	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48BP	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48BQ	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48BR	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48BS	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48BT	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48BU	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48BV	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48BW	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48BX	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48BY	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48BZ	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48CA	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48CB	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48CC	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48CD	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48CE	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48CF	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48CG	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48CH	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48CI	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48CJ	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48CK	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48CL	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48CM	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48CN	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48CO	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48CP	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48CQ	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48CR	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48CS	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48CT	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48CU	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48CV	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48CW	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48CX	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48CY	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48CZ	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48DA	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48DB	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48DC	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48DD	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48DE	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48DF	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48DG	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48DH	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48DI	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48DJ	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48DK	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48DL	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48DM	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48DN	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48DO	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48DP	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48DQ	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48DR	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48DS	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48DT	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48DU	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48DV	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48DW	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48DX	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48DY	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48DZ	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48EA	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48EB	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48EC	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48ED	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48EE	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48EF	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48EG	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48EH	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48EI	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48EJ	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48EK	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48EL	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48EM	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48EN	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48EO	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48EP	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48EQ	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48ER	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48ES	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48ET	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48EU	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48EV	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48EW	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48EX	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48EY	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48EZ	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48FA	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48FB	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48FC	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48FD	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48FE	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48FF	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48FG	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48FH	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48FI	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48FJ	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48FK	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48FL	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48FM	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48FN	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48FO	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48FP	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48FQ	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48FR	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48FS	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48FT	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48FU	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48FV	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48FW	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48FX	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48FY	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48FZ	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48GA	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48GB	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48GC	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48GD	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48GE	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48GF	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48GG	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48GH	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48GI	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48GJ	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48GK	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48GL	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48GM	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48GN	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48GO	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48GP	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48GQ	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48GR	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48GS	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48GT	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48GU	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48GV	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48GW	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48GX	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48GY	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48GZ	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48HA	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48HB	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48HC	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48HD	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48HE	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48HF	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48HG	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48HH	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48HI	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48HJ	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48HK	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48HL	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48HM	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48HN	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48HO	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48HP	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48HQ	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48HR	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48HS	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48HT	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48HU	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48HV	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48HW	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48HX	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48HY	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48HZ	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48IA	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48IB	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48IC	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48ID	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48IE	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48IF	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48IG	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48IH	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48II	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48IJ	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48IK	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48IL	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48IM	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48IN	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48IO	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48IP	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48IQ	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48IR	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48IS	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48IT	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48IU	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48IV	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48IW	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48IX	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48IY	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48IZ	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48JA	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48JB	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48JC	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48JD	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48JE	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48JF	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48JG	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48JH	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48JI	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48JJ	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48JK	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48JL	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48JM	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48JN	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48JO	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48JP	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48JQ	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48JR	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48JS	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48JT	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48JU	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48JV	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48JW	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48JX	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48JY	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48JZ	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48KA	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48KB	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48KC	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48KD	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48KE	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48KF	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48KG	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48KH	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48KI	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48KJ	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48KK	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48KL	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48KM	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48KN	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48KO	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48KP	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48KQ	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48KR	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48KS	SHI FRAME FOUNDATION SCHEDULE	06/27/07
E-48KT	SHI FRAME FOUNDATION SCHEDULE	

NOTE:  
STANDARD PLANS APPLICABLE TO THIS  
PROJECT ARE INDICATED BY A "●"  
NEXT TO THE STANDARD PLAN NO.  
(FOR EXAMPLE: 0-07 ● )

 <b>Wilson Okamoto Corporation</b> ENGINEERS - PLANNERS 447 North Main Street, Suite 200 Portland, Oregon 97201 Tel: 503-241-7440 Fax: 503-241-7442 www.wilsonokamoto.com		<b>THE VILLAGES OF AINA LE'A</b> PHASE 1 <b>INTERSECTION IMPROVEMENTS</b> District of South Kihuna Island of Hawaii		Owner: AINA LE'A LAND DEVELOPMENTS, LLC 1001 Kalia Road, Suite 301-119 Honolulu, HI 96813 Tel: 808-943-6200		Design-Builder Contractor: <b>GOODFELLOW BROS., INC.</b> GENERAL CONTRACTORS 1001 Kalia Road, Suite 301-119 Honolulu, HI 96813 Tel: 808-943-6200		 I HEREBY CERTIFY THAT THE DESIGN AND CONSTRUCTION OF THE PROJECT DESCRIBED HEREON WAS PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND THAT I AM A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF HAWAII.		Date: <u>May 12, 2011</u> Signature: <u>[Signature]</u> Title: <u>Professional Engineer</u>		SHEET NO. <u>1</u> OF <u>1</u> PROJECT NO. <u>1001</u> DRAWING NO. <u>1001</u> SCALE: <u>AS SHOWN</u> DATE: <u>5/12/11</u>		STANDARD PLANS SUMMARY		<b>C-01</b> 2 of 38 SHEETS	
---	--	---	--	---	--	---	--	---	--	---	--	--	--	------------------------	--	-------------------------------	--

## STANDARD PLANS SUMMARY

STANDARD PLAN NO.	TITLE	DATE
TE-1M	FIXED MESSAGE LUMINAIRE SUPPORT	06/23/07
TE-1IK	MISCELLANEOUS SIGN DETAILS	06/23/07
TE-1IL	MISCELLANEOUS SIGN DETAILS	06/23/07
TE-1HM	MISCELLANEOUS SIGN FRAME DETAILS	06/23/07
TE-20	SUPPORTS FOR EXPOSED UNPAINTED GAGE SIGN	06/23/07
TE-20A	SUPPORTS FOR EXPOSED UNPAINTED GAGE SIGN	06/23/07
TE-20B	SUPPORTS FOR EXPOSED UNPAINTED GAGE SIGN	06/23/07
TE-20C	SUPPORTS FOR EXPOSED UNPAINTED GAGE SIGN	06/23/07
TE-21A	SIGN REMEDIATION DETAILS	06/23/07
TE-21B	SIGN REMEDIATION DETAILS	06/23/07
TE-21C	LAMINATED ALUMINUM SIGN PANELS (OVERPAINT)	06/23/07
TE-23	LAMINATED ALUMINUM SIGN PANELS (CONCERN WARRANT)	06/23/07
TE-24	SOLID ALUMINUM EXTERIOR SIGN PANEL AND ACCESSORY DETAILS	06/23/07
TE-25	GUIDE SIGN LUMINAIRE MOUNTINGS	06/23/07
TE-26	BASED PAVEMENT MARKINGS AND SIGNING	06/23/07
TE-27	BASED PAVEMENT MARKINGS AND SIGNING	06/23/07
TE-28	ENTRANCE AND EXIT PAVEMENT MARKINGS	06/23/07
TE-29A	MISCELLANEOUS PAVEMENT MARKINGS	06/23/07
TE-29B	PAVEMENT MARKING AND STRIPES	06/23/07
TE-30	PAVEMENT ALPHABETIC MARKERS & SYMBOLS	06/23/07
TE-31	PAVEMENT ALPHABETIC MARKERS & SYMBOLS	06/23/07
TE-32	TYPE I & II WARPED SIGNAL SYSTEM MISCELLANEOUS DETAILS	06/23/07
TE-33	TYPE I WARPED SIGNAL SYSTEM	06/23/07
TE-33A	TYPE I WARPED SIGNAL STANDARD	06/23/07
TE-33B	TYPE I WARPED SIGNAL STANDARD	06/23/07
TE-34	LOOP DETECTOR DETAILS	06/23/07
TE-35	WARPED SIGNAL DETAILS	06/23/07
TE-36	WARPED SIGNAL DETAILS	06/23/07
TE-37	PULLBOX & COVER DETAILS	06/23/07
TE-37A	TYPE "A" WARPED PULLBOX	06/23/07
TE-37B	TYPE "A" WARPED PULLBOX REINFORCING	06/23/07
TE-37C	TYPE "A" WARPED PULLBOX	06/23/07
TE-37D	TYPE "A" WARPED PULLBOX REINFORCING	06/23/07
TE-37E	TYPE "A" WARPED PULLBOX REINFORCING	06/23/07
TE-37F	TYPE "A" WARPED PULLBOX	06/23/07
TE-37G	TYPE "A" WARPED PULLBOX REINFORCING	06/23/07
TE-37H	TYPE "A" WARPED PULLBOX REINFORCING	06/23/07
TE-37I	WARPED PULLBOX COVER AND DETAILS	06/23/07
TE-38	TYPE II WARPED SIGNAL STANDARD	06/23/07
TE-38A	TYPE II WARPED SIGNAL STANDARD	06/23/07
TE-38B	TYPE II WARPED SIGNAL STANDARD	06/23/07
TE-39	METAL GUARDRAIL CORRECTION TO CONCRETE MARKER	06/23/07
TE-40	CONCRETE MARKER REINFORCEMENT	06/23/07
TE-40A	CONCRETE MARKER REINFORCEMENT SECTIONS	06/23/07
TE-41	GUARDRAIL TYPE 4 (ROAD MARKERS)	06/23/07
TE-42	PORTABLE CONCRETE MARKER	06/23/07
TE-43	PORTABLE CONCRETE MARKER	06/23/07
TE-44	GUARDRAIL TYPE I MISCELLANEOUS DETAILS	06/23/07
TE-45	BARRICADES	06/23/07
TE-46	REINFORCED & PAVEMENT MARKINGS AT HARBOR BROOKS	06/23/07
TE-47	HARBOR DART STANDARD	06/23/07

NOTE:  
STANDARD PLANS APPLICABLE TO THIS  
PROJECT ARE INDICATED BY A ● \*  
NEXT TO THE STANDARD PLAN NO.  
(FOR EXAMPLE: D-07 ● )

[illegible]



**Wilson Okamoto  
CORPORATION**  
ENGINEERS, PLANNERS  
10770 Wilshire Boulevard  
Beverly Hills, CA 90210  
(310) 205-1100  
www.wilsonokamoto.com

**THE VILLAGES  
OF AINA LE'A  
PHASE 1**

**INTERSECTION  
IMPROVEMENTS  
DISTRICT OF SOUTH KOHOLA  
Island of Hawaii**

Owner: L&L Development, LLC  
1000 Kalia Road, Suite 200  
Honolulu, HI 96813

Design-Builder Consultant:  
K&L Engineering, Inc.  
1000 Kalia Road, Suite 200  
Honolulu, HI 96813



THIS DOCUMENT PREPARED BY  
K&L ENGINEERING, INC. FOR  
PROJECT NO. 1000 KALIA ROAD  
HONOLULU, HI 96813

*Patricia J. Kelly*

NO.	DESCRIPTION	DATE	BY	FOR
1	PRELIMINARY DESIGN	01/15/10	PK	WOK
2	FINAL DESIGN	01/15/10	PK	WOK
3	CONSTRUCTION	01/15/10	PK	WOK
4	AS-BUILT	01/15/10	PK	WOK

Prepared by: Patricia J. Kelly  
Checked by: Patricia J. Kelly  
Reviewed by: Patricia J. Kelly

**STANDARD  
PLANS  
SUMMARY**

**C-02**



1. THE PROJECT IS ON A QUARRY MANAGER'S PROPERTY AT WHICH NO LIMIT TO THE SCOPE OF WORK FOR THE PROJECT CONSENSUS OF ALL PARTIES LIMITED TO THE PROPERTY OF THE PROJECT MANAGER. THE PROJECT MANAGER SHALL BE RESPONSIBLE FOR THE PROJECT MANAGER'S PROPERTY AND SHALL BE RESPONSIBLE FOR THE PROJECT MANAGER'S PROPERTY AND SHALL BE RESPONSIBLE FOR THE PROJECT MANAGER'S PROPERTY.
2. THE CONTRACTOR'S ATTENTION IS DIRECTED TO SCHEDULES 107-113-14-15-16-17-18-19-20-21-22-23-24-25-26-27-28-29-30-31-32-33-34-35-36-37-38-39-40-41-42-43-44-45-46-47-48-49-50-51-52-53-54-55-56-57-58-59-60-61-62-63-64-65-66-67-68-69-70-71-72-73-74-75-76-77-78-79-80-81-82-83-84-85-86-87-88-89-90-91-92-93-94-95-96-97-98-99-100-101-102-103-104-105-106-107-108-109-110-111-112-113-114-115-116-117-118-119-120-121-122-123-124-125-126-127-128-129-130-131-132-133-134-135-136-137-138-139-140-141-142-143-144-145-146-147-148-149-150-151-152-153-154-155-156-157-158-159-160-161-162-163-164-165-166-167-168-169-170-171-172-173-174-175-176-177-178-179-180-181-182-183-184-185-186-187-188-189-190-191-192-193-194-195-196-197-198-199-200-201-202-203-204-205-206-207-208-209-210-211-212-213-214-215-216-217-218-219-220-221-222-223-224-225-226-227-228-229-230-231-232-233-234-235-236-237-238-239-240-241-242-243-244-245-246-247-248-249-250-251-252-253-254-255-256-257-258-259-260-261-262-263-264-265-266-267-268-269-270-271-272-273-274-275-276-277-278-279-280-281-282-283-284-285-286-287-288-289-290-291-292-293-294-295-296-297-298-299-300-301-302-303-304-305-306-307-308-309-310-311-312-313-314-315-316-317-318-319-320-321-322-323-324-325-326-327-328-329-330-331-332-333-334-335-336-337-338-339-340-341-342-343-344-345-346-347-348-349-350-351-352-353-354-355-356-357-358-359-360-361-362-363-364-365-366-367-368-369-370-371-372-373-374-375-376-377-378-379-380-381-382-383-384-385-386-387-388-389-390-391-392-393-394-395-396-397-398-399-400-401-402-403-404-405-406-407-408-409-410-411-412-413-414-415-416-417-418-419-420-421-422-423-424-425-426-427-428-429-430-431-432-433-434-435-436-437-438-439-440-441-442-443-444-445-446-447-448-449-450-451-452-453-454-455-456-457-458-459-460-461-462-463-464-465-466-467-468-469-470-471-472-473-474-475-476-477-478-479-480-481-482-483-484-485-486-487-488-489-490-491-492-493-494-495-496-497-498-499-500-501-502-503-504-505-506-507-508-509-510-511-512-513-514-515-516-517-518-519-520-521-522-523-524-525-526-527-528-529-530-531-532-533-534-535-536-537-538-539-540-541-542-543-544-545-546-547-548-549-550-551-552-553-554-555-556-557-558-559-560-561-562-563-564-565-566-567-568-569-570-571-572-573-574-575-576-577-578-579-580-581-582-583-584-585-586-587-588-589-590-591-592-593-594-595-596-597-598-599-600-601-602-603-604-605-606-607-608-609-610-611-612-613-614-615-616-617-618-619-620-621-622-623-624-625-626-627-628-629-630-631-632-633-634-635-636-637-638-639-640-641-642-643-644-645-646-647-648-649-650-651-652-653-654-655-656-657-658-659-660-661-662-663-664-665-666-667-668-669-670-671-672-673-674-675-676-677-678-679-680-681-682-683-684-685-686-687-688-689-690-691-692-693-694-695-696-697-698-699-700-701-702-703-704-705-706-707-708-709-710-711-712-713-714-715-716-717-718-719-720-721-722-723-724-725-726-727-728-729-730-731-732-733-734-735-736-737-738-739-740-741-742-743-744-745-746-747-748-749-750-751-752-753-754-755-756-757-758-759-760-761-762-763-764-765-766-767-768-769-770-771-772-773-774-775-776-777-778-779-780-781-782-783-784-785-786-787-788-789-790-791-792-793-794-795-796-797-798-799-800-801-802-803-804-805-806-807-808-809-810-811-812-813-814-815-816-817-818-819-820-821-822-823-824-825-826-827-828-829-830-831-832-833-834-835-836-837-838-839-840-841-842-843-844-845-846-847-848-849-850-851-852-853-854-855-856-857-858-859-860-861-862-863-864-865-866-867-868-869-870-871-872-873-874-875-876-877-878-879-880-881-882-883-884-885-886-887-888-889-890-891-892-893-894-895-896-897-898-899-900-901-902-903-904-905-906-907-908-909-910-911-912-913-914-915-916-917-918-919-920-921-922-923-924-925-926-927-928-929-930-931-932-933-934-935-936-937-938-939-940-941-942-943-944-945-946-947-948-949-950-951-952-953-954-955-956-957-958-959-960-961-962-963-964-965-966-967-968-969-970-971-972-973-974-975-976-977-978-979-980-981-982-983-984-985-986-987-988-989-990-991-992-993-994-995-996-997-998-999-1000-1001-1002-1003-1004-1005-1006-1007-1008-1009-1010-1011-1012-1013-1014-1015-1016-1017-1018-1019-1020-1021-1022-

- [illegible]

[illegible]

- [illegible]

[illegible]

- [illegible]

1. ALL COMPLETES AND ADMITS ARE BASED ON
2. LOCATION OF UNDERGROUND UTILITIES ARE APPROXIMATE ONLY AND ARE BASED ON RECORD INFORMATION.
3. ALL ELEVATIONS AND DISTANCES SHOWN ARE IN FEET.
4. SEE SHEET C-4 FOR BEACH MARK.
5. ELEVATIONS ARE REFERENCED TO MEAN SEA LEVEL.
6. TOPOGRAPHIC SURVEY BASED ON "TOPOGRAPHIC SURVEY FOR CLIENT PROJECT PREPARED BY GEORGE WILSON & ASSOCIATES INC., SEPTEMBER 1, 2009"

## PAVEMENT DESIGN NOTES

1. PAVEMENT DESIGN BASED ON "TRAILBLAZER ASPHALT/CONCRETE REPORT QUOTE SANDHURST HIGHWAY AND LUNAN LAKE INTERSECTION WITH KAMAHU ROAD, HONOLULU, HI, DATE 1/17/2008" BY GEORGE WILSON & ASSOCIATES INC.

- [illegible]

1. PAVEMENT DESIGN BASED ON "PAVEMENT JUSTIFICATION REPORT QURDIA KANAMAMU HIGHWAY AND MAURA LAM CRONE INTERSECTION IMPROVEMENTS WADIGLOA, SOUTH KOTAWA, HAWAII" PREPARED BY GEOLABS, INC., JUNE 1, 2004

1. PAVEMENT DESIGN BASED ON "PAVEMENT JUSTIFICATION REPORT QURDIA KANAMAMU HIGHWAY AND MAURA LAM CRONE INTERSECTION IMPROVEMENTS WADIGLOA, SOUTH KOTAWA, HAWAII" PREPARED BY GEOLABS, INC., JUNE 1, 2004

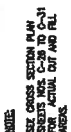
[illegible]







**TYPICAL FILL SECTION**



**TYPICAL CUT SECTION**  
**NOT TO SCALE**

Die V wie



**Wilson Okamoto  
CORPORATION**  
ENGINEERS - PLANNERS

1000 Kalia Road, Suite 100  
Honolulu, Hawaii 96813  
PHONE: 531-1111  
FAX: 531-1112

**THE VILLAGES  
OF AINA LE'A  
PHASE 1**

**INTERSECTION  
IMPROVEMENTS  
District of South Kahoala  
Island of Hawaii**

Client:  
Big Ma, LLC Development, LLC  
1000 Kalia Road, Suite 100  
Honolulu, HI 96813

Design-Build Contractor:  
GOODFELLOW INC., INC.  
1000 Kalia Road, Suite 100  
Honolulu, HI 96813



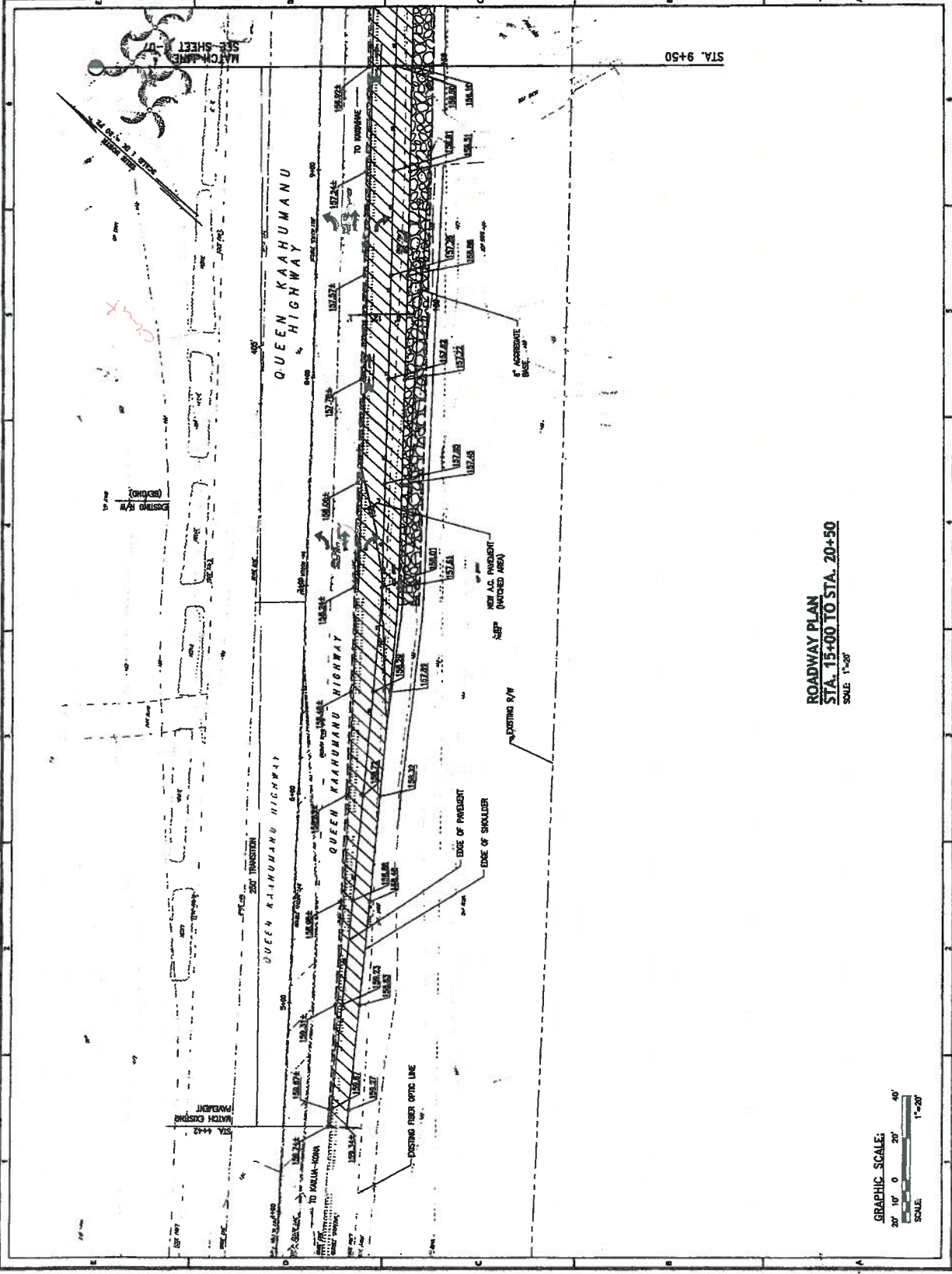
DATE: 05/10/2011  
BY: [Signature]  
CHECKED BY: [Signature]  
DESIGNED BY: [Signature]  
PROJECT NO.: 10000  
SHEET NO.: 10000

NO.	DESCRIPTION	DATE
1	DESIGN	05/10/2011
2	CHECK	05/10/2011
3	DESIGN	05/10/2011
4	CHECK	05/10/2011
5	DESIGN	05/10/2011
6	CHECK	05/10/2011
7	DESIGN	05/10/2011
8	CHECK	05/10/2011
9	DESIGN	05/10/2011
10	CHECK	05/10/2011

NO.	DESCRIPTION	DATE
1	DESIGN	05/10/2011
2	CHECK	05/10/2011
3	DESIGN	05/10/2011
4	CHECK	05/10/2011
5	DESIGN	05/10/2011
6	CHECK	05/10/2011
7	DESIGN	05/10/2011
8	CHECK	05/10/2011
9	DESIGN	05/10/2011
10	CHECK	05/10/2011

**ROADWAY PLAN  
STA. 4+42 TO  
STA. 9+50**

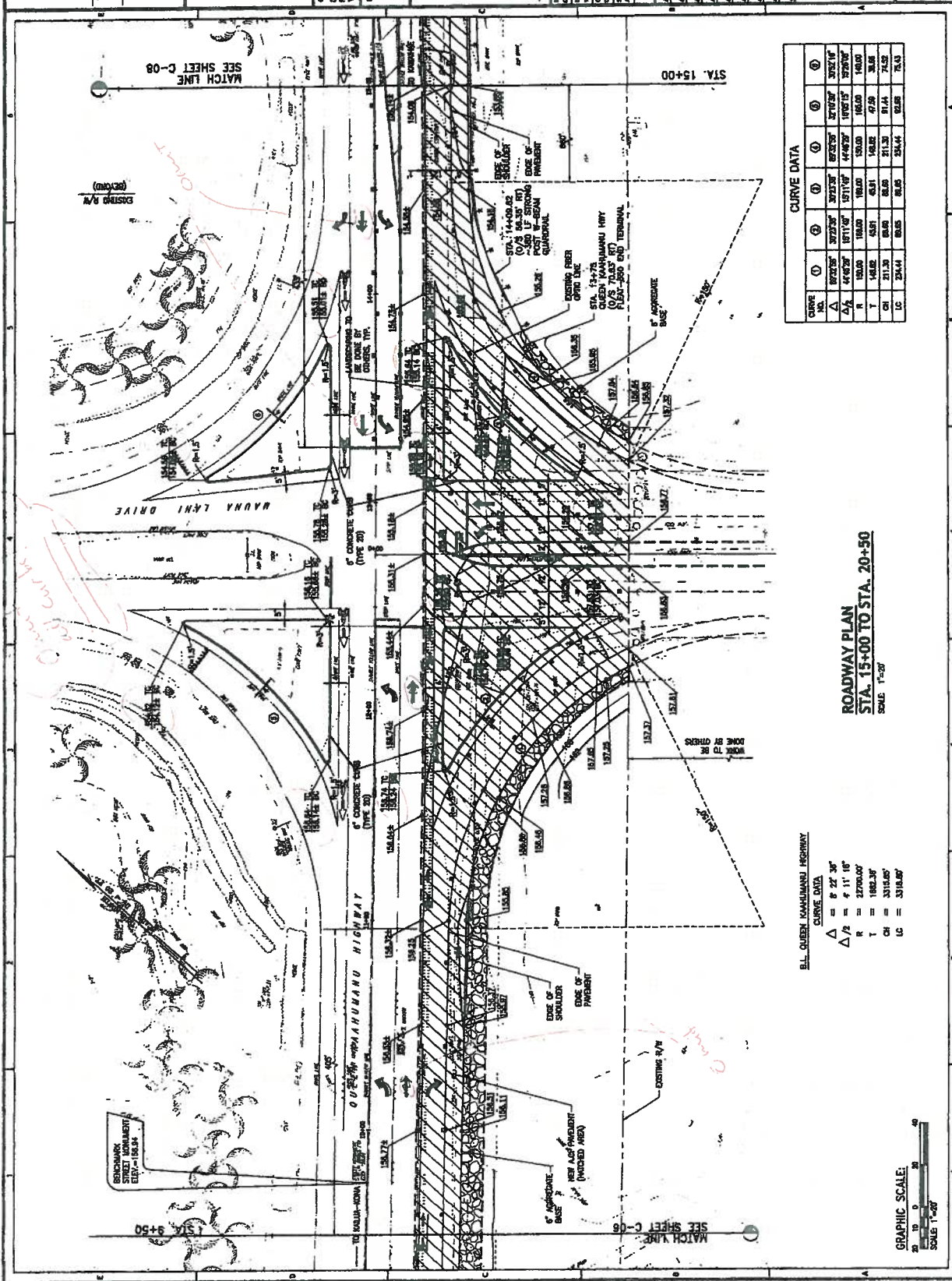
**C-06**  
7 of 20 SHEETS



**ROADWAY PLAN  
STA. 15+00 TO STA. 20+50  
SCALE: 1"=20'**













**GRAPHIC SCALE:**



SCALE 1"=20'



**Wilson Okamoto  
CORPORATION**  
ENGINEERS-PLANNERS

1000 North 10th Street, Suite 200  
Tomball, Texas 77475-1200  
Tel: 281-291-1200  
Fax: 281-291-1201

# THE VILLAGES OF AINA LE'A

PHASE I

**INTERSECTION  
IMPROVEMENTS**  
DISTRICT OF SOUTH HAWAII  
COUNTY OF HAWAII

Owner:

OW Aina Le'a Development, LLC  
P.O. Box 20020  
Honolulu, HI 96820

Design-Builder:

GOODWIN/LOW BROS., INC.  
1000 KALANIAN'OLU DRIVE, SUITE 200  
HONOLULU, HI 96813



*Wilson Okamoto*  
Professional Engineer  
No. 10000  
State of Hawaii  
Expiration Date: 12/31/2010

Project No.	10000
Sheet No.	10000
Scale	As Shown
Date	10/1/09
By	W.O.
Check	W.O.
Appr.	W.O.

COMPILED & CHECKED: 10/1/09

## STRIPING AND SIGNING NOTES

**C-10**

11 of 28 sheets

### LEGEND



4 EACH TYPE A RAISED PAVEMENT MARKERS  
TYPE C RAISED PAVEMENT MARKERS (RPM)  
AT 20'-0" O.C.



4" WHITE STRIPE WITH TYPE C RAISED PAVEMENT  
MARKERS (RPM) AT 20'-0" O.C. (TYPE I OR  
THERMOPLASTIC EXTENSION)



4" DOUBLE SOLID YELLOW STRIPE WITH TYPE H  
RAISED PAVEMENT MARKERS (RPM) AT 20'-0" O.C.  
(TYPE I OR THERMOPLASTIC EXTENSION)



4" DOUBLE SOLID YELLOW STRIPE WITH TYPE H  
RAISED PAVEMENT MARKERS (RPM) AT 20'-0" O.C.  
(TYPE I OR THERMOPLASTIC EXTENSION)



4" WHITE GUIDE STRIPE WITH TYPE C  
RAISED PAVEMENT MARKERS (RPM) AT 20'-0" O.C.  
(TYPE I OR THERMOPLASTIC EXTENSION)



4" WHITE GUIDE LINES (TYPE I OR  
THERMOPLASTIC EXTENSION) EXIST FOR BUS BAYS



TRANSVERSE MEDIAN MARKER (TYPE I OR  
THERMOPLASTIC EXTENSION)



TRANSVERSE SHOULDER MARKER (TYPE I  
OR THERMOPLASTIC EXTENSION)



TRANSVERSE SHOULDER MARKER (TYPE I  
OR THERMOPLASTIC EXTENSION)



TRANSVERSE SHOULDER MARKER (TYPE I  
OR THERMOPLASTIC EXTENSION)



TRANSVERSE SHOULDER MARKER (TYPE I  
OR THERMOPLASTIC EXTENSION)



TRANSVERSE SHOULDER MARKER (TYPE I  
OR THERMOPLASTIC EXTENSION)



TRANSVERSE SHOULDER MARKER (TYPE I  
OR THERMOPLASTIC EXTENSION)



TRANSVERSE SHOULDER MARKER (TYPE I  
OR THERMOPLASTIC EXTENSION)



TRANSVERSE SHOULDER MARKER (TYPE I  
OR THERMOPLASTIC EXTENSION)



TRANSVERSE SHOULDER MARKER (TYPE I  
OR THERMOPLASTIC EXTENSION)



TRANSVERSE SHOULDER MARKER (TYPE I  
OR THERMOPLASTIC EXTENSION)



TRANSVERSE SHOULDER MARKER (TYPE I  
OR THERMOPLASTIC EXTENSION)



TRANSVERSE SHOULDER MARKER (TYPE I  
OR THERMOPLASTIC EXTENSION)



TRANSVERSE SHOULDER MARKER (TYPE I  
OR THERMOPLASTIC EXTENSION)



TRANSVERSE SHOULDER MARKER (TYPE I  
OR THERMOPLASTIC EXTENSION)



TRANSVERSE SHOULDER MARKER (TYPE I  
OR THERMOPLASTIC EXTENSION)



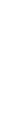
TRANSVERSE SHOULDER MARKER (TYPE I  
OR THERMOPLASTIC EXTENSION)



TRANSVERSE SHOULDER MARKER (TYPE I  
OR THERMOPLASTIC EXTENSION)



TRANSVERSE SHOULDER MARKER (TYPE I  
OR THERMOPLASTIC EXTENSION)



TRANSVERSE SHOULDER MARKER (TYPE I  
OR THERMOPLASTIC EXTENSION)



TRANSVERSE SHOULDER MARKER (TYPE I  
OR THERMOPLASTIC EXTENSION)



TRANSVERSE SHOULDER MARKER (TYPE I  
OR THERMOPLASTIC EXTENSION)



**Wilson Okamoto**  
C.D., P.E., F.A.S.T.E.  
CONSULTING ENGINEERS

1000 West 10th Street, Suite 100  
Honolulu, HI 96813  
Phone: (808) 531-1234  
Fax: (808) 531-1235  
www.wilsonokamoto.com

**THE VILLAGES  
OF AINA LE'A**

**PHASE 1**

**INTERSECTION  
IMPROVEMENTS**  
District of South Kaimuku  
Island of Hawaii

Owner:  
Lay Area Land Development, LLC  
P.O. Box 100  
Honolulu, HI 96808

Design-Build Contractor:  
**GOODFELLOW BROOK, INC.**  
GENERAL CONTRACTOR



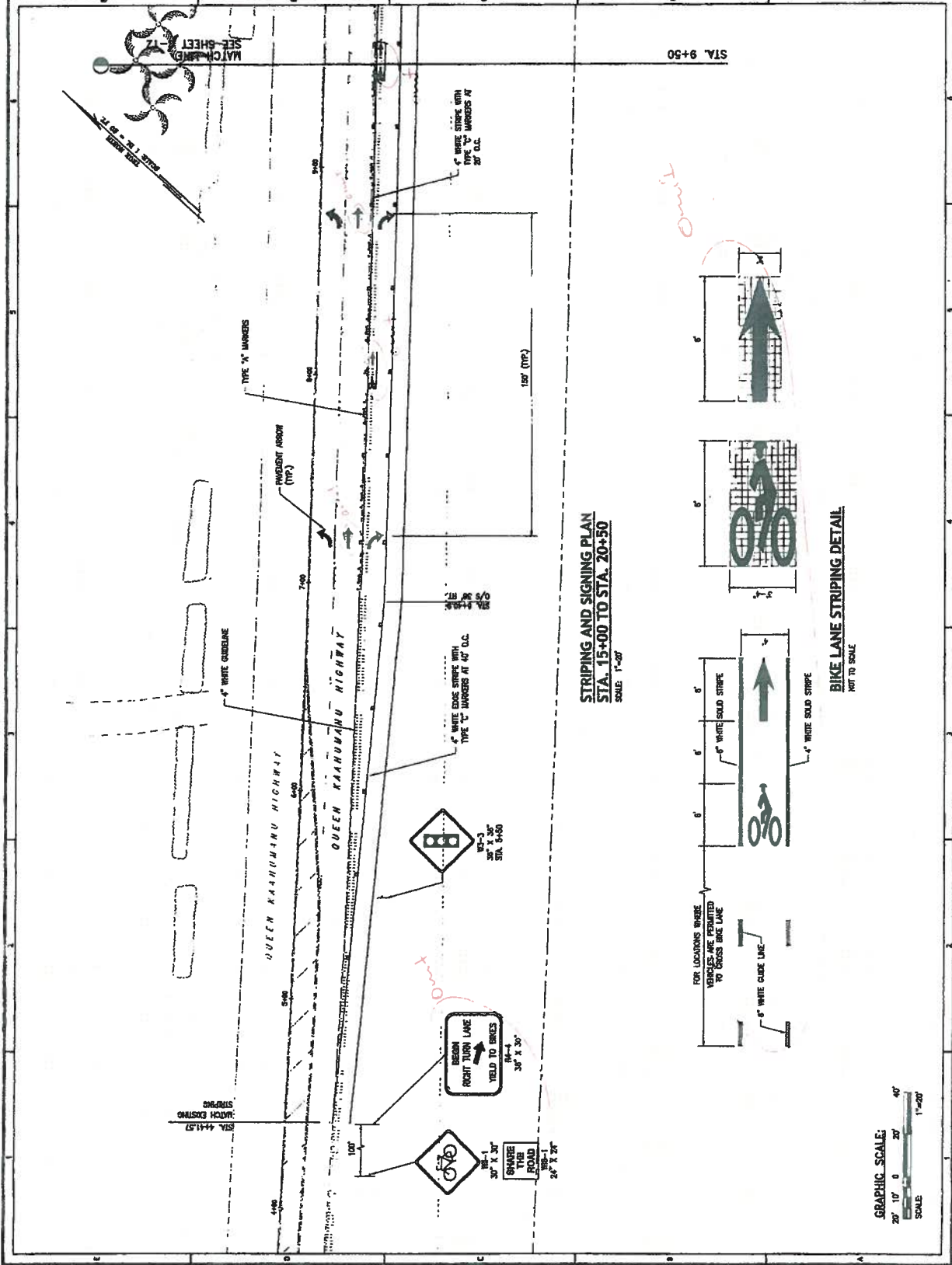
DATE: 01/15/2010  
BY: [Signature]  
CHECKED BY: [Signature]  
IN CHARGE: [Signature]

PROJECT NO.	100-000000
DATE	01/15/2010
BY	[Signature]
CHECKED BY	[Signature]
IN CHARGE	[Signature]
CONTRACT NO.	100-000000
CONTRACT NAME	100-000000
CONTRACT NO.	100-000000
CONTRACT NAME	100-000000

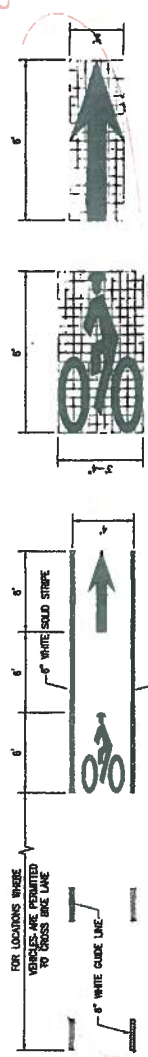
NO.	DESCRIPTION
1	100-000000
2	100-000000
3	100-000000
4	100-000000
5	100-000000
6	100-000000
7	100-000000
8	100-000000
9	100-000000
10	100-000000

**STRIPING AND  
SIGNING PLAN**  
STA. 4+42 TO  
STA. 9+50

Sheet No. **C-11**  
12 of 36 sheets



**STRIPING AND SIGNING PLAN**  
STA. 15+00 TO STA. 20+50  
SCALE: 1"=20'



**BIKE LANE STRIPING DETAIL**  
NOT TO SCALE





**Wilson Okamoto**  
CORPORATION  
ENGINEERS - PLANNERS

1001 Kalia Road, Suite 200  
Honolulu, Hawaii 96813  
Phone: (808) 943-1100  
Fax: (808) 943-1101  
www.wilsonokamoto.com

**THE VILLAGES  
OF ANALEA  
PHASE 1**

**INTERSECTION  
IMPROVEMENTS**  
District of South Kona  
Island of Hawaii

Owner:  
HAWAIIAN LAND DEVELOPMENT, LLC  
P.O. Box 10020  
Honolulu, HI 96808

Design-Build Contractor:  
GOODFELLOW GROUP, INC.  
GENERAL CONTRACTOR  
1001 Kalia Road, Suite 200  
Honolulu, HI 96813



DATE: 01/11/2011  
BY: [Signature]  
CHECKED BY: [Signature]  
IN CHARGE: [Signature]

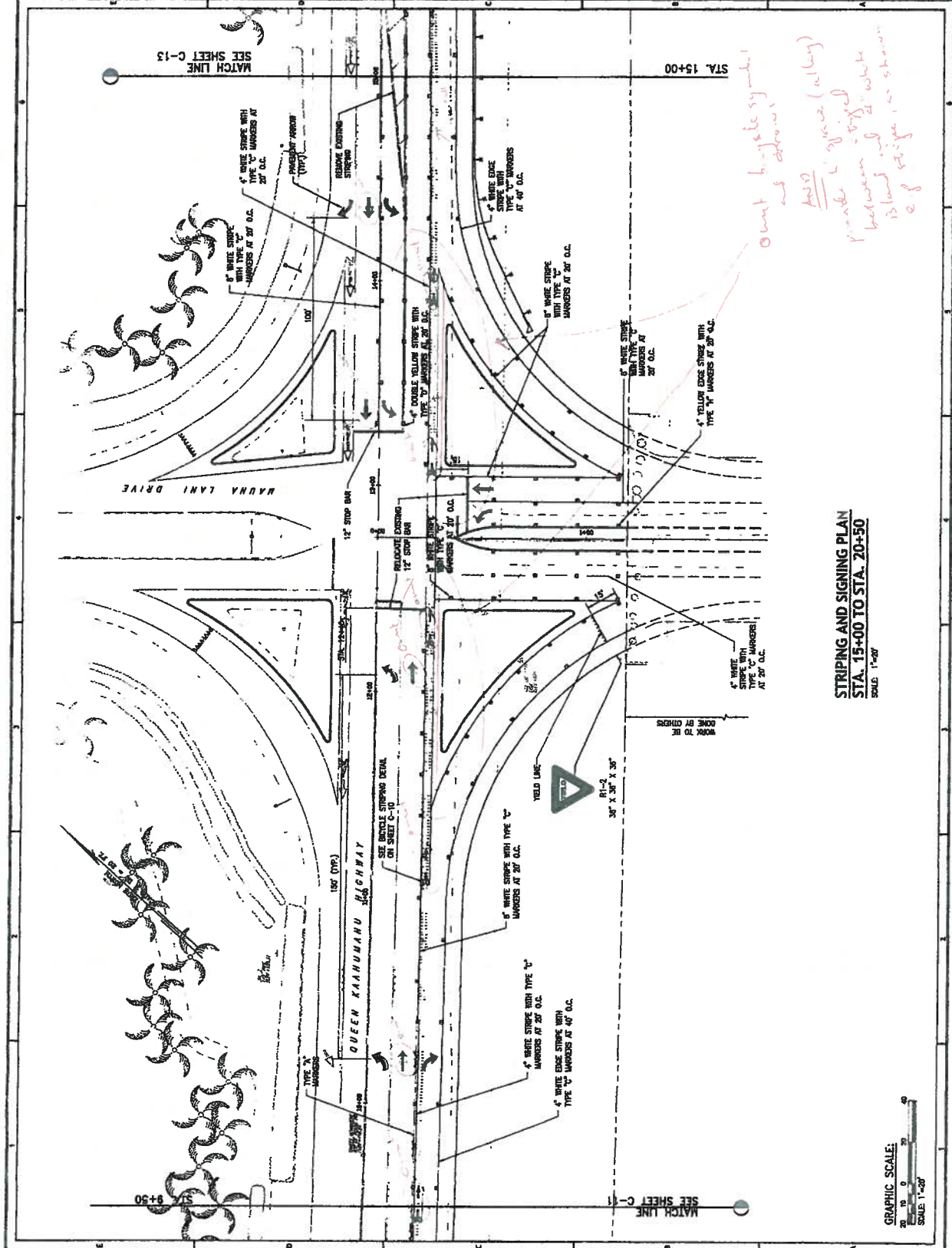
PROJECT NO.	1001
DATE	01/11/2011
BY	[Signature]
CHECKED BY	[Signature]
IN CHARGE	[Signature]
PROJECT NAME	THE VILLAGES OF ANALEA PHASE 1
LOCATION	DISTRICT OF SOUTH KONA, HAWAII
SCALE	AS SHOWN
DATE	01/11/2011
BY	[Signature]
CHECKED BY	[Signature]
IN CHARGE	[Signature]

DATE	01/11/2011
BY	[Signature]
CHECKED BY	[Signature]
IN CHARGE	[Signature]
PROJECT NAME	THE VILLAGES OF ANALEA PHASE 1
LOCATION	DISTRICT OF SOUTH KONA, HAWAII
SCALE	AS SHOWN
DATE	01/11/2011
BY	[Signature]
CHECKED BY	[Signature]
IN CHARGE	[Signature]

**STRIPING AND  
SIGNING PLAN**  
STA. 15+00 TO  
STA. 20+50

**C-12**

13 of 38 SHEETS



*out hedges and driveway*  
*add 1' grade (alley)*  
*provide 1' grade between and 2' white island striping, as shown*

**STRIPING AND SIGNING PLAN**  
STA. 15+00 TO STA. 20+50  
SCALE: 1"=40'



14 of 38 sheets

SCALE: 1"=20'

• **3.1.1.3**



**THE VILLAGES  
OF AINA LE'A  
PHASE 1**

## INTERSECTION IMPROVEMENTS

**Donner**  
JW Allen Life Development, LLC  
P.O. Box 383729  
Washington, MI 48379

**Budget-Solid Contractor!**  
**GOODFELLOW BROS., INC.**  
**GENERAL CONTRACTOR**  
—ESTABLISHED 1914—



THIS WORK WAS PERFORMED IN  
AN OFFICE OF THE  
AND CONSTRUCTION OF THE  
PROJECT WILL BE UNDER THE

[illegible][illegible]

**STRIPING AND  
SIGNING PLAN**  
**STA. 20+30 TO  
STA. 24+63**

**C-14**

**STRIPING AND SIGNING PLAN**  
**STA. 20+50 TO STA. 24+63**  
**SCALE: 1"=30'**



MATCH LINE  
SEE SHEET C-13

STA. 20+50

3" DOUBLE YELLOW STRIPE WITH  
TYPE "D" MARKERS AT 20' O.C.

4" WHITE EDGE STRIPE WITH  
TYPE "T" MARKERS AT 40' O.C.

700 102 14 GREEN H. 3411  
TYPE 70 WARRORS AT 20' O.C.  
HULL 240015 NOTED 37000 . 4

2. 344 HURR 34015 31100.

✓ 12" YELLOW STRIPE (TYP.)

TYPE "A" MARKERS

JUCEN KAHUMANU HIGHWAY

QUEEN KANUMAND HIGHWAY

7-24-63  
MILITARY MAIL  
2-12-63





**Wilson Okamoto Corporation**  
ENGINEERS - PLANNERS  
1000 North Main Street  
P.O. Box 1000  
Pittsburgh, PA 15224  
Tel: 412-261-1000  
Fax: 412-261-1001

# THE VILLAGES OF ARNA LEA PHASE 1

**INTERSECTION IMPROVEMENTS**  
District of South Richmond  
Island of Hawaii

**Owner:**  
The Village of Arna Lea  
1000 North Main Street  
Pittsburgh, PA 15224

**Design-Builder Consultant:**  
The Village of Arna Lea  
1000 North Main Street  
Pittsburgh, PA 15224



**Contract No.:**  
1000 North Main Street  
Pittsburgh, PA 15224

**Project No.:**  
1000 North Main Street  
Pittsburgh, PA 15224

**Scale:**  
1" = 40'

**Sheet No.:**  
1000 North Main Street  
Pittsburgh, PA 15224

**DATE:**  
1000 North Main Street  
Pittsburgh, PA 15224

**TRAFFIC SIGNAL NOTES**

**C-15**

14 of 28 sheets

## TRAFFIC SIGNAL NOTES

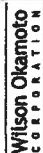
- ALL TRAFFIC SIGNAL CONTROLLER EQUIPMENT SHALL BE COMPLETELY WEED IN THE CONCRETE AND SHALL BE COMPLETELY WEED IN THE CONCRETE.
- SIGNAL HOUSINGS DURING CLEARANCE INTERVAL:  
A. IF A SIGNAL IS 0 OR 4-5- AND WILL REMAIN 0 OR 4-5- DURING THE NEXT PHASE, IT SHALL BE 0 OR 4-5- DURING THE CLEARANCE INTERVAL.  
B. IF A SIGNAL IS 0 OR 4-5- AND WILL BECOME R OR 4-5- DURING THE NEXT PHASE, IT SHALL BE Y OR 4-5- DURING THE CLEARANCE INTERVAL.  
C. IF A SIGNAL IS R AND WILL REMAIN R OR BECOMES 0 DURING THE NEXT PHASE, IT SHALL REMAIN R DURING THE CLEARANCE INTERVAL.
- THE LOOP AMPLIFIER UNITS FURNISHED FOR THIS PROJECT SHALL BE COMPLETELY WEED IN THE CONCRETE AND SHALL BE COMPLETELY WEED IN THE CONCRETE.
- A SOLID 1/4 INCH COPPER WIRE SHALL BE PULLED WITH THE TRAFFIC CONTROL CABLE FOR EQUIPMENT GROUND. COST SHALL BE INCIDENTAL TO THE INSTALLATION OF THE TRAFFIC CONTROL CABLE.
- CONDUITS AND CABLE LOCATIONS AS SHOWN ON THE PLANS ARE EXHIBIT. THEY MAY BE MODIFIED BY THE CONTRACTOR WITH THE APPROVAL OF THE ENGINEER.
- THE CONTRACTOR SHALL PROVIDE ALL SIGNAL CONDUITS IN PULLBOX. NO SPICES SHALL BE PROVIDED IN EXISTING LOOP-IN CABLE.
- ALL TRAFFIC SIGNAL REMOVAL AND REPAIR WORK (I.E. PULLBOXES, STANDARDS, HOUSINGS, ETC.) SHALL BE COMPLETED PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND REPAIR OF ALL TRAFFIC SIGNALS.
- ALL EXISTING TRAFFIC SIGNAL STANDARDS SHALL BE PLACED AS DIRECTED BY THE ENGINEER. COST SHALL BE INCIDENTAL TO THE VARIOUS TRAFFIC SIGNAL ITEMS.
- THE DEPARTMENT OF WATER RESOURCES OF MINIMUM VERTICAL AND 3' MINIMUM HORIZONTAL CLEARANCE BETWEEN UTILITIES

## CONSTRUCTION NOTES

- LOCATIONS OF EXISTING UNDERGROUND UTILITIES AND UTILITIES SUCH AS WATER, GAS, AND ELECTRICITY SHALL BE SHOWN ON THE PLANS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND REPAIR OF ALL UTILITIES.
- THE CONTRACTOR SHALL VERIFY AND CHECK ALL DIMENSIONS AND DETAILS SHOWN ON THE PLANS PRIOR TO THE START OF CONSTRUCTION. ANY DISCREPANCY SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER FOR CLARIFICATION.
- THE CONTRACTOR SHALL NOTIFY ALL AGENCIES TO VERIFY THE ACTUAL LOCATION OF ALL UTILITIES IN THE PROJECT AREA PRIOR TO EXCAVATING. THE CONTRACTOR SHALL COORDINATE ALL WORK.
- THE CONTRACTOR SHALL TUNE AND LOCATE EXISTING UTILITIES ALONG ROUTINE PRIOR TO EXCAVATION.
- THE LOCATIONS OF THE NEW TRAFFIC SIGNAL STANDARDS, TRAFFIC SIGNAL STANDARDS WITH 1/4 INCH COPPER WIRE, TRAFFIC SIGNAL STANDARDS, PULLBOXES, HOUSINGS, ETC. SHALL BE SHOWN ON THE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND REPAIR OF ALL TRAFFIC SIGNALS.
- ALL TRAFFIC SIGNAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE FEDERAL HIGHWAY ADMINISTRATION (FHWA) AND AMENDMENTS.
- LOCATIONS OF NEW PAVEMENT, STOPPING, WARDING, AND WARDING (PAVEMENT ARROW, STOP LINES, CROSSWALK, ETC.) SHOWN ON THE PLANS SHALL BE VERIFIED WITH THE ENGINEER PRIOR TO THE INSTALLATION OF THE TRAFFIC SIGNAL SYSTEM.

## TRAFFIC SIGNAL LEGEND

- TRAFFIC SIGNAL STANDARD
- STANDARD TRAFFIC AND PEDESTRIAN SIGNAL HEADS ADJUSTED ON TYPE 1 SIGNAL STANDARD, HEIGHT=10'
- OPTIMUM UNIT
- TRAFFIC SIGNAL HEADS MOUNTED ON TYPE 1 SIGNAL STANDARD, MIN SPREAD SHOWN IS 30' AND DISTANCE BETWEEN SIGNAL HEADS IS 12'
- 12" RT - FIBER OPTIC HEAD
- 12" TWO TRAFFIC SIGNAL HEAD (LED)
- 12" RT TRAFFIC SIGNAL HEAD (LED)
- PEDESTRIAN SIGNAL HEAD
- CONTROLLER AND CABINET
- TYPE A TRAFFIC SIGNAL PULLBOX
- TYPE B TRAFFIC SIGNAL PULLBOX
- LOOP DETECTORS

[illegible]

## THE VILLAGES OF AINA LE'A

**PHASE 1**  
**INTERSECTION**  
**IMPROVEMENTS**  
District of South Kohala  
Island of Hawaii

Decatur:  
 1000 Allen Lane Development, LLC  
 P.O. Box 353729  
 Atlanta, GA 30379

**Design-Build Contractor:**

**GOODFELLOW BROS., INC.**  
**GENERAL CONVEYOR**



THIS WORK WAS SUPPORTED BY AN ACADEMIC FELLOWSHIP FROM THE NATIONAL RESEARCH SERVICE OF THE NATIONAL ACADEMIES OF SCIENCES.

*Calla Adams*  
OWNER/OPERATOR

[illegible]

COMPTON & WILSON CONSULTING CORP., 2007

[illegible]TRAFFIC SIGNAL  
PLAN

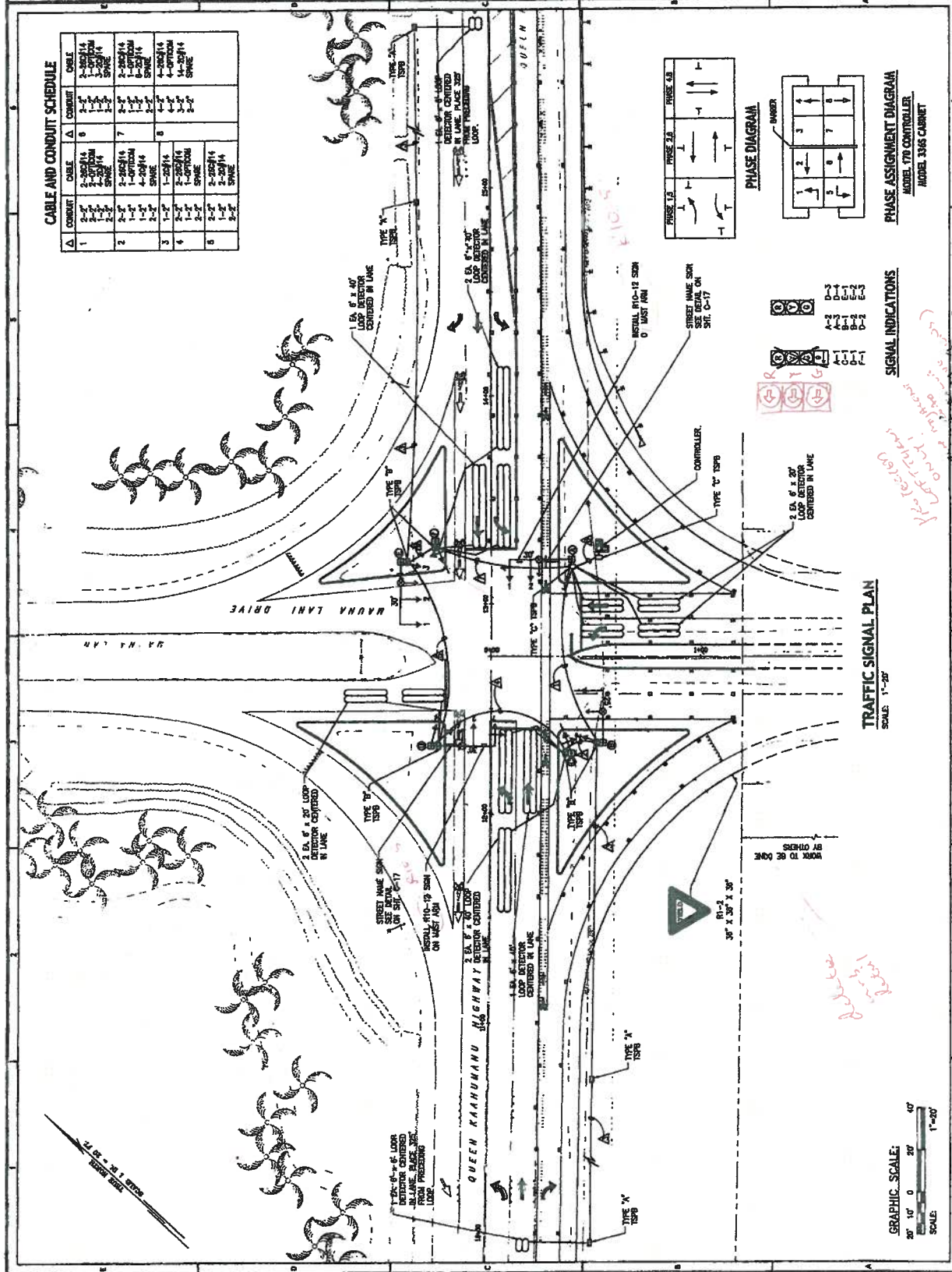
**ON IMPROVING**

C-16

1999

### CABLE AND CONDUIT SCHEDULE

$\Delta$	CONVERT	CABLE	CONVERT	CABLE
1	2-322/14 2-322/14 1-322/14 2-322/14 2-322/14 2-322/14	2-322/14 2-322/14 1-322/14 2-322/14 2-322/14 2-322/14	0	2-322/14 2-322/14 1-322/14 2-322/14 2-322/14 2-322/14
2	2-322/14 2-322/14 1-322/14 2-322/14 2-322/14 2-322/14	2-322/14 2-322/14 1-322/14 2-322/14 2-322/14 2-322/14	7	2-322/14 2-322/14 1-322/14 2-322/14 2-322/14 2-322/14
3	2-322/14 2-322/14 1-322/14 2-322/14 2-322/14 2-322/14	2-322/14 2-322/14 1-322/14 2-322/14 2-322/14 2-322/14	8	2-322/14 2-322/14 1-322/14 2-322/14 2-322/14 2-322/14
4	2-322/14 2-322/14 1-322/14 2-322/14 2-322/14 2-322/14	2-322/14 2-322/14 1-322/14 2-322/14 2-322/14 2-322/14		2-322/14 2-322/14 1-322/14 2-322/14 2-322/14 2-322/14
5	2-322/14 2-322/14 1-322/14 2-322/14 2-322/14 2-322/14	2-322/14 2-322/14 1-322/14 2-322/14 2-322/14 2-322/14		2-322/14 2-322/14 1-322/14 2-322/14 2-322/14 2-322/14
6	2-322/14 2-322/14 1-322/14 2-322/14 2-322/14 2-322/14	2-322/14 2-322/14 1-322/14 2-322/14 2-322/14 2-322/14		2-322/14 2-322/14 1-322/14 2-322/14 2-322/14 2-322/14



**GRAPHIC SCALE:**

5' 10' 0' 20' 40'

SCALE: 1"=20'

## TRAFFIC SIGNAL PLAN

1011

## SIGNAL INDICATIONS

## PHASE ASSIGNMENT DIAGRAM

MODEL 170 CONTROLLER

**INTERVIEW SUBJECT**

## ! TROVATE LA SOLUZIONE!

1

---



**Wilson Okamoto  
CORPORATION**  
CORPORATE PLANTERS

10000 Wilson Road, Suite 100  
San Diego, CA 92121  
619-591-1111  
FAX 619-591-1112

**THE VILLAGES  
OF AINA LEA**  
PHASE 1

**INTERSECTION  
IMPROVEMENTS**  
District of South Kohala  
Island of Hawaii

Client:  
DPR Asia Ltd., Honolulu, HI  
Contract No.: 10000  
Design-Build Contract

Contractor:  
OKAMOTO LOW RISE, INC.  
10000 Wilson Road, Suite 100  
San Diego, CA 92121  
619-591-1111



10000 Wilson Road, Suite 100  
San Diego, CA 92121  
619-591-1111  
FAX 619-591-1112

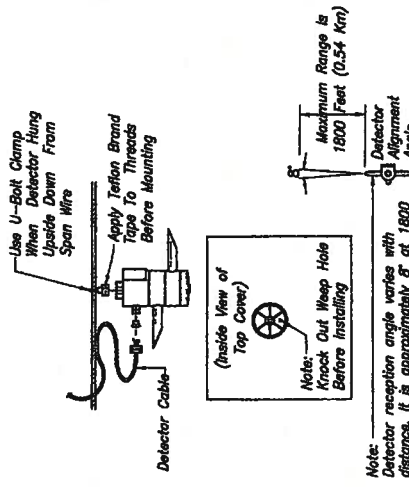
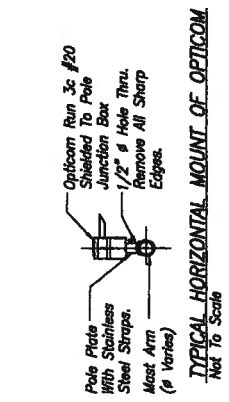
Project No.: 10000  
Contract No.: 10000  
Design-Build Contract

DATE	10/1/00
BY	ROBERT J. OKAMOTO
FOR	OKAMOTO LOW RISE, INC.
PROJECT NO.	10000
CONTRACT NO.	10000
DESIGN-BUILD CONTRACT	

DATE	10/1/00
BY	ROBERT J. OKAMOTO
FOR	OKAMOTO LOW RISE, INC.
PROJECT NO.	10000
CONTRACT NO.	10000
DESIGN-BUILD CONTRACT	

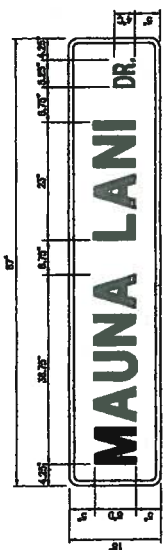
**TRAFFIC  
SIGNAL  
DETAIL**

**C-17**  
10 of 30 Sheets

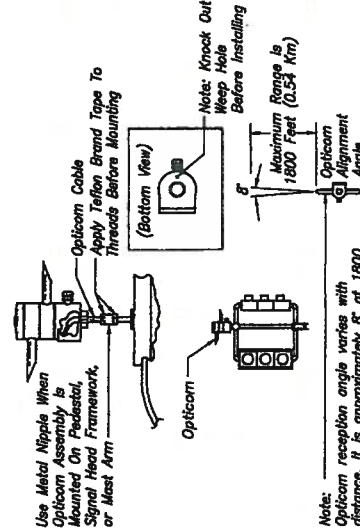
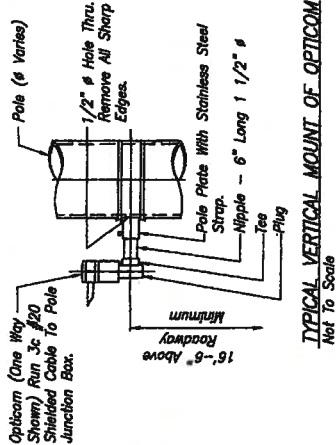


Note: Detector reception angle varies with distance. It is approximately 8° at 1800 feet (0.54km). Due to reflection, reception angle is increased at close range. The detector must be aligned within 8° of the farthest point where priority vehicle is to be sensed.

**TYPICAL SPAN WIRE  
INSTALLATION OF OPTICOM**  
Not To Scale



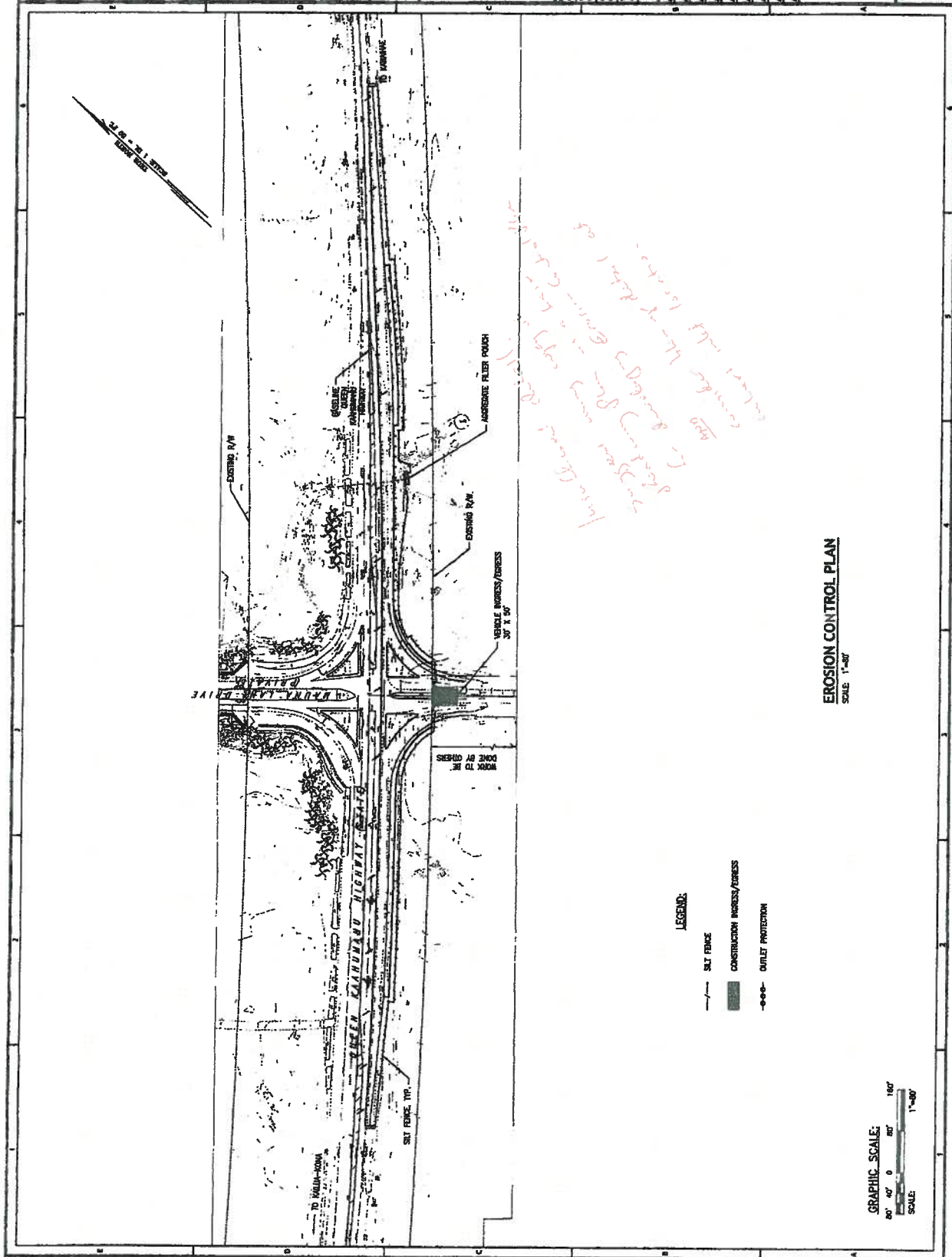
**STREET NAME SIGN**  
Not To Scale



Note: Opticom reception angle varies with distance. It is approximately 8° at 1800 feet (0.54km). Due to reflection, reception angle is increased at close range. The opticom must be aligned within 8° of the farthest point where priority vehicles is to be sensed.

**TYPICAL PEDESTAL/MAST ARM  
INSTALLATION OF OPTICOM**  
Not To Scale







**Wilson Okamoto  
CORPORATION**  
ENGINEERS - PLANNERS

1000 North Street, Suite 200  
Honolulu, Hawaii 96813  
Phone: (808) 531-1111  
Fax: (808) 531-1112

**THE VILLAGES  
OF AINA LEA  
PHASE 1**

**INTERSECTION  
IMPROVEMENTS  
District of South Kona  
Island of Hawaii**

**Owner:**  
P.O. Box 1000  
P.O. Box 1000  
Honolulu, HI 96813

**Design-Builder Contractor:**  
KAWAII CONSTRUCTION, INC.  
P.O. Box 1000  
Honolulu, HI 96813



THIS SEAL WAS PREPARED BY  
ME OR UNDER MY CLOSE PERSONAL  
SUPERVISION AND I AM A LICENSED  
PROFESSIONAL ENGINEER IN THE STATE OF HAWAII.

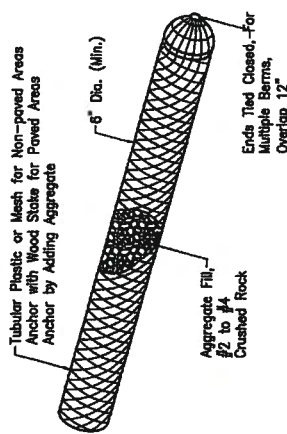
*Wilson Okamoto*  
Professional Engineer  
No. 1000

PROJECT NO.	1000
DATE	10/1/00
BY	W.O.
CHECKED BY	W.O.
DATE	10/1/00
PROJECT TITLE	Intersection Improvements
LOCATION	South Kona, Hawaii
SCALE	As Shown

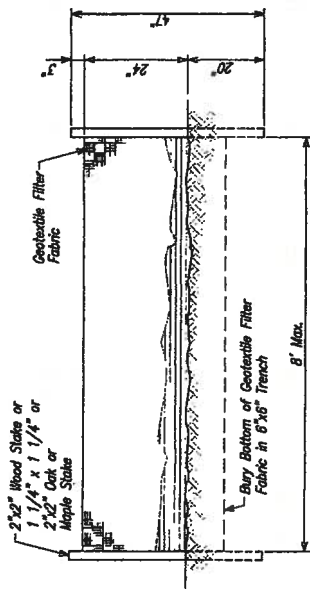
REVISIONS	DATE	DESCRIPTION
1	10/1/00	Initial Design
2	10/1/00	Revised Design
3	10/1/00	Final Design

**EROSION  
CONTROL  
DETAILS**

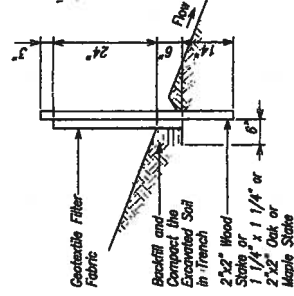
**C-19**  
28 of 38 Sheets



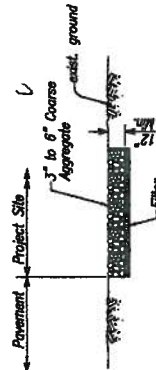
**AGGREGATE FILTER POUCH**  
Not to Scale



**SILT FENCE DETAIL**  
Not to Scale



**TEMPORARY STABILIZED  
CONSTRUCTION INGRESS/EGRESS**  
Not to Scale





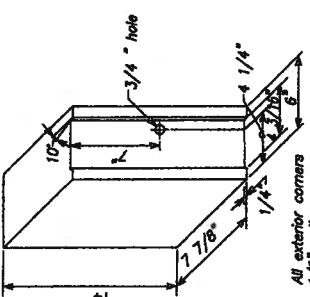


For 1998 in the National  
 Book Awards for Children  
 and Young Adults, the  
 American Library Association  
 announced that the  
 award for Best Picture Book  
 went to *The Lion and the  
 Rose* by *Shirley Hughes*.

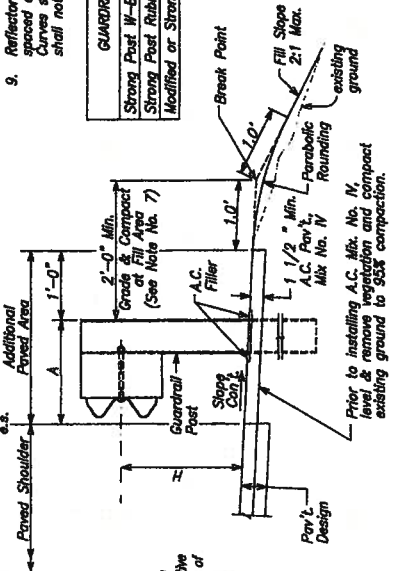
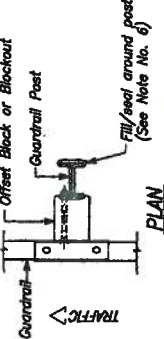
[illegible][illegible]

## GENERAL NOTES

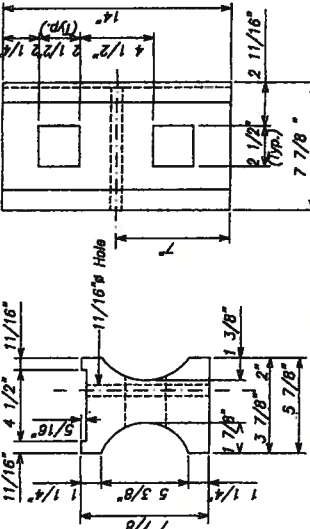
1. All hardware, posts and fasteners shall be hot-dip zinc coated galvanized after fabrication. No punches, drilling or cutting will be permitted after galvanizing.
2. Where conditions require, special post lengths in increments of 6 inches may be specified.
3. All fasteners, posts, and rail elements (i.e. FERGUS, PAVED1, ARMADAZ, etc.) shall conform to the latest edition and the current revision of A Guide to Standardized Highway Barrier Systems Report prepared and approved by the FHWA, FHWA-400-1-77B, FHWA-400-1-77C, FHWA-400-1-77D, FHWA-400-1-77E, FHWA-400-1-77F, FHWA-400-1-77G, FHWA-400-1-77H, FHWA-400-1-77I, FHWA-400-1-77J, FHWA-400-1-77K, FHWA-400-1-77L, FHWA-400-1-77M, FHWA-400-1-77N, FHWA-400-1-77O, FHWA-400-1-77P, FHWA-400-1-77Q, FHWA-400-1-77R, FHWA-400-1-77S, FHWA-400-1-77T, FHWA-400-1-77U, FHWA-400-1-77V, FHWA-400-1-77W, FHWA-400-1-77X, FHWA-400-1-77Y, FHWA-400-1-77Z, FHWA-400-1-77AA, FHWA-400-1-77AB, FHWA-400-1-77AC, FHWA-400-1-77AD, FHWA-400-1-77AE, FHWA-400-1-77AF, FHWA-400-1-77AG, FHWA-400-1-77AH, FHWA-400-1-77AI, FHWA-400-1-77AJ, FHWA-400-1-77AK, FHWA-400-1-77AL, FHWA-400-1-77AM, FHWA-400-1-77AN, FHWA-400-1-77AO, FHWA-400-1-77AP, FHWA-400-1-77AQ, FHWA-400-1-77AR, FHWA-400-1-77AS, FHWA-400-1-77AT, FHWA-400-1-77AU, FHWA-400-1-77AV, FHWA-400-1-77AW, FHWA-400-1-77AX, FHWA-400-1-77AY, FHWA-400-1-77AZ, FHWA-400-1-77BA, FHWA-400-1-77BB, FHWA-400-1-77BC, FHWA-400-1-77BD, FHWA-400-1-77BE, FHWA-400-1-77BF, FHWA-400-1-77BG, FHWA-400-1-77BH, FHWA-400-1-77BI, FHWA-400-1-77BJ, FHWA-400-1-77BK, FHWA-400-1-77BL, FHWA-400-1-77BM, FHWA-400-1-77BN, FHWA-400-1-77BO, FHWA-400-1-77BP, FHWA-400-1-77BQ, FHWA-400-1-77BR, FHWA-400-1-77BS, FHWA-400-1-77BT, FHWA-400-1-77BU, FHWA-400-1-77BV, FHWA-400-1-77BW, FHWA-400-1-77BX, FHWA-400-1-77BY, FHWA-400-1-77BZ, FHWA-400-1-77CA, FHWA-400-1-77CB, FHWA-400-1-77CC, FHWA-400-1-77CD, FHWA-400-1-77CE, FHWA-400-1-77CF, FHWA-400-1-77CG, FHWA-400-1-77CH, FHWA-400-1-77CI, FHWA-400-1-77CJ, FHWA-400-1-77CK, FHWA-400-1-77CL, FHWA-400-1-77CM, FHWA-400-1-77CN, FHWA-400-1-77CO, FHWA-400-1-77CP, FHWA-400-1-77CQ, FHWA-400-1-77CR, FHWA-400-1-77CS, FHWA-400-1-77CT, FHWA-400-1-77CU, FHWA-400-1-77CV, FHWA-400-1-77CW, FHWA-400-1-77CX, FHWA-400-1-77CY, FHWA-400-1-77CZ, FHWA-400-1-77DA, FHWA-400-1-77DB, FHWA-400-1-77DC, FHWA-400-1-77DD, FHWA-400-1-77DE, FHWA-400-1-77DF, FHWA-400-1-77DG, FHWA-400-1-77DH, FHWA-400-1-77DI, FHWA-400-1-77DJ, FHWA-400-1-77DK, FHWA-400-1-77DL, FHWA-400-1-77DM, FHWA-400-1-77DN, FHWA-400-1-77DO, FHWA-400-1-77DP, FHWA-400-1-77DQ, FHWA-400-1-77DR, FHWA-400-1-77DS, FHWA-400-1-77DT, FHWA-400-1-77DU, FHWA-400-1-77DV, FHWA-400-1-77DW, FHWA-400-1-77DX, FHWA-400-1-77DY, FHWA-400-1-77DZ, FHWA-400-1-77EA, FHWA-400-1-77EB, FHWA-400-1-77EC, FHWA-400-1-77ED, FHWA-400-1-77EE, FHWA-400-1-77EF, FHWA-400-1-77EG, FHWA-400-1-77EH, FHWA-400-1-77EI, FHWA-400-1-77EJ, FHWA-400-1-77EK, FHWA-400-1-77EL, FHWA-400-1-77EM, FHWA-400-1-77EN, FHWA-400-1-77EO, FHWA-400-1-77EP, FHWA-400-1-77EQ, FHWA-400-1-77ER, FHWA-400-1-77ES, FHWA-400-1-77ET, FHWA-400-1-77EU, FHWA-400-1-77EV, FHWA-400-1-77EW, FHWA-400-1-77EX, FHWA-400-1-77EY, FHWA-400-1-77EZ, FHWA-400-1-77FA, FHWA-400-1-77FB, FHWA-400-1-77FC, FHWA-400-1-77FD, FHWA-400-1-77FE, FHWA-400-1-77FF, FHWA-400-1-77FG, FHWA-400-1-77FH, FHWA-400-1-77FI, FHWA-400-1-77FJ, FHWA-400-1-77FK, FHWA-400-1-77FL, FHWA-400-1-77FM, FHWA-400-1-77FN, FHWA-400-1-77FO, FHWA-400-1-77FP, FHWA-400-1-77FQ, FHWA-400-1-77FR, FHWA-400-1-77FS, FHWA-400-1-77FT, FHWA-400-1-77FU, FHWA-400-1-77FV, FHWA-400-1-77FW, FHWA-400-1-77FX, FHWA-400-1-77FY, FHWA-400-1-77FZ, FHWA-400-1-77GA, FHWA-400-1-77GB, FHWA-400-1-77GC, FHWA-400-1-77GD, FHWA-400-1-77GE, FHWA-400-1-77GF, FHWA-400-1-77GG, FHWA-400-1-77GH, FHWA-400-1-77GI, FHWA-400-1-77GJ, FHWA-400-1-77GK, FHWA-400-1-77GL, FHWA-400-1-77GM, FHWA-400-1-77GN, FHWA-400-1-77GO, FHWA-400-1-77GP, FHWA-400-1-77GQ, FHWA-400-1-77GR, FHWA-400-1-77GS, FHWA-400-1-77GT, FHWA-400-1-77GU, FHWA-400-1-77GV, FHWA-400-1-77GW, FHWA-400-1-77GX, FHWA-400-1-77GY, FHWA-400-1-77GZ, FHWA-400-1-77HA, FHWA-400-1-77HB, FHWA-400-1-77HC, FHWA-400-1-77HD, FHWA-400-1-77HE, FHWA-400-1-77HF, FHWA-400-1-77HG, FHWA-400-1-77HH, FHWA-400-1-77HI, FHWA-400-1-77HJ, FHWA-400-1-77HK, FHWA-400-1-77HL, FHWA-400-1-77HM, FHWA-400-1-77HN, FHWA-400-1-77HO, FHWA-400-1-77HP, FHWA-400-1-77HQ, FHWA-400-1-77HR, FHWA-400-1-77HS, FHWA-400-1-77HT, FHWA-400-1-77HU, FHWA-400-1-77HV, FHWA-400-1-77HW, FHWA-400-1-77HX, FHWA-400-1-77HY, FHWA-400-1-77HZ, FHWA-400-1-77IA, FHWA-400-1-77IB, FHWA-400-1-77IC, FHWA-400-1-77ID, FHWA-400-1-77IE, FHWA-400-1-77IF, FHWA-400-1-77IG, FHWA-400-1-77IH, FHWA-400-1-77II, FHWA-400-1-77IJ, FHWA-400-1-77IK, FHWA-400-1-77IL, FHWA-400-1-77IM, FHWA-400-1-77IN, FHWA-400-1-77IO, FHWA-400-1-77IP, FHWA-400-1-77IQ, FHWA-400-1-77IR, FHWA-400-1-77IS, FHWA-400-1-77IT, FHWA-400-1-77IU, FHWA-400-1-77IV, FHWA-400-1-77IW, FHWA-400-1-77IX, FHWA-400-1-77IY, FHWA-400-1-77IZ, FHWA-400-1-77JA, FHWA-400-1-77JB, FHWA-400-1-77JC, FHWA-400-1-77JD, FHWA-400-1-77JE, FHWA-400-1-77JF, FHWA-400-1-77JG, FHWA-400-1-77JH, FHWA-400-1-77JI, FHWA-400-1-77JJ, FHWA-400-1-77JK, FHWA-400-1-77JL, FHWA-400-1-77JM, FHWA-400-1-77JN, FHWA-400-1-77JO, FHWA-400-1-77JP, FHWA-400-1-77JQ, FHWA-400-1-77JR, FHWA-400-1-77JS, FHWA-400-1-77JT, FHWA-400-1-77JU, FHWA-400-1-77JV, FHWA-400-1-77JW, FHWA-400-1-77JX, FHWA-400-1-77JY, FHWA-400-1-77JZ, FHWA-400-1-77KA, FHWA-400-1-77KB, FHWA-400-1-77KC, FHWA-400-1-77KD, FHWA-400-1-77KE, FHWA-400-1-77KF, FHWA-400-1-77KG, FHWA-400-1-77KH, FHWA-400-1-77KI, FHWA-400-1-77KJ, FHWA-400-1-77KL, FHWA-400-1-77KM, FHWA-400-1-77KN, FHWA-400-1-77KO, FHWA-400-1-77KP, FHWA-400-1-77KQ, FHWA-400-1-77KR, FHWA-400-1-



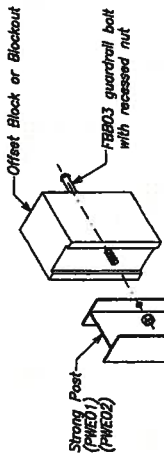
RECYCLED POLYETHYLENE  
OFFSET BLOCK (TYPE II)



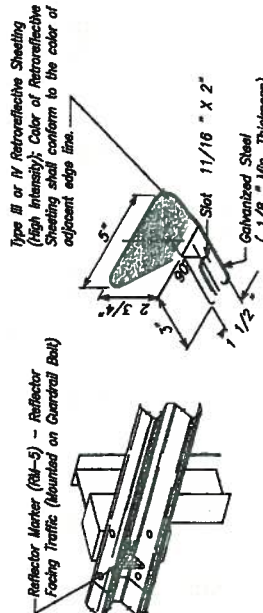
## TYPICAL GUARDRAIL INSTALLATION



TOP SIDE  
RECYCLED PLASTIC BLOCKOUT (TYPE I)



**EXPLODED VIEW**  
(Rail and washer not shown)



REFLECTOR MARKER (RM-5) DETAIL AND TYPICAL INSTALLATION





**Wilson Okamoto**  
CORPORATION  
ENGINEERS - PLANNERS  
1000 West 10th Street  
Honolulu, Hawaii 96813  
TEL: 535-4400 FAX: 535-4401

**THE VILLAGES  
OF AINA LE'A  
PHASE I**

**INTERSECTION  
IMPROVEMENTS**  
District of South Kapiolani  
Island of Hawaii

Client:  
Hawaii State Department of Transportation  
1000 Ala Moana Blvd., Suite 200  
Honolulu, HI 96813

Design-Builder Contractor:  
Geacopello Bros., Inc.  
1111 Kalia Road, Suite 100  
Honolulu, HI 96813



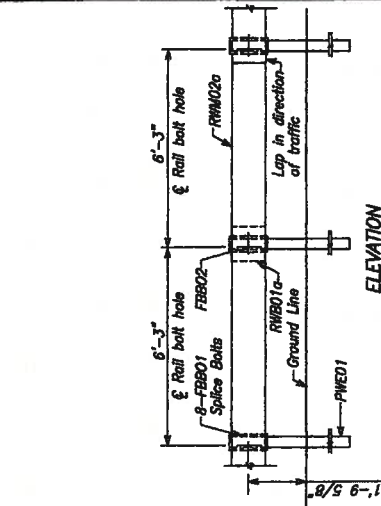
THIS PROJECT HAS BEEN REVIEWED BY  
A LICENSED PROFESSIONAL ENGINEER  
FOR THE STATE OF HAWAII  
DATE: 10/15/2010  
PROJECT NO.: 10-001  
SHEET NO.: 22 OF 28

NO.	DESCRIPTION	DATE
1	REVISION	
2	REVISION	
3	REVISION	
4	REVISION	
5	REVISION	
6	REVISION	
7	REVISION	
8	REVISION	
9	REVISION	
10	REVISION	

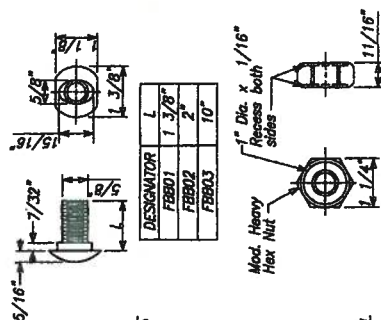
NO.	DESCRIPTION	DATE
1	REVISION	
2	REVISION	
3	REVISION	
4	REVISION	
5	REVISION	
6	REVISION	
7	REVISION	
8	REVISION	
9	REVISION	
10	REVISION	

**STRONG POST  
W-BEAM  
GUARDRAIL  
DETAIL**

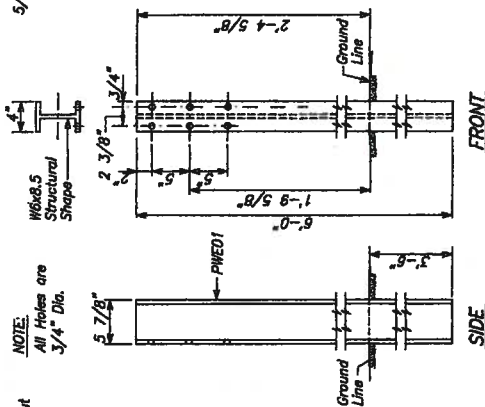
**C-22**  
22 of 28 sheets



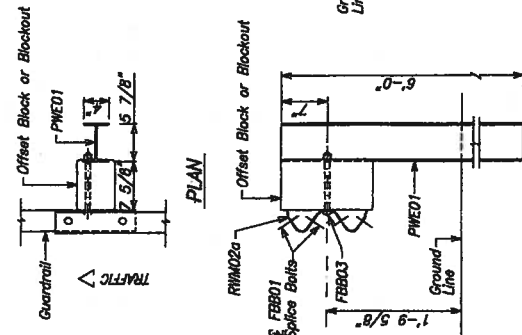
**STRONG POST W-BEAM GUARDRAIL WITH  
RECYCLED OFFSET BLOCK OR PLASTIC BLOCKOUT**



**GUARDRAIL BOLTS AND  
RECESSED NUT**

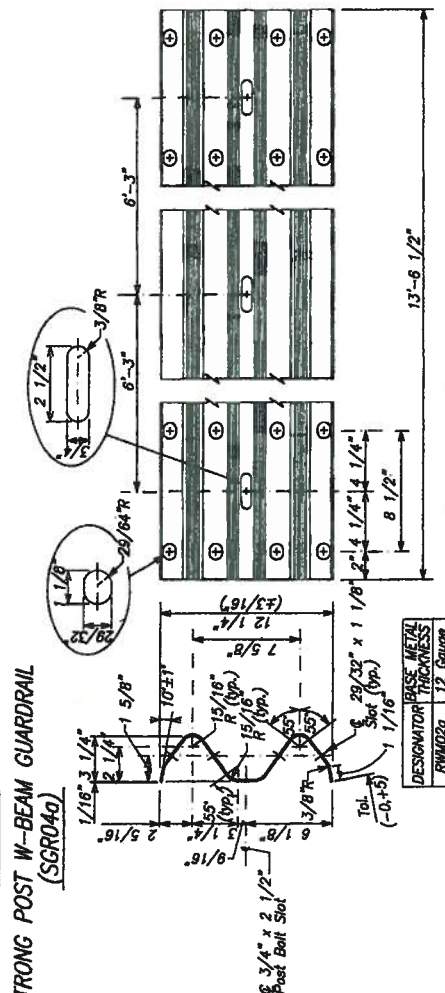


**W-BEAM STRONG POST (PWE01)**



**ELEVATION**

**STRONG POST W-BEAM GUARDRAIL  
(SGR040a)**



**2 SPACE W-BEAM GUARDRAIL (RW020a)**

DESIGNATOR	THICKNESS
RW020a	12 Gauge





6125 North American Road, Suite 100  
 Dallas, Texas, U.S.A. 75249  
 Tel: 800-955-5555 or 214-343-4433

**THE VILLAGES  
OF AINALA  
PHASE 1**

**INTERSECTION  
IMPROVEMENTS**  
District of South Kohala  
Island of Hawaii

**Donor:**  
 The Allen Life Development, LLC  
 10000 E. 10th Avenue

**Design-Build Contractors**  
**GOODFELLOW INCORP., INC.**  
**GENERAL CONTRACTORS**  
—ESTABLISHED 1961—



**NOTES**

AM GOING TO THE LIBRARY  
TO RESEARCH MY  
APPLICANT. AM GOING TO BE  
AN EDUCATIONAL WORK WITH THEM.

1. IN	CL	STANDARD IN
2. IN	CL	STANDARD IN
3. IN	CL	STANDARD IN
4. IN	CL	STANDARD IN
5. IN	CL	STANDARD IN
6. IN	CL	STANDARD IN
7. IN	CL	STANDARD IN
8. IN	CL	STANDARD IN
9. IN	CL	STANDARD IN
10. IN	CL	STANDARD IN
11. IN	CL	STANDARD IN
12. IN	CL	STANDARD IN
13. IN	CL	STANDARD IN
14. IN	CL	STANDARD IN
15. IN	CL	STANDARD IN
16. IN	CL	STANDARD IN
17. IN	CL	STANDARD IN
18. IN	CL	STANDARD IN
19. IN	CL	STANDARD IN
20. IN	CL	STANDARD IN
21. IN	CL	STANDARD IN
22. IN	CL	STANDARD IN
23. IN	CL	STANDARD IN
24. IN	CL	STANDARD IN
25. IN	CL	STANDARD IN
26. IN	CL	STANDARD IN
27. IN	CL	STANDARD IN
28. IN	CL	STANDARD IN
29. IN	CL	STANDARD IN
30. IN	CL	STANDARD IN
31. IN	CL	STANDARD IN
32. IN	CL	STANDARD IN
33. IN	CL	STANDARD IN
34. IN	CL	STANDARD IN
35. IN	CL	STANDARD IN
36. IN	CL	STANDARD IN
37. IN	CL	STANDARD IN
38. IN	CL	STANDARD IN
39. IN	CL	STANDARD IN
40. IN	CL	STANDARD IN
41. IN	CL	STANDARD IN
42. IN	CL	STANDARD IN
43. IN	CL	STANDARD IN
44. IN	CL	STANDARD IN
45. IN	CL	STANDARD IN
46. IN	CL	STANDARD IN
47. IN	CL	STANDARD IN
48. IN	CL	STANDARD IN
49. IN	CL	STANDARD IN
50. IN	CL	STANDARD IN
51. IN	CL	STANDARD IN
52. IN	CL	STANDARD IN
53. IN	CL	STANDARD IN
54. IN	CL	STANDARD IN
55. IN	CL	STANDARD IN
56. IN	CL	STANDARD IN
57. IN	CL	STANDARD IN
58. IN	CL	STANDARD IN
59. IN	CL	STANDARD IN
60. IN	CL	STANDARD IN
61. IN	CL	STANDARD IN
62. IN	CL	STANDARD IN
63. IN	CL	STANDARD IN
64. IN	CL	STANDARD IN
65. IN	CL	STANDARD IN
66. IN	CL	STANDARD IN
67. IN	CL	STANDARD IN
68. IN	CL	STANDARD IN
69. IN	CL	STANDARD IN
70. IN	CL	STANDARD IN
71. IN	CL	STANDARD IN
72. IN	CL	STANDARD IN
73. IN	CL	STANDARD IN
74. IN	CL	STANDARD IN
75. IN	CL	STANDARD IN
76. IN	CL	STANDARD IN
77. IN	CL	STANDARD IN
78. IN	CL	STANDARD IN
79. IN	CL	STANDARD IN
80. IN	CL	STANDARD IN
81. IN	CL	STANDARD IN
82. IN	CL	STANDARD IN
83. IN	CL	STANDARD IN
84. IN	CL	STANDARD IN
85. IN	CL	STANDARD IN
86. IN	CL	STANDARD IN
87. IN	CL	STANDARD IN
88. IN	CL	STANDARD IN
89. IN	CL	STANDARD IN
90. IN	CL	STANDARD IN
91. IN	CL	STANDARD IN
92. IN	CL	STANDARD IN
93. IN	CL	STANDARD IN
94. IN	CL	STANDARD IN
95. IN	CL	STANDARD IN
96. IN	CL	STANDARD IN
97. IN	CL	STANDARD IN
98. IN	CL	STANDARD IN
99. IN	CL	STANDARD IN
100. IN	CL	STANDARD IN

402 JOURNAL OF DOCUMENTATION

[illegible][illegible][illegible][illegible]

DATE	DESCRIPTION
------	-------------

**SECRET**

ET-2002-115

E1-2007-13

1

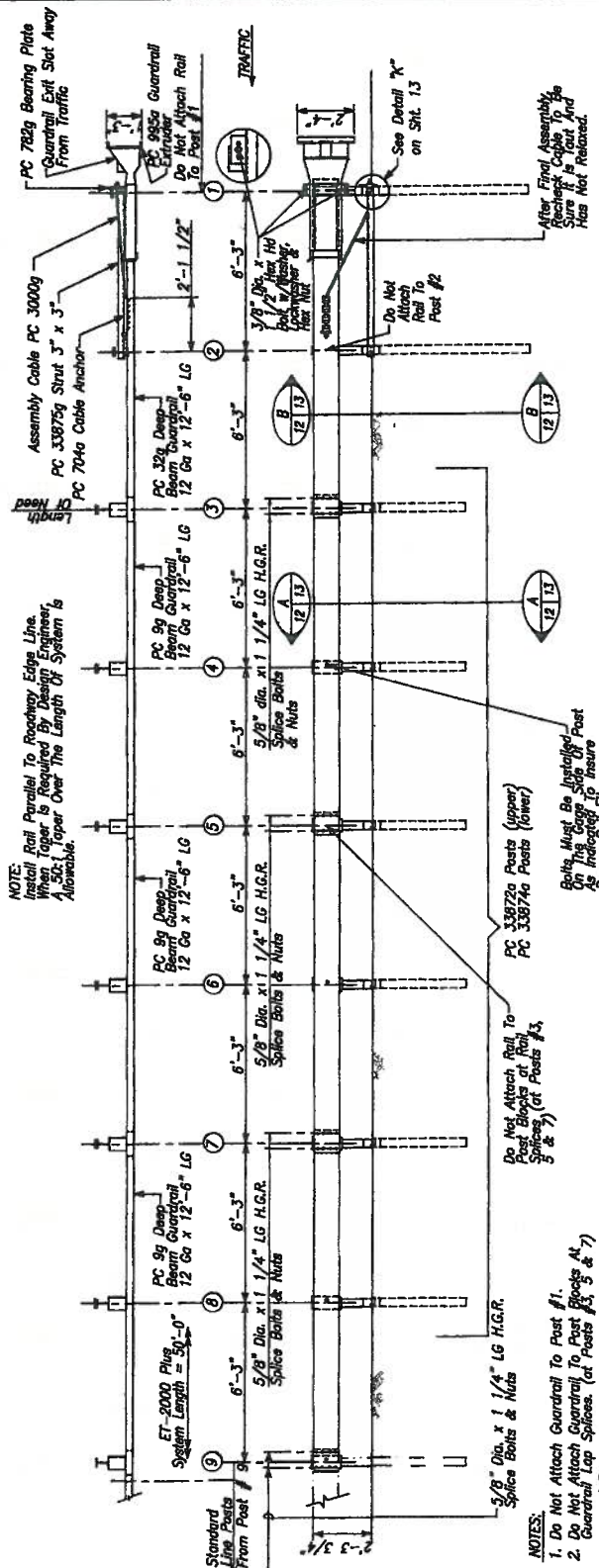
THE ENGINEER

67-2

1000

1

**NOTE:** Rail Parallel To Roadway Edge Line. When Taper Is Required By Design Engineer, A 50:1 Taper Over The Length Of System Is Allowable.



**OF MATERIAL**

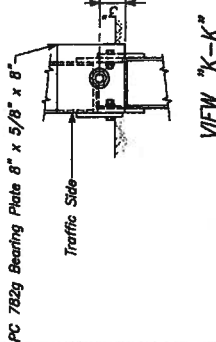
PC	QTY	DESCRIPTION	PC	QTY	DESCRIPTION
96	3	12 GAL 17 1/2" 6 3/4" S GUARDRAIL	39006	2	1" WASHER
326	1	12 GAL 17 1/2" 6 3/4" S ANG GUARDRAIL	39106	2	1" HEX NUT
7044	1	CABLE ANCHOR BRACKET			RECYCLED PLASTIC BLOKOUT OR
7020	1	5/8" x 8" x 3" BEARING PLATE	43268	6	OFFSET BLOCK
9634	1	1" x 2000 PLUS EXTRUDER	43240	18	3/8" WASHER
37006	1	CABLE 3/4" x 6	42550	2	3/8" FENDER WASHERS
37006	6	5/8" WASHER	43580	16	3/8" LOCKWASHERS
37006	30	3/8" HEX NUT	43610	2	3/8" Dia x 1 1/2" HEX HD BOLT
39002	32	3/8" dia x 1 1/4" SPLICE BOLT	43690	16	1/2" LOCKWASHER
39006	6	5/8" dia x 10" POST BOLT	43710	18	3/8" Dia x 2" HEX HD BOLT
37010	19	3/4" WASHER	44050	18	3/8" HEX NUT
37046	16	3/4" HEX NUT	33871A	1	E12000 HBA POST 1" TOP
37176	15	3/4" Dia x 2 1/2" HEX HD BOLT	33872A	7	E12000 HBA POST 42-48 TOP
37186	1	3/4" Dia x 3" HEX HD BOLT	33873A	2	E12000 HBA POST 42-48 BOTTOM
39006	2	1" WASHER	33874A	6	E12000 HBA POST 3" 48 BOTTOM
			33875C	1	6"-8" ANGLE STRUT ET HBA

**BILL OF MATERIAL**

PC	QTY	DESCRIPTION
96	3	12 GA 1 7/8" 6/3" S GUARDRAIL
100	3	12 GA 1 7/8" 6/3" S ANG GUARDRAIL
326	1	CABLE ANCHOR BRACKET
7044	1	5/8" x 8" x 8" BEARING PLATE
7820	1	1" x 2000 PLUS EXTRUDER
9254	1	CABLE 3/4" x 6
37006	6	5/8" WASHER
33006	6	5/8" HEX NUT
33406	30	3/8" HEX NUT
35002	32	3/8" DIA. x 1 1/4" SPLICE BOLT
35003	6	5/8" DIA. x 10" POST BOLT
37016	18	3/4" WASHER
37046	16	3/4" HEX NUT
37176	15	3/4" DIA. x 2 1/2" HEX HD BOLT
37186	1	3/4" DIA. x 3" HEX HD BOLT
39006	2	1" WASHER

NOTES:

1. Do Not Attach Guardrail To Post Block #1.
2. Do Not Attach Guardrail To Post Block #2. Guardrail Lap Splices. (at Posts #3, 5 & 7).
3. The 5/8" Flat Washer Is Used Under The Nut Behind The Post Only. No Washer Is Used At The Rail.
4. Manufacturer Specifies Customer To Provide Reflectorization Of Terminal.









**Wilson Okamoto**  
CORPORATION  
ENGINEERS - PLANNERS

1000 Kapiolani Blvd., Suite 200  
Honolulu, Hawaii 96813  
808-943-8888  
www.wilsonokamoto.com

**THE VILLAGES  
OF AINA LE'A  
PHASE 1**

**INTERSECTION  
IMPROVEMENTS**  
Districts of South Kohala  
Island of Hawaii

Client:  
P.O. Box 100, Development, LLC  
1000 Kapiolani Blvd., Suite 200  
Honolulu, HI 96813

Design-Build Contractor:  
GOODFELLOW BROS., INC.  
1000 Kapiolani Blvd., Suite 200  
Honolulu, HI 96813



THIS PROJECT HAS BEEN REVIEWED BY  
THE BOARD OF ENGINEERS OF THE STATE OF HAWAII  
AND THE PROJECT HAS BEEN FOUND TO BE IN  
COMPLIANCE WITH THE REQUIREMENTS OF  
HAWAIIAN LAWS AND RULES.

PROJECT NO.	1000
DATE	10/1/00
DESIGNED BY	W.O.
CHECKED BY	W.O.
IN CHARGE	W.O.
DATE	10/1/00
PROJECT NO.	1000
DATE	10/1/00
DESIGNED BY	W.O.
CHECKED BY	W.O.
IN CHARGE	W.O.
DATE	10/1/00

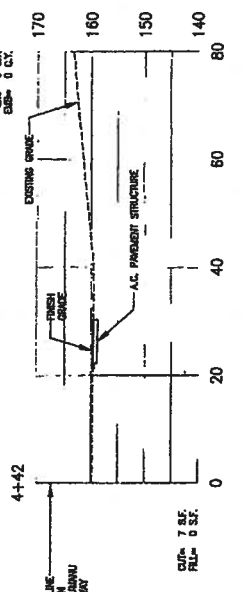
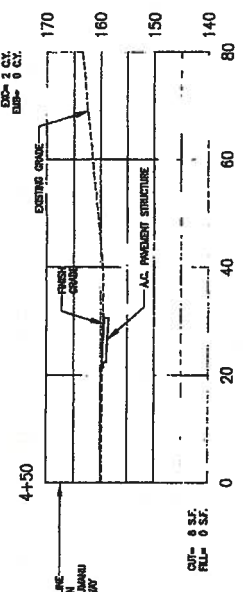
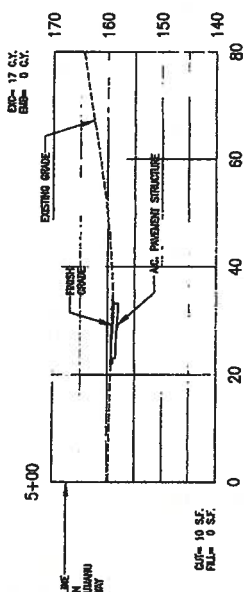
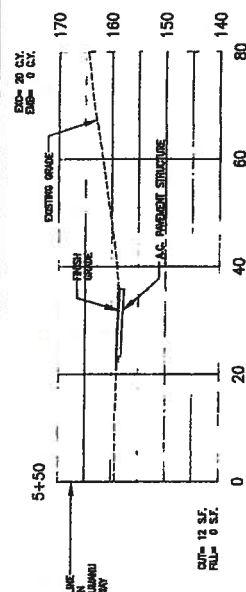
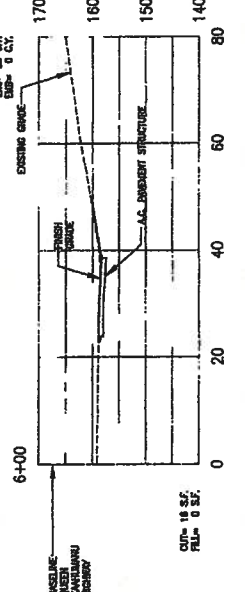
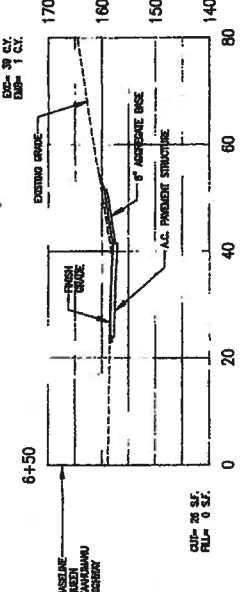
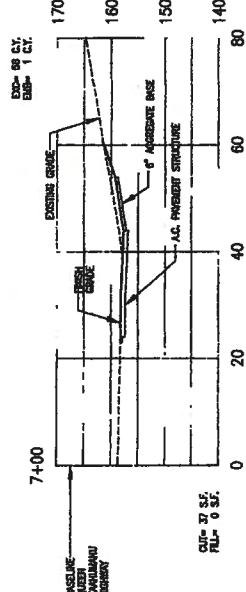
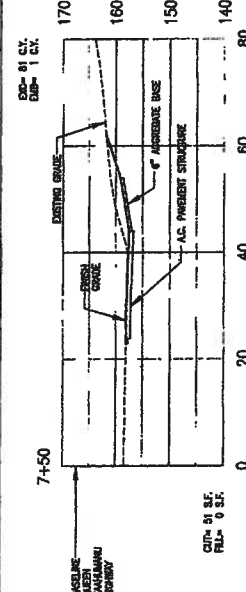
CROSS SECTION - QUEEN KAHAHUMANU HWY

**CROSS SECTIONS**

**C-26**

27 of 28 SHEETS

SHEET DATA  
DATE: 10/1/00  
EAB: 1 C.V.  
EAB: 3 C.V.



GRAPHIC SCALE:  
1" = 10'  
1" = 10'

CROSS SECTIONS - QUEEN KAHAHUMANU HWY

SCALE: 1"=10'





**Wilson Okamoto  
CORPORATION**  
ENGINEERS - PLANNERS  
1000 Kalia Road, Suite 1000  
Honolulu, Hawaii 96813  
Phone: (808) 521-1234  
Fax: (808) 521-1235

**THE VILLAGES  
OF AHA LE'A  
PHASE 1**

**INTERSECTION  
IMPROVEMENTS**  
District of South Kohala  
Island of Hawaii

Owner:  
The Aha Le'a Development, LLC  
P.O. Box 20070  
Honolulu, HI 96820

Design/Build Consultant:  
CH2M HILL O&M, INC.  
1000 Kalia Road, Suite 1000  
Honolulu, HI 96813



THE PROJECT WAS PREPARED BY  
THE ENGINEER OR ARCHITECT  
FOR THE PURPOSES OF THE  
CONSTRUCTION OF THE  
PROJECT.

*Wilson Okamoto*  
Professional Engineer  
No. 10000

PROJECT NO.	10000
DATE	10/1/00
BY	W.O.
CHECKED BY	W.O.
DATE	10/1/00
PROJECT FILE	10000
DATE	10/1/00
BY	W.O.
CHECKED BY	W.O.
DATE	10/1/00

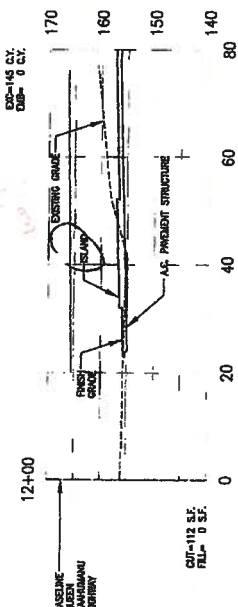
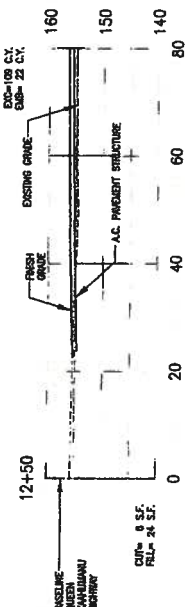
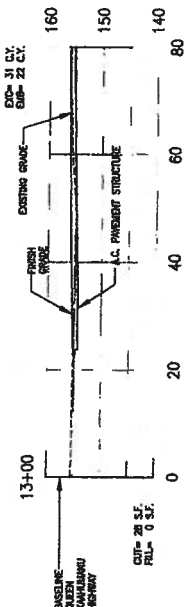
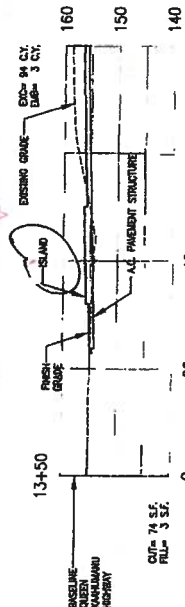
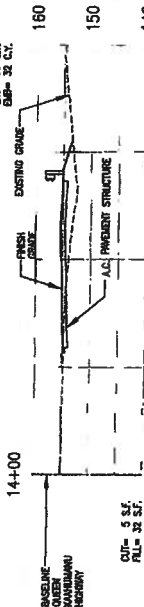
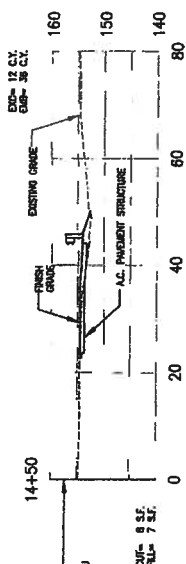
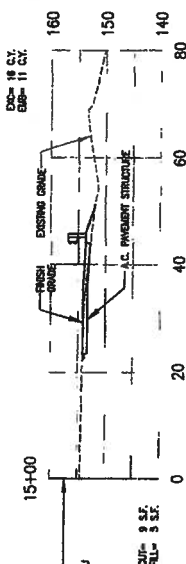
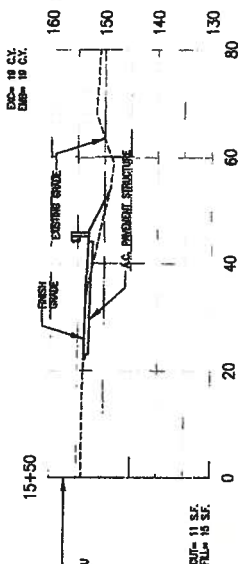
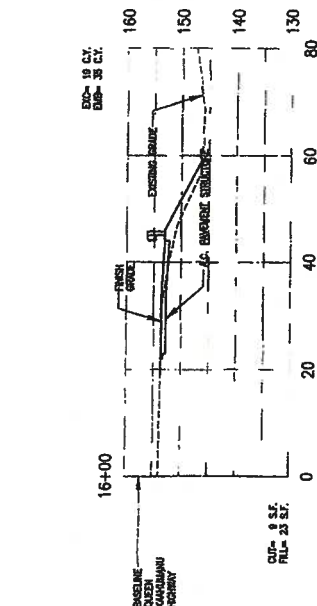
CROSS SECTION 1 - CROSS SECTION 100

**CROSS SECTIONS**

**C-28**

28 of 28 sheets

BASELINE  
ELEVATION  
ELEVATION  
ELEVATION



GRAPHIC SCALE:  
1" = 10'  
1" = 10'

CROSS SECTIONS - QUEEN KAHUMANU HWY  
SCALE 1"=10'



**Wilson Okamoto**  
CORPORATION  
ENGINEERS - PLANNERS

1000 Kalia Road, Suite 200  
Honolulu, Hawaii 96813  
Phone: (808) 521-1234  
Fax: (808) 521-1235

**THE VILLAGES  
OF AINA LE'A  
PHASE 1**

**INTERSECTION  
IMPROVEMENTS**  
District of South Kohala  
Island of Hawaii

Owner:  
P.O. Box 100, Development, LLC  
Honolulu, HI 96808

Design-Build Contractor:  
GOODELLOW BROS., INC.  
1000 Kalia Road, Suite 200  
Honolulu, HI 96813



THIS DOCUMENT IS THE PROPERTY OF  
GOODELLOW BROS., INC. AND IS NOT TO BE  
REPRODUCED OR TRANSMITTED IN ANY FORM  
OR BY ANY MEANS, ELECTRONIC OR MECHANICAL,  
INCLUDING PHOTOCOPYING, RECORDING, OR BY  
ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM,  
WITHOUT THE WRITTEN PERMISSION OF  
GOODELLOW BROS., INC.

DESIGNED BY	DATE
CHECKED BY	DATE
IN CHARGE	DATE
CORRECTIONS	DATE
BY	DATE
DATE	DATE

CONSENT TO PROCEED DRAWING NO. 100

NO.	DATE	DESCRIPTION
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

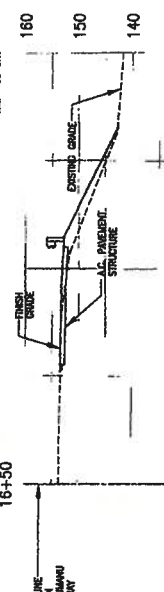
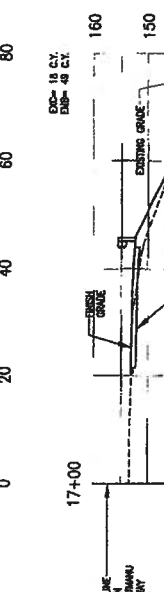
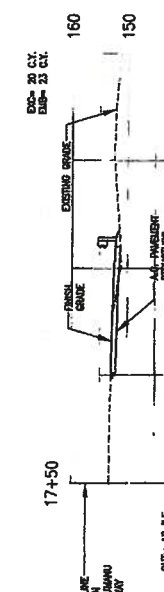
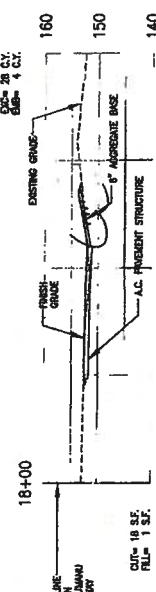
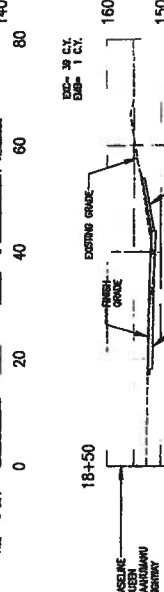
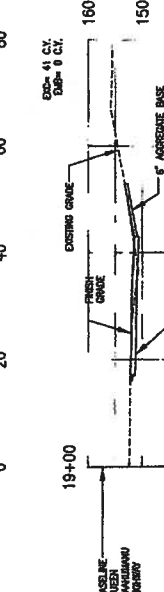
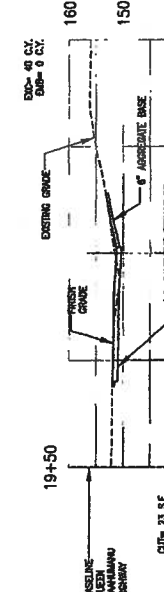
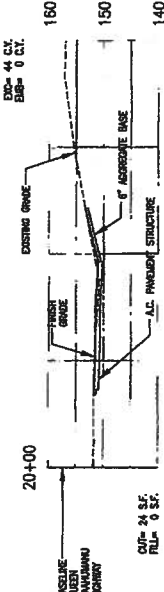
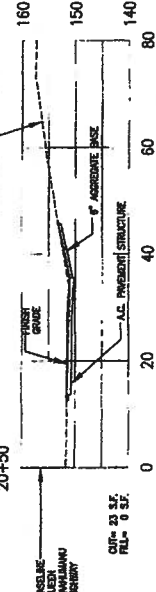
SHEET NO.

**CROSS SECTIONS**

**C-29**

25 of 28 SHEETS

SHEET NO. 29  
DATE: 12/17/01  
DWM: 12/17/01



GRAPHIC SCALE:  
1" = 10'  
10 5 0 5 10  
SCALE: 1"=10'

**CROSS SECTIONS - QUEEN KAAHUMANU HWY**  
SCALE: 1"=10'





**Wilson Okamoto**  
CORPORATION  
ENGINEERS • PLANNERS

1000 Kalia Road, Suite 1000  
Honolulu, Hawaii 96813  
Phone: (808) 955-1100  
Fax: (808) 955-1101

**THE VILLAGES  
OF AINA LE'A  
PHASE 1**

**INTERSECTION  
IMPROVEMENTS**  
District of South Kohala  
Island of Hawaii

Client:  
Hawaii Land Development, LLC  
1000 Kalia Road, Suite 1000  
Honolulu, HI 96813

Design-Build Contractor:  
GOOSEFELLOW BROS., INC.  
1111 Kalia Road, Suite 1000  
Honolulu, HI 96813



DATE: 08/14/13  
BY: [Signature]  
CHECKED BY: [Signature]  
SCALE: 1"=10'

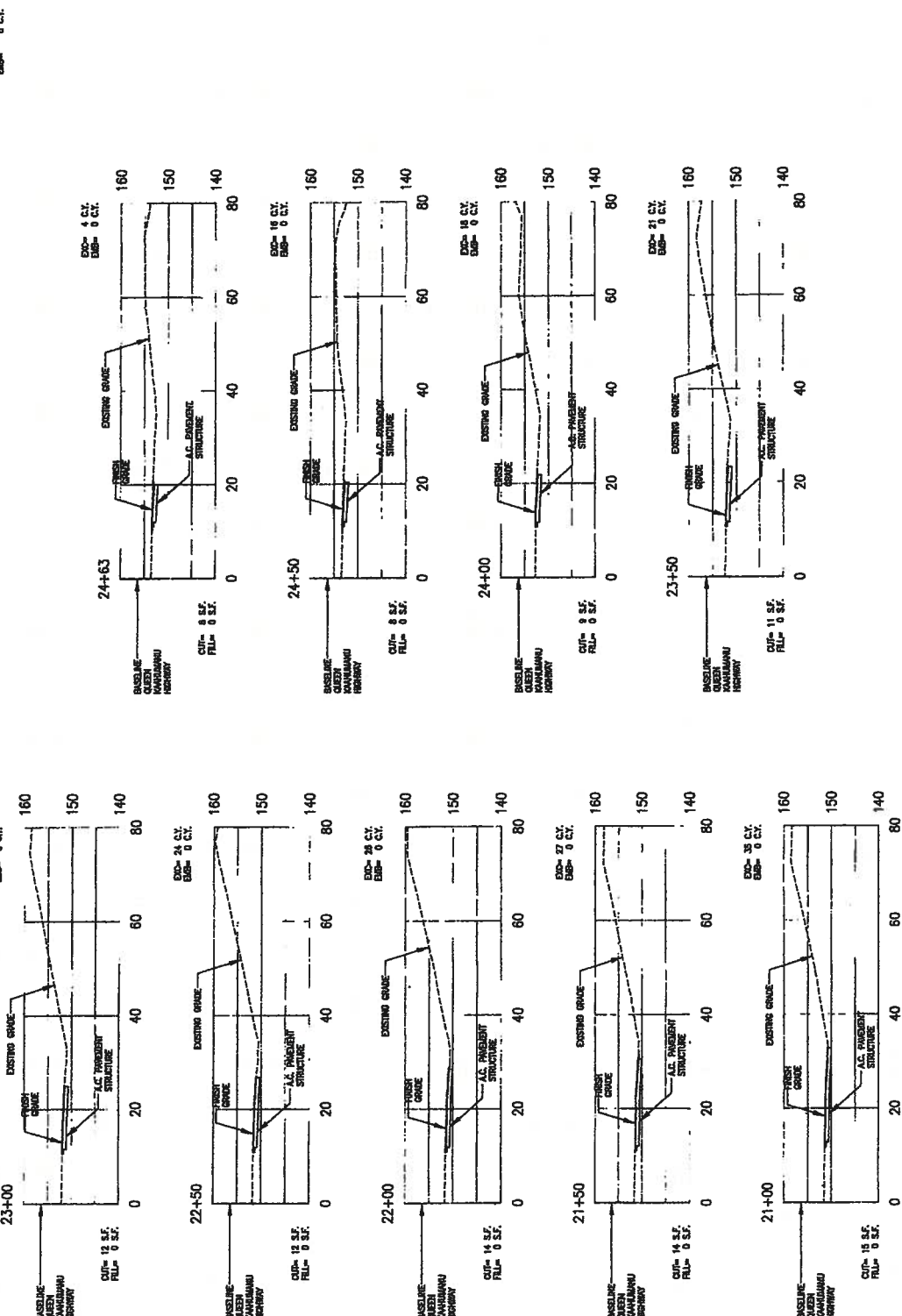
NO.	DESCRIPTION	DATE
1	DESIGN	08/14/13
2	REVISION	
3	REVISION	
4	REVISION	
5	REVISION	
6	REVISION	
7	REVISION	
8	REVISION	
9	REVISION	
10	REVISION	

CROSS SECTION C-30

NO.	DESCRIPTION	DATE
1	DESIGN	08/14/13
2	REVISION	
3	REVISION	
4	REVISION	
5	REVISION	
6	REVISION	
7	REVISION	
8	REVISION	
9	REVISION	
10	REVISION	

**CROSS SECTIONS**  
C-30  
31 of 38 Sheets

SHEET NO. 31  
DATE: 08/14/13  
BY: [Signature]



GRAPHIC SCALE:  
1"=10'  
0 10 20

**CROSS SECTIONS - QUEEN KAAHUMANU HWY**  
SCALE: 1"=10'





**Wilson Okamoto  
CORPORATION**  
ENGINEERS-PLANNERS

1000 South Street, Suite 200  
Honolulu, Hawaii 96813  
Phone: (808) 531-1111  
Fax: (808) 531-1112

**THE VILLAGES  
OF ANA LE'A  
PHASE I**

**INTERSECTION  
IMPROVEMENTS**  
District of South Kona  
Island of Hawaii

Owner:  
DVF Ana Le'A Development, LLC  
P.O. Box 383229  
Honolulu, HI 96838

Design-Builder Consultant:  
**GOODFELLOW BROS., INC.**  
GENERAL CONTRACTOR  
1000 South Street, Suite 200  
Honolulu, Hawaii 96813



THE STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
HONOLULU, HAWAII

PROJECT NO.	10000
DATE	10/1/00
DESIGNED BY	DJG
CHECKED BY	WJC
IN CHARGE	WJC
PROJECT TITLE	INTERSECTION IMPROVEMENTS
LOCATION	ANALEA DRIVE
SCALE	AS SHOWN
DATE	10/1/00

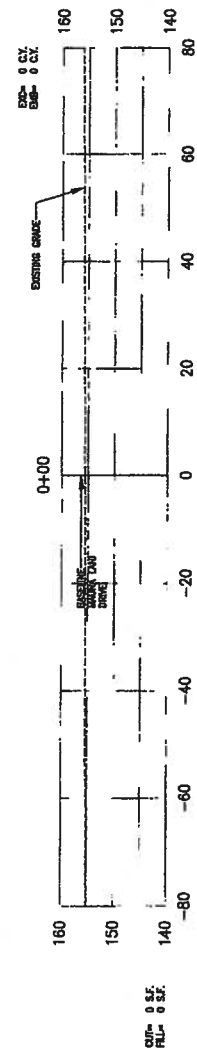
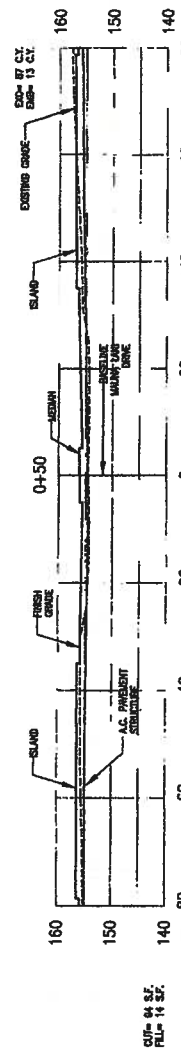
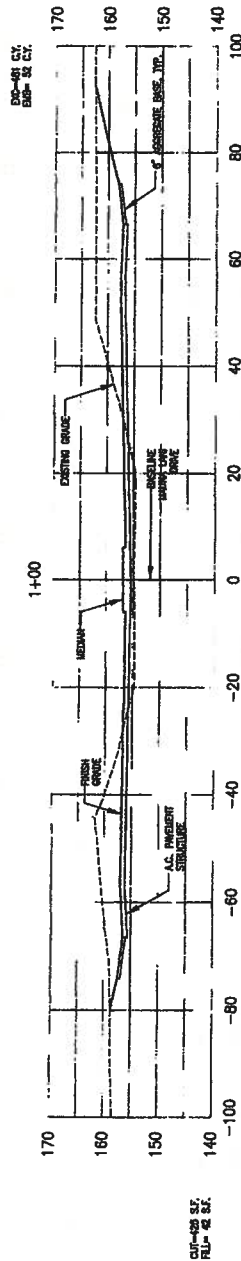
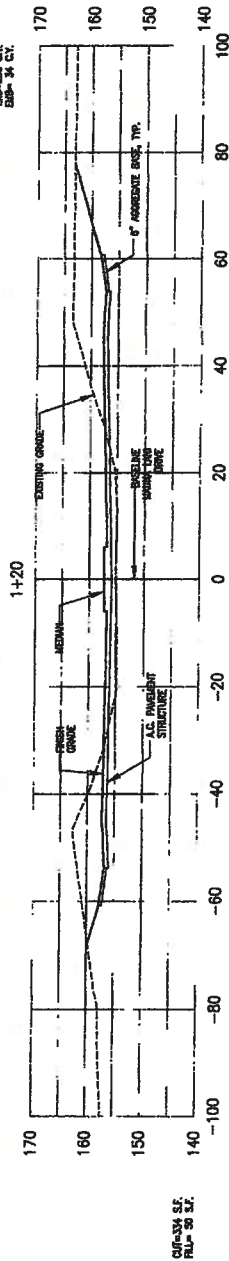
DATE	10/1/00
BY	DJG
CHECKED	WJC
IN CHARGE	WJC
PROJECT TITLE	INTERSECTION IMPROVEMENTS
LOCATION	ANALEA DRIVE
SCALE	AS SHOWN
DATE	10/1/00

**CROSS SECTIONS**

**C-31**

31 of 38 sheets

SHEET 31 OF 38  
DATE: 10/1/00  
BY: DJG



GRAPHIC SCALE:  
1" = 10'  
SCALE 1"=10'

**CROSS SECTIONS - MAUNA LANI DRIVE**

SCALE 1"=10'



www.merck.com  
Merck, Inc., P.O. Box 2000  
Kenilworth, NJ 07033

**THE VILLAGES  
OF AINA LE'A  
PHASE 1**

**INTERSECTION  
IMPROVEMENTS**  
District of South Kona  
Island of Hawaii

**Donor:**  
IBM Almas Life Development, LLC  
P.O. Box 201719  
Bedford, MA 01731

**Design-Build Contractor:**  
**GOODFELLOW BROS., INC.,**  
**GENERAL CONTRACTOR**  
2004-04-12/104



ALL INFORMATION CONTAINED HEREIN IS UNCLASSIFIED  
DATE 01-11-2011 BY 60322  
REASON: 25X

*[Signature]*  
Director

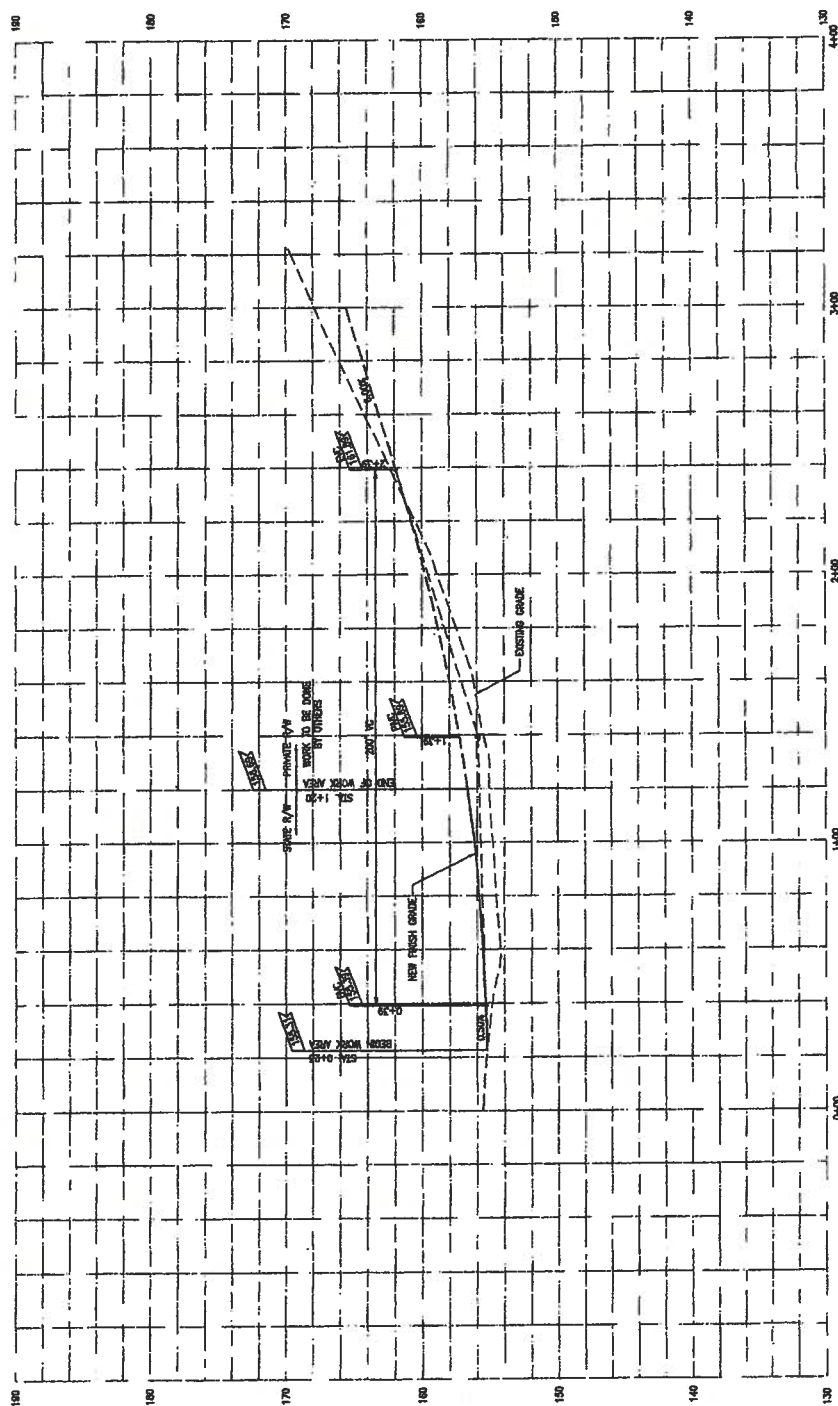
[illegible]

Copyright © 2005 Pearson Education, Inc.

[illegible]**MAUNA LANI  
DRIVE PROFILE**

**C-32**

अथ मन्त्रः



**ROADWAY PROFILE - MAUNA LANI DRIVE**

SCALE: HORIZ. 1"=20'  
VERT. 1"=5'

**GRAPHIC SCALE:**



1. THE CONTRACTOR SHALL NOTIFY THE STATE HIGHWAYS, HIGHWAY DIVISION AND TRAFFIC SUPERVISOR 72 HOURS IN ADVANCE BEFORE COMPLETION INSTALLATION OF HIGHWAY TRAFFIC SIGNAL.
2. ALL LIGHTWAYS SHALL BE LOW PRESSURE SODIUM TYPE WITH BOTTAGE AND L&L TYPE LIGHT DISTRIBUTION AS SHOWN ON THE APPROVED PLANS.
3. THE CONTRACTOR SHALL HAVE ONE SET OF APPROVED PLANS AT AND SITE AT ALL TIMES DURING THE CONSTRUCTION WORK AND RECORD ALL CHANGES WHICH OCCUR DURING CONSTRUCTION OF TRAFFIC LIGHTING SYSTEM.
4. CONTRACTOR TO PROVIDE DATA OF INSULATION AT THE BOTTOM OF PHOTOCELL.
5. FINAL ACCEPTANCE AND INSPECTION WILL BE UNDERTAKEN ONLY AFTER ALL WORK IS COMPLETE.
6. THE CONTRACTOR SHALL INSURE AND RECORD GROUND RESISTANCE OF EACH STANDOFF WITH FOUNDATIONS IN CEMENT, AND SENSIT RESISTANCE GROUND RESISTANCE TO WATER DRAINAGE SHALL BE FOLLOWED BY THE DEPARTMENT OF TRANSPORTATION, STATE HIGHWAYS. THE CONTRACTOR SHALL SUBMIT ALL RECORDS TO THE DEPARTMENT OF TRANSPORTATION, STATE HIGHWAYS. THE GROUND AND RESISTANCE TEST PLAN TO SUBMISSION TO THE STATE.
7. ALL SET POINT LOCATIONS SHALL BE GIVEN AND JOURNAL OF LOCATIONS SHALL BE OBTAINED FROM THE STATE BEFORE CONSTRUCTION. ALL LOCATIONS WILL BE ASSIGNED TO CLEAR UNDERGROUND UTILITY LINES. THE STATE LOCATIONS WILL NOT CONTACT WITH ANY OTHER UTILITY LINES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COSTS INCURRED BY CONSTRUCTION LINES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COSTS INCURRED BY CONSTRUCTION LINES.
8. THE CONTRACTOR SHALL, IN ALL PLACES, KEEP THE PAVEMENT AND SURROUNDING AREA FREE FROM ALL TYPES OF OBSTRUCTIONS, INCLUDING BUT NOT LIMITED TO, DEBRIS, RUBBER, OIL, GREASE, AND OTHERS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COSTS INCURRED BY CONSTRUCTION LINES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COSTS INCURRED BY CONSTRUCTION LINES.
9. THE CONTRACTOR SHALL, IN ALL PLACES, KEEP THE PAVEMENT AND SURROUNDING AREA FREE FROM ALL TYPES OF OBSTRUCTIONS, INCLUDING BUT NOT LIMITED TO, DEBRIS, RUBBER, OIL, GREASE, AND OTHERS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COSTS INCURRED BY CONSTRUCTION LINES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COSTS INCURRED BY CONSTRUCTION LINES.
10. THE CONTRACTOR SHALL, IN ALL PLACES, KEEP THE PAVEMENT AND SURROUNDING AREA FREE FROM ALL TYPES OF OBSTRUCTIONS, INCLUDING BUT NOT LIMITED TO, DEBRIS, RUBBER, OIL, GREASE, AND OTHERS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COSTS INCURRED BY CONSTRUCTION LINES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COSTS INCURRED BY CONSTRUCTION LINES.
11. ALL MATERIALS TO BE INSTALLED IN CONCRETE SHALL BE INSPECTED AND APPROVED BY THE CONTRACTOR. NOTIFY THE INSPECTOR AND SUPERVISOR 72 HOURS BEFORE PLACING CONCRETE. NOTIFY THE INSPECTOR AND SUPERVISOR 72 HOURS BEFORE PLACING CONCRETE. NOTIFY THE INSPECTOR AND SUPERVISOR 72 HOURS BEFORE PLACING CONCRETE.

1. THE CONTRACTOR SHALL PROTECT AND PAY FOR ALL UTILITIES AND SERVICES AND SHALL SECURE ALL UTILITIES MESSAGE AND READY TO THE USE AND LAUNCH PROTECTION OF THE WORK.
2. THE LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THEIR LOCATIONS AND SHALL BE RESPONSIBLE FOR ANY DAMAGES TO THESE UTILITIES AS A RESULT OF HIS OPERATIONS. ADJUSTMENTS TO THE NEW INCLUDE ALIGNMENT, IF REQUIRED, SHALL BE MADE TO PROTECT THE REQUIRED CLEARANCES.
3. THE CONTRACTOR SHALL SECURE ALL PRESENT, CONCEALED, BURIED, CONCRETE CABLES AND OTHER UTILITIES AND SERVICES. ALL UTILITIES ARE TO BE PROTECTED BY BEING PLACED AND SHALL REMAIN TO EXISTING CONDITION OR BETTER.
4. THE CONTRACTOR IS TO OWN EXPENSE SHALL MEET THE PROPERTY AND RESPONSIBILITY AND FREEZE FROM ANY DAMAGE. THE COST FOR SUPPLEMENTARY ASSURANCE SHALL BE RECOVERED BY THE CITY AND COUNTY, SHALL BE BORNE BY THE CONTRACTOR.
5. THE CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO PROTECT THE EXISTING CABLE COMPANY TO LAUNCH EXISTING INCLINE WHEELER FERRAND.
6. THE CONTRACTOR SHALL, THROUGH NECESSARY PRECAUTIONS NOT TO INJURE EXISTING CABLES OR OTHER, ANY WORK INVOLVING EXISTING CABLES OR CABLES SHALL BE DONE IN THE PRESENCE OF THE COGNATE CABLE COMPANY REPRESENTATIVE OR HIS SUPERVISOR.
7. THE CONTRACTOR SHALL NOTIFY THE COGNATE CABLE COMPANY REPRESENTATIVE 48 HOURS PRIOR TO THE FOUNDED COMMENCEMENT OF WORK.
8. WHETHER CORRESPONDING TO EXISTING UTILITIES ARE SHOWN ON THE PLANS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE MAIN PRECISE TO VERIFY THEIR LOCATIONS AND DEPTHS.
9. THE CONTRACTOR SHALL PROTECT ALL MATERIALS AND EQUIPMENT AND EQUIPMENT NECESSARY TO INSTALL THE INCLINE IN PLACE CORRECTLY.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LIFTING OUT AND REDUCING AND AND SAVED AND SHALL PROTECT ALL EXISTING MATERIALS AND EQUIPMENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE CONTRACTOR TO SUIT THE EXISTING CONDITIONS AND THE MATERIAL AS DESCRIBED IN THE PLAN.
11. THE CONTRACTOR, AT HIS OWN EXPENSE, SHALL KEEP THE PROPERTY AREA FREE FROM JUST SURROUNDINGS AND REMAINING FOR THE USE OF THE CITY AND COUNTY CONTROL.

[illegible][illegible]





**Wilson Okamoto  
CORPORATION**  
ENGINEERS - PLANNERS

1000 Kalia Road, Suite 1000  
Honolulu, Hawaii 96813  
PHONE: 535-0000  
FAX: 535-0001

**THE VILLAGES  
OF ANA LE'A  
PHASE 1**

**INTERSECTION  
IMPROVEMENTS**  
District of South Kohala  
Island of Hawaii

Client: L.A. Development, LLC  
P.O. Box 1000  
Honolulu, HI 96808

Design-Builder Consultant:  
PROSPECT CONSULTING, LLC  
GENERAL CONTRACTOR



THIS PLAN WAS PREPARED BY  
AN ENGINEER OR ARCHITECT  
REGISTERED IN THE STATE OF  
HAWAII.

NO.	DATE	REVISION
1	01/11/11	ISSUED FOR PERMIT
2	02/01/11	REVISED FOR
3	02/01/11	REVISED FOR
4	02/01/11	REVISED FOR
5	02/01/11	REVISED FOR
6	02/01/11	REVISED FOR
7	02/01/11	REVISED FOR
8	02/01/11	REVISED FOR
9	02/01/11	REVISED FOR
10	02/01/11	REVISED FOR

NO.	DATE	REVISION
1	01/11/11	ISSUED FOR PERMIT
2	02/01/11	REVISED FOR
3	02/01/11	REVISED FOR
4	02/01/11	REVISED FOR
5	02/01/11	REVISED FOR
6	02/01/11	REVISED FOR
7	02/01/11	REVISED FOR
8	02/01/11	REVISED FOR
9	02/01/11	REVISED FOR
10	02/01/11	REVISED FOR

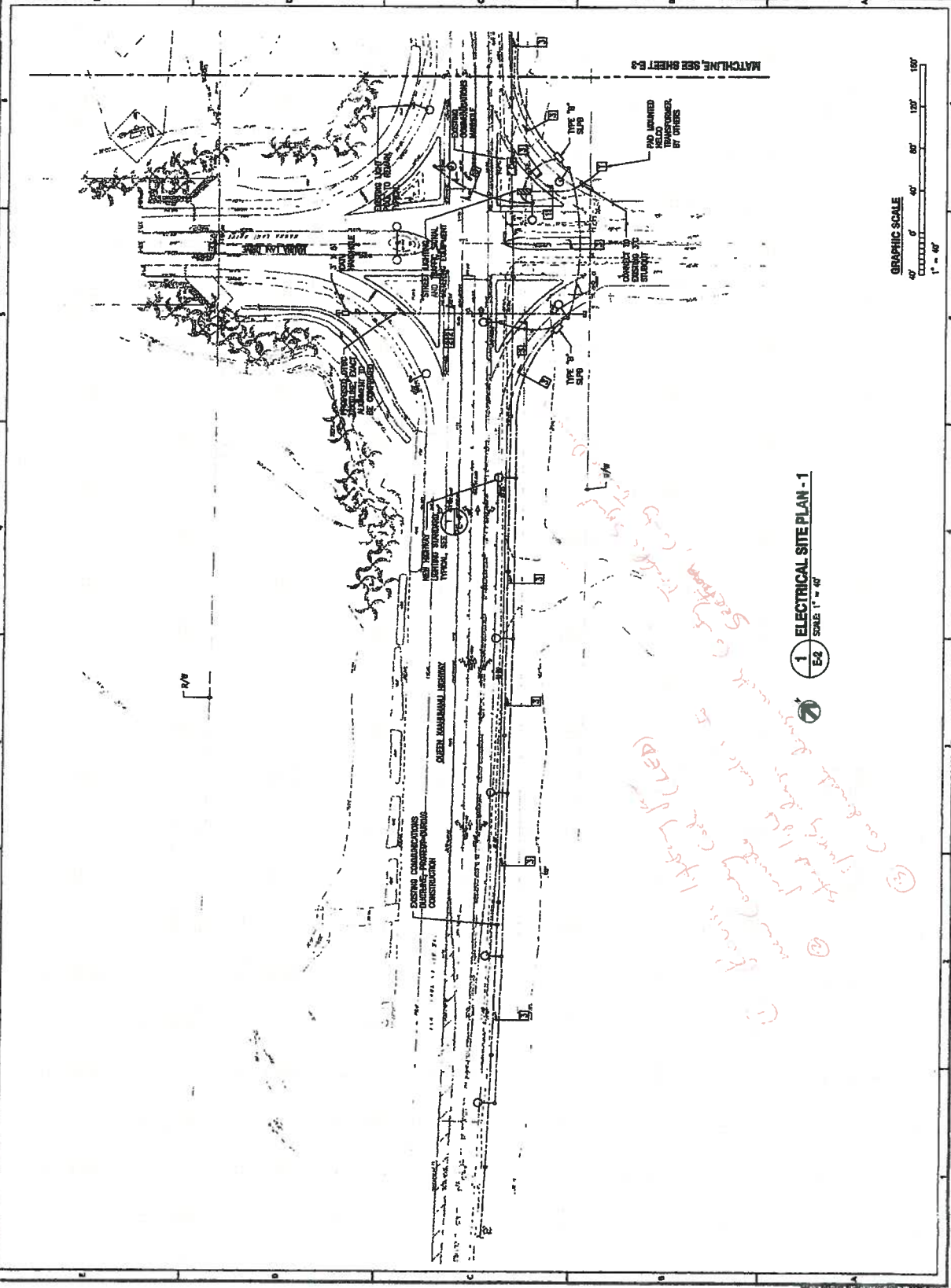
DATE OF SUBMITTAL: 01/11/11

NO.	DATE	REVISION
1	01/11/11	ISSUED FOR PERMIT
2	02/01/11	REVISED FOR
3	02/01/11	REVISED FOR
4	02/01/11	REVISED FOR
5	02/01/11	REVISED FOR
6	02/01/11	REVISED FOR
7	02/01/11	REVISED FOR
8	02/01/11	REVISED FOR
9	02/01/11	REVISED FOR
10	02/01/11	REVISED FOR

**ELECTRICAL  
SITE PLAN - 1**

**E-2**

30' x 40' sheets



**1 ELECTRICAL SITE PLAN - 1**  
E-2 SCALE: 1" = 40'

*Handwritten notes in red ink:*  
(1) New County Water (LED)  
(2) New County Water (LED)  
(3) New County Water (LED)  
(4) New County Water (LED)  
(5) New County Water (LED)  
(6) New County Water (LED)  
(7) New County Water (LED)  
(8) New County Water (LED)  
(9) New County Water (LED)  
(10) New County Water (LED)



**Wilson Okamoto**  
CORPORATION  
ENGINEERS-PLANNERS

1000 Kalia Road, Suite 400  
Honolulu, Hawaii 96813  
Phone: (808) 551-1100  
Fax: (808) 551-1101

**THE VILLAGES  
OF AINA LEA  
PHASE 1**

**INTERSECTION  
IMPROVEMENTS**  
District of South Kohala  
Island of Hawaii

Client:  
Hawaii Land Development, LLC  
P.O. Box 20329  
Honolulu, HI 96820

Design-Builder:  
HAWAIIAN ELECTRIC POWER  
CORPORATION



THIS PROJECT WAS DESIGNED BY  
AN ENGINEER LICENSED IN THE  
STATE OF HAWAII

DATE: 10/1/01

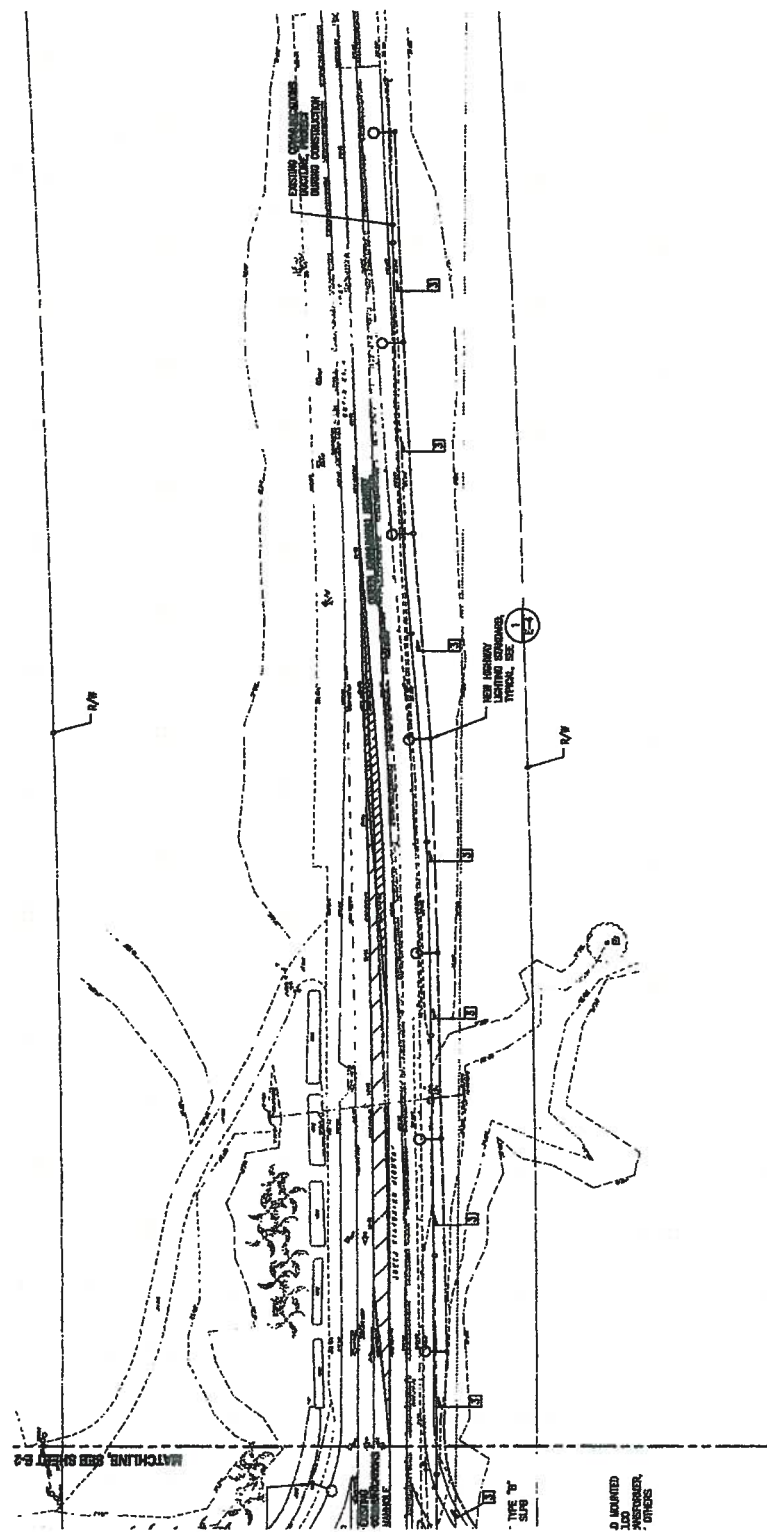
NO.	REVISION
1	ISSUED FOR PERMIT

DATE	DESCRIPTION
10/1/01	ISSUED FOR PERMIT

**ELECTRICAL  
SITE PLAN - 2**

**E-3**

204' x 170' sheets



**1 ELECTRICAL SITE PLAN - 2**  
SCALE: 1" = 40'





**Abstract**



**THE VILLAGES  
OF AIN AL RA  
PHASE 1**

**INTERSECTION**  
District of South Kohala  
Island of Hawaii

Project  
1997 Alpha Life Development, LLC  
A. R. R. R. R.  
October 19 1997

**Design-Build Contractors:**  
**COOPERFLOW, INC.**  
 GENERAL CONTRACTORS  
 2345 N. 10TH ST. • 100-1000  
 100-1000



ALL INFORMATION CONTAINED  
HEREIN IS UNCLASSIFIED  
DATE 08-10-2001 BY 60322  
UCBAW/BJA

[illegible]

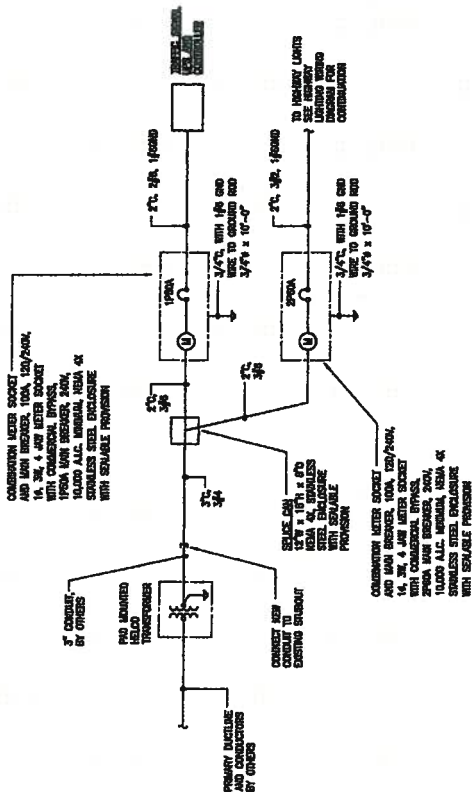
COMPACT & EASY TO USE

[illegible]

## ONE LINE AND HIGHWAY LIGHTING DIAGRAMS

5-3

of no costs



**1 ONE-LINE DIAGRAM**  
**E-8 NO SCALE**

**SERVICE DATA:**

- SERVICE NUMBER 120-104121 W  
 LEAD NAME CONNOR, J. MARK ESTIMATED REMOVAL - 7 MAR  
 SERVICE CONDUCTORS 1-4 CU  
 INTERVIEW HELD WITH STD. 2-4 RATE SCHEDULE "A"  
 TYPE UNDERGROUND  
 BILLING INFORMATION  
 STATE OF IOWA  
 DEPARTMENT OF TRANSPORTATION  
 30 MAPLE  
 VANDALA  
 IOWA 50570

DUCT SCHEDULE		
TYPE	DESCRIPTION	CONDUCTIONS
1	3" HELIO SECONDARY, PNC SCHEDULE 40	REFER TO ONE LINE DIAGRAM
2	4" EXTRA, PNC SCHEDULE 40, PROVIDE MULTIZONE	NONE
3	2" FLUORENT LIGHTING, PNC SCHEDULE 40	REFER TO FLUORENT LIGHTING DIAGRAM