

**INVITATION FOR BIDS
AND
CONSTRUCTION DOCUMENTS
FOR**

**JOB NO. 09-01
K-01, K-12 KALĀHEO WATER SYSTEM
IMPROVEMENTS, PACKAGE A – 0.5 MG YAMADA
RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL
RESERVOIR, PACKAGE C – WATER MAIN
INSTALLATION, KALĀHEO,
KAUA‘I, HAWAI‘I**

April 2022

**DEPARTMENT OF WATER
COUNTY OF KAUA‘I
LĪHU‘E, KAUA‘I, HAWAI‘I**

APPROVED:



Chief Procurement Officer

Date



Date

1 ADMINISTRATION

1.1 INVITATION FOR BIDS.

DEPARTMENT OF WATER, COUNTY OF KAUA‘I
**09-01 K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5
MG YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR,
PACKAGE C – WATER MAIN INSTALLATION, KALĀHEO,
KAUA‘I, HAWAI‘I**

Pursuant to Chapter 103D, HRS, SEALED TENDERS will be received up to and opened at 2:00 p.m., Hawaiian Standard Time (HST) on **Wednesday, May 04, 2022**, in the Administration Office of the Department of Water at 4398 Pua Loke Street, Līhu‘e, Kaua‘i, Hawai‘i (“DOW Admin. Office”). Bids received after the date and time specified above shall be rejected. Facsimile offers will not be accepted or considered.

The schedule set out below represents the Department’s best estimate of the schedule that will be followed for this competitive sealed bidding procurement process. If an activity in the schedule is delayed, the dates following the delayed activity may be adjusted by the same number of days. All prospective Offerors will be advised by addendum of any changes to the Procurement Schedule.

Activity	Scheduled Date
Invitation For Bids Issued	April 5, 2022
Pre-Bid Conference	April 13, 2022
Deadline: Receipt of Questions / Comments / Material Substitutions	April 20, 2022
Deadline: Notice of Intent	April 27, 2022
Department’s Responses to Questions / Comments / Material Substitutions	April 27, 2022
Bid Opening	May 4, 2022
Selection / Award Notification	June 2022
Contract Execution Period	September 2022 – September 2024
Contract Tentative Notice to Proceed Date	September 2022

The Chief Procurement Officer also reserves the right to reject any or all bids, in whole or in part, if deemed to be in the best interest of the Department of Water.

Bids must be signed in ink by the person or persons duly authorized to sign bids in the space provided for signature on the Offer form. **Bidders shall submit their offer and all related documents as required in this solicitation through Public Purchase at www.publicpurchase.com.**

BIDDERS ARE HEREBY NOTIFIED THAT EVIDENCE OF THE AUTHORITY OF THE PERSON(S) SIGNING THE BID DOCUMENT IS REQUIRED TO BE INCLUDED WITH THE BID DOCUMENTS. FAILURE TO COMPLY WITH THIS REQUIREMENT WILL BE CAUSE FOR REJECTION OF THE BID AS BEING NON-RESPONSIVE.

Job No. **09-01 K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5 MG YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR, PACKAGE C – WATER MAIN INSTALLATION, KALĀHEO,**

SCOPE OF WORK: This contract consists of furnishing and installing materials for the installation of the Project consisting of Packages A, B, and C, as indicated in the contract drawings and specifications.

(Base Bid) Package A – 0.5 MG YAMADA RESERVOIR includes a 0.5 million gallon (MG) reinforced concrete reservoir, approximately 260 linear feet (LF) of 12-inch diameter ductile iron water pipe (DIP), approximately 120 LF of 8-inch diameter DIP, and appurtenances; demolition; site clearing and grubbing; earthwork; concrete retaining walls; chain-link fencing; gate; asphaltic concrete pavement; drainage system; and grassing. Package A is located at the intersection of Pu‘ulima Road and Pu‘uwai Road in Kalāheo, Kaua‘i, Hawai‘i.

(Additive No. 1) Package B – 0.1 MG CLEARWELL RESERVOIR includes a 0.1 MG reinforced concrete reservoir, approximately 1,315 LF of 8-inch diameter DIP, and appurtenances; demolition; site clearing and grubbing; earthwork; concrete retaining wall; control building; hydropneumatic booster pump system; 1-1/2” water service lateral; chain-link fencing; gate; concrete access road; cellular confinement construction access road; asphaltic concrete pavement; drainage system; and grassing. Package B is located along Pu‘uwai Road in Kalāheo, Kaua‘i, Hawai‘i.

(Additive No. 2) Package C – WATER MAIN INSTALLATION includes 3-, 6-, 8-, and 12-inch diameter DIP and appurtenances; trench excavation; connections to existing waterlines; temporary waterline and temporary service connections; demolition and removal of existing waterlines and appurtenances; replacement of existing service laterals, including water meters and meter boxes; and pavement restoration. Package C is located in the following streets: Kikala Road, Pu ‘uwai Road, Po‘ohiwi Road, and an access road to T.M.K. 2-4-04:049.

The approximate lengths (in LF) of pipe by size:

Street	Waterline	12-inch DIP	8-inch DIP	6-inch DIP	3-inch DIP
Kikala Road	B	-	1,150	14	-
Pu‘uwai Road	C, E, F, G	830	2,775	24	-
Po‘ohiwi Road	C, D	-	3,151	3,288	34
Access Road to T.M.K. 2-4-04-049	C, D	-	121	174	-

PLANS AND SPECIFICATIONS: The contract documents are to be downloaded electronically. Please email the Department Contracts Officer, Christine Erorita at cerorita@kauaiwater.org for instructions. May be examined and obtained at the DOW Admin. Office. Those who download documents electronically shall be responsible for any and all costs related to printing or reproducing the items as required for offer submission. For inquires on obtaining plans and specifications and all other inquires call the project engineer at (808) 245-54.

The contract documents may be examined at the following locations:

DOW Admin. Office, Līhu‘e, Kaua‘i, Hawai‘i
 Building Industry Digest Plan Room, Honolulu, Hawai‘i

Job No. 09-01 K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5 MG YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR, PACKAGE C – WATER MAIN INSTALLATION, KALĀHEO,

General Contractors' Association Plan Room, Honolulu, Hawai'i

- Published in: Garden Island Newspaper
 Bid Service Weekly
 General Contractors' Association
 State Procurement Internet website at: <https://hands.ehawaii.gov/hands/welcome>
 DOW website at: www.kauaiwater.org
 DOW electronic procurement system at: www.publicpurchase.com

CONTRACTORS LICENSE: All prospective Bidders must be currently licensed by the State of Hawai'i, Department of Commerce and Consumer Affairs, Division of Professional and Vocational Licensing.

"A" general engineering contractors and "B" general building contractors are reminded that due to the Hawai'i Supreme Court's January 28, 2002 decision in Okada Trucking Co., Ltd. v. Board of Water Supply, et al, 97 Haw. 450 (2002), they are prohibited from undertaking any work, solely or as part of a larger project, which would require the general contractor to act as a specialty contractor in any area where the general contractor has no license. Although the "A" and "B" contractor may still bid on and act as the "prime" contractor on an "A" or "B" project (See, HRS § 444-7 for the definitions of an "A" or "B" project), respectively, the "A" and "B" contractor may only perform work in the areas in which they have the appropriate contractor's license (An "A" or "B" contractor obtains "C" specialty contractor's licenses either on its own or automatically under HAR § 16-77-32.). The remaining work must be performed by appropriately licensed entities. It is the sole responsibility of the contractor to review the requirements of this Project and determine the appropriate licenses that are required to complete the Project.

PRE-BID CONFERENCE: The estimated contract value is more than \$500,000 and, thus, a Pre-Bid Conference shall be held. If a Pre-Bid Conference is held, all potential interested offerors, subcontractors, and union representatives are invited to attend on the date specified in the Procurement Schedule in Section 1.1 at the DOW Admin. Office. An optional visit to the site will be conducted following the meeting. The site inspection is not mandatory; however, submission of an offer shall be evidence that the Offeror understands the scope of the project and shall comply with the specifications herein, if awarded the contract and has thoroughly familiarize itself with the existing conditions, rules and regulations, and the extent and nature of work to be performed. No additional compensation, subsequent to bid opening, shall be allowed by reason of any misunderstanding or error regarding site conditions or work to be performed. All prospective Bidders must make their own transportation arrangements to and from the site. Those interested in attending the pre-bid conference should contact the Procurement Officer. Offerors are advised that anything discussed at the pre-bid conference does not change any part of this solicitation. All changes and/or clarifications to this solicitation shall be done in the form of written addenda.

NOTICE OF INTENTION TO BID: Prospective bidders shall file with the Chief Procurement Officer, a written notice of intention to bid at least ten (10) calendar days prior to the day designated for the opening of bids, as required by HRS 103D-310.

CHIEF PROCUREMENT OFFICER
DEPARTMENT OF WATER
COUNTY OF KAUAI

Job No. **09-01 K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5 MG
YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR, PACKAGE C – WATER
MAIN INSTALLATION, KALĀHEO,**

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1.2 DEFINITIONS.

This section shall incorporate the definitions not listed below and contained in Hawai'i Revised Statutes (HRS) 103D; the Hawai'i Administrative Rules (HAR), Title 3, Department of Accounting & General Services, Subtitle 11, Procurement Policy Board, Chapters 120 through 131; and the General Provisions for Construction Contracts of the Department of Water, dated April 25, 2016. Terms as used in this solicitation, unless the context requires otherwise, shall have the following meaning:

“Award” means the notification of the Department’s acceptance of a bid or the presentation of a contract to the selected offeror.

“Bid sample” means a sample to be furnished by a bidder to show the characteristics of the item offered in the bid.

“Board” or “Board of Water Supply” shall mean the “Department of Water, County of Kaua’i”, as provided for in the County Charter which became effective January 2, 1969.

“Contract Administrator” means the person designated to manage the various facets of the Contract to ensure the Contractor’s total performance is in accordance with the contractual commitments and obligations to the Department are fulfilled.

“Department” or “DOW” means the Department of Water, County of Kaua’i, contracting on behalf of the Board of Water Supply. Wherever the terms “Engineer” or “Owner” are used in any document which forms a part of the Contract, the terms shall mean the Department of Water, County of Kaua’i and its authorized agents.

“Offer” means the bid, proposal, or quotation.

“Offeror” means any individual, partnership, firm, corporation, joint venture, or other legal entity submitting, directly or through a duly authorized representative or agent, an offer for the good, service, or construction contemplated.

“Opening” means the date set for opening of bids, receipt of unpriced technical offers in multistep sealed bidding, or receipt of proposals in competitive sealed proposals.

“Procurement officer” means any person with delegated authority to enter into and administer contracts and make written determination with respect thereto. The term includes an authorized representative acting within the limits of authority. The delegated authority is received from the chief procurement officer directly or through the head of a purchasing agency or designee to the procurement officer.

“Project” means work to be performed as set forth in the Contract, including furnishing all services, labor, goods, materials, supplies, equipment and other incidentals reasonably necessary for the successful completion of work contemplated under the Contract.

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MAIN INSTALLATION, KALĀHEO,**

“Quotation” means a statement of price, terms of sale, and description of goods, services, or construction offered by a prospective seller to a prospective purchaser, usually for purchases pursuant to section 103D-305, HRS.

“Special Provisions” means the terms and conditions pertaining to the specific solicitation in which they are incorporated; including but not limited to terms and conditions describing the preparation of solicitations, evaluation of offers, determination of award, plus those applicable to performance by the Contractor.

Additions or revisions to the General Provisions, which shall be considered a part of the General Provisions, setting forth conditions or requirements applicable to the particular project or contract under consideration shall be included in the Special Provisions. Should any Special Provisions conflict with these General Provisions, said Special Provisions shall govern.

“Specifications” mean any description of the physical or functional characteristics, or of the nature of a good, service, or construction item. The term includes descriptions or any requirement for inspecting, testing, or preparing a good, service, or construction item for delivery.

“Standard commercial product” means a product or material, in the normal course of business, is customarily maintained in stock or readily available by a manufacturer, distributor, or dealer for the marketing of the product.

“Successful bidder” means the individual, partnership, firm, corporation, joint venture, or other legal entity that submitted a bid for the Project and was determined to be a responsible, responsive bidder and selected for award of the contract.

1.3 INSTRUCTIONS TO BIDDERS.

THESE INSTRUCTIONS TO BIDDERS SHALL BE CONSIDERED TO BE INCORPORATED INTO THE SPECIAL PROVISIONS.

- 1.3.1 Submission of Bids: Bidders shall read and examine the Special Provisions, Specifications, General Provisions and all other bid documents attached hereto and by reference made a part hereof. Submission of bids shall be deemed a verification of such reading and examination and shall be deemed acknowledgement and agreement to be bound by the terms and conditions, and specifications of such documents. All Bidders shall complete and submit with its bid, the Offer form found in Appendix C via www.publicpurchase.com .

All bids for the construction of this project shall be and marked “**Job 09-01 K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5 MG YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR, PACKAGE C – WATER MAIN INSTALLATION, KALĀHEO,**”

Bidders shall submit their offer and all related documents as required in this solicitation through Public Purchase at www.publicpurchase.com .

- 1.3.2 Bidding Instructions: In addition to these Instructions to Bidders, Bidders are directed to SECTION 2 - BIDDING / PROPOSAL INSTRUCTIONS of the “GENERAL PROVISIONS FOR CONSTRUCTION CONTRACTS OF THE DEPARTMENT OF WATER”, dated April 25, 2016 (hereafter “GENERAL PROVISIONS”), and the General Provisions in its entirety.
- 1.3.3 Offer Form: The attached form of the OFFER is furnished only for the guidance of bidders and is not to be used for actual bidding. An official copy of the Offer on which the bid shall be made will be furnished to the prospective bidder when plans and specifications are obtained.
- 1.3.4 Omission or Erasures; Conditioned Offers: Any Offer which contains any omission or erasure or alteration not properly initialed or any attempt by a bidder to condition the bid or other irregularity, and bid samples or descriptive literature, unless expressly requested, will not be examined or tested, and will not be deemed to vary any of the provisions of this solicitation and are submitted at the Bidder’s risk and may be rejected. Offerors shall not submit their organization’s terms and conditions, standard contracts, or other similar agreements or forms. General reference to such items or attempts to substitute such items for the Department’s **shall** result in the disqualification of the Offeror’s bid as conditioned.

- 1.3.5 Solicitation Review; Submission of Questions and Requests For Clarification:

- 1.3.5.1 Submission of Questions and Requests for Clarification: Offerors are encouraged to submit written questions pertaining to this solicitation. Questions and requests for clarification must be submitted in writing via

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e-mail or received by post mail to the Procurement Officer not later than the date specified in the Procurement Schedule in Section 1.1 in order to generate an official answer. All written questions will receive an official written response from the Department and become an addenda to this solicitation. The only official position of the Department is that which is stated in writing and issued in this solicitation as an addenda thereto. All other means of communication, whether oral or written, shall not be formal or official responses/statements and may not be relied upon. **Any addendum issued must be acknowledged by downloading from Public Purchase, signed, and included with offer.**

1.3.5.2 **Solicitation Review:** Offerors should carefully review this solicitation for defects and/or ambiguities. Comments concerning defects and questionable or objectionable matter must be made in writing either via e-mail or post mailed and should be received by the Procurement Officer not later than the date specified in the Procurement Schedule in Section 1.1. This will allow issuance of any necessary amendments to this solicitation. It will also assist in preventing the opening of offers upon which award may not be made due to a defective solicitation package.

1.3.6 **Standard Questionnaire and Financial Statement:** When the Manager and Chief Engineer requires a prospective bidder to file a “Standard Qualification Questionnaire for Prospective Offerors on Department of Water Contracts,” the prospective bidder shall return a completed Standard Questionnaire, on the form provided by the Department, at least 48 hours prior to opening of bids. If this proves satisfactory, the bidder’s Offer will be received.

1.3.7 **Bid Bond:** A bid bond for the value of 5% of the bid value shall accompany the bid.

1.3.8 **Performance and Payment Bonds:** If the contract which is awarded exceeds \$25,000 and is for construction, performance and payment bonds shall each be in an amount equal to one hundred per cent of the amount of the contract price.

1.3.9 **Responsibility of Bidders to Study Site:** At the time of opening of bids, the Department shall presume that each Bidder has inspected the project site(s) and has read the Plans, Specifications, and other Contract Documents, including all Addenda and has become thoroughly familiar with them. The failure or omission of any Bidder to receive or examine any form, instrument, or document shall in no way relieve that Bidder from any obligation under the Bid or the Contract.

Each bidder must form an opinion of the character of the work and of the materials to be excavated, from an examination of the project site(s), from studies and inspection of available samples, records and reports and from any other investigations the Bidder may wish to make. Each Bidder must form an independent opinion of all the conditions affecting the work to be done and the labor and materials to be supplied, in order to make a Bid in sole reliance thereupon. Failure of a Bidder to become completely familiar with the labor and construction

conditions under which the work is to be performed will not relieve that Bidder of any obligations to furnish all materials, equipment, and labor necessary to perform the work as set forth in this solicitation and to perform the Contract.

1.3.10 **Insurance:** Contractor shall procure and maintain, on a primary basis and at its sole expense, at all times during the life of the contract insurance coverages, limits, including endorsements as described Appendix “D” - Insurance, against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work by the Contractor or the Contractor’s agents, representatives, employees, or subcontractors. The requirements contained therein, as well as the Department’s review or acceptance of insurance maintained by the Contractor is not intended to and shall not in any manner limit or qualify the liabilities or obligations assumed by the Contractor. Unless otherwise approved by the Manager and Chief Engineer, the policy or policies of insurance maintained by the Contractor shall provide the minimum limit(s) and coverage(s) as specified in the attached Appendix “D” - Insurance and be placed with an insurance carrier authorized to do business in this state and rated A-VII by A.M. Best.

1.3.11 **Tax Clearance:** See: Subsection 3.5 - RESPONSIBILITY OF OFFERORS AND TAX CLEARANCE of the GENERAL PROVISIONS in its entirety. Further, the **Bidder shall be required to submit a tax clearance with the bid Offer.** Failure to comply with this provision will be grounds for disqualifying the Bidder. The successful bidder will also be required to submit a current valid tax clearance prior to final payment for this Project.

1.3.12 **Preferences:** The following preferences are applicable when preceded by a checked box. Information and legal and procedural requirements pertaining to all preferences can be found within the General Provisions:

Hawai’i Products Preference (See: Appendix C). Pursuant to HRS 103D-1002, Offers should complete the Certificate of Hawai’i Products Preference for application of this preference.

Reciprocal Preferences: Pursuant to the provisions of Section 103D-1004, HRS and Subchapter 3, Chapter 124, Subtitle 11, Title 3, HAR, the Manager may impose a reciprocal preference against Bidders from those states which apply preferences.

Recycled Products Preference. Pursuant to HRS 103D-1005, Offerors should contact the Procurement Officer for application of this preference.

Tax Payer Preference (Hawai’i Excise and Use Tax Preference). Pursuant to HRS 103D-1008, any “taxpaying bidder” shall qualify for this preference.

Qualified Community Rehabilitation Programs Preference. Pursuant to HRS 103D-1009, a five per cent preference shall be given to services to be provided by nonprofit corporations or public agencies operating qualified

community rehabilitation programs in conformance with criteria established by the DLIR for all competitive sealed bid and proposal procurements.

Apprenticeship Program Preference (See: Appendix G). Pursuant to HRS 103-55, applicable to public works projects with estimated values of \$250,000 or greater. Section 103-55.6, HRS, as enacted by S.B. 19, Act 17, SLH 2009, and the State of Hawai‘i Comptroller’s Memorandum 2011-06 as amended, provides for a Hawai‘i Apprenticeship Preference for public works construction projects with estimated values of \$250,000 or greater. The preference shall be in the form of five percent (5%) bid adjustment applied to the Bidder’s Offer amount.

Safety and Health Program (See: Appendix N). Pursuant to HRS 396-18, applicable to construction projects where the offer amount is in excess of \$100,000.

1.3.13 Tax Adjustment for Out-Of-State Vendors and Tax Exempt Bidders: Pursuant to the provisions of Section 103-53.5, HRS, where the Bidder is an out-of-state vendor not doing business in the State of Hawai‘i, or is a person exempted from paying the applicable general excise tax, the package bid or purchase price, for the purpose of determining the lowest price bid, shall be increased by the applicable retail rate of general excise tax and the applicable use tax. The lowest responsible bidder who satisfies all of the requirements of these bid documents, taking into consideration the above increases, shall be awarded the contract, but the contract amount of any contract awarded shall be the amount of the bid offered and shall not include the amount of the increase.

1.3.14 Worker’s Compensation Act: The Contractor will be required to comply with the provisions of Chapter 97, Revised Laws of Hawai‘i 1955, known as the “Worker’s Compensation Laws,” and all laws amendatory thereof, relating to the compensation of employees for personal injuries sustained in the course of their employment. The Contractor’s surety or sureties shall be liable for any loss caused the Department by reason of the Contractor’s failure to comply with the provisions of said laws.

The Contractor shall furnish to the Department one copy of certificate of said insurance prior to commencement of work. Refer to the “RESPONSIBILITY OF SUCCESSFUL BIDDER” for additional requirements.

1.3.15 Subcontractor: Under the terms of this Contract, no subcontractor will be recognized. All subcontractors shall deal directly with the general Contractor; however, each and every subcontractor shall manage and take care of its own material and waste.

1.3.16 Listing Joint Contractors or Subcontractors:

Bidder shall complete the “[Joint Contractors or Subcontractors List](#).” It is the sole responsibility of the bidder to review the requirements of this Project and determine

the appropriate specialty contractor licenses that are required to complete the Project.

Bidder shall specify the name of each person or firm to be engaged by the Bidder as a joint contractor or subcontractor in the performance of the contract and the nature and scope of the work to be performed by each regardless of the percentage of the value of the work to be performed by the joint contractor or subcontractor. (HRS 103D-302(b))

Failure of the Bidder to provide the correct names and specialty contractor's nature of work to be performed may cause the bid to be rejected.

Bidder agrees the completed listing of joint contractors or subcontractors is required for the Project and that Bidder, together with the listed joint contractors and subcontractors, have all the specialty contractor licenses to complete the work.

Based on the Hawai'i Supreme Court's January 28, 2002 decision in Okada Trucking Co., Ltd. v. Board of Water Supply, et al., 97 Hawai'i 450 (2002), the bidder as a general Contractor ('A' or 'B' license) is prohibited from undertaking any work solely or as part of a larger project, which would require the bidder ('A' or 'B' general Contractor) to act as a specialty ('C' license) Contractor in any area in which the bidder ('A' or 'B' general Contractor) has no specialty Contractor's license. Although the 'A' and 'B' Contractor may still bid on and act as the "Prime Contractor" on an 'A' and 'B' project (See: HRS § 444-7 for the definitions of an 'A' and 'B' project.), respectively, the 'A' and 'B' Contractor may only perform work in the areas in which they have the appropriate Contractor's license. The bidder ('A' or 'B' general Contractor) must have the appropriate 'C' specialty Contractor's licenses either obtained on its own, or obtained automatically under HAR §16-77-32.

General Engineering 'A' Contractors automatically have these 'C' specialty contractor licenses: C-3, C-9, C-10, C-17, C-24, C31a, C32, C-35, C-37a, C-37b, C-38, C43, C49, C-56, C-57a, C-57b, and C61.

General Building 'B' Contractors automatically have these 'C' specialty contractor licenses: C-5, C-6, C-10, C-12, C-24, C-25, C31a, C32a, C42a, and C-42b.

1.3.16.1 Instructions to complete the Joint Contractors or Subcontractors List:

1.3.16.1.1 Describe the nature of work to be performed by the specialty contractor for this Project and provide the complete firm name of the joint contractor or subcontractor in the respective columns. If the bidder is a general contractor and providing the work of the required specialty contractor, fill in the Bidder's (general contractor's) name and nature of work to be performed for this Project.

1.3.16.1.2 List only one joint contractor or subcontractor per required specialty contractor classification.

1.3.16.1.3 For projects with alternate(s), fill out the respective “Joint Contractors or Subcontractors List for the Alternate(s).” Bidder shall describe the nature of work to be performed by the specialty contractor on this Project for the respective alternate. Bidders shall fill in the complete firm name and nature of work to be performed by the respective joint contractor or subcontractor. If the joint contractor or subcontractor was previously listed under base bid, listing under Alternate(s) is not required.

1.3.17 Wages and Labor Requirements: Pursuant to HRS Section 103-55, each bidder submitting an offer and list of subcontractors certifies that: WAGES: The service to be rendered shall be performed by employees paid not less than wages paid to public officers and employees for similar work; and COMPLIANCE WITH LABOR LAWS: All applicable laws of the Federal and State governments relating to workmen’s compensation, unemployment compensation, payment of wages, and safety will be fully complied with. The successful Bidder shall complete the Wage Certification in Appendix E.

1.3.17.1 In accordance with HRS Section 104-2 et seq., the Hawai‘i Director of Labor and Industrial Relations determines the prevailing wages applicable to the project. The wage rates are the minimum rates to be paid and may be revised. Contractors shall pay the applicable rates, as revised, at no cost to the Department. This is not a representation that labor can be obtained at these rates. It is the responsibility of bidders to inform themselves of local labor conditions and prospective changes or adjustments of wage rates. No increase in the contract price shall be allowed or authorized on account of the payment of wage rates in excess of those listed herein. Wage rate schedules are available at the office of the Department of Labor and Industrial Relations, State of Hawai‘i.

Current Wage Rate Bulletin: **Water Determination General Decision No. DC20210002, Modification No. 11**

1.3.18 Asbestos Cement Pipe: For all construction contract bids involving asbestos cement pipe, the Contractor shall remove, handle, and dispose of asbestos cement pipe in conformance with all applicable OSHA, State, and Federal regulations. The asbestos cement pipes shall only be disposed of at an approved disposal site.

1.3.19 Chlorination Subcontractor: All construction contract bids involving any chlorination work shall have a name listed for the C-37d Water Chlorination Subcontractor. Any bid not listing this subcontractor shall be rejected and disqualified.

1.3.20 Substitute Materials: Bidders contemplating submission of bids based on substitute materials must obtain prior written permission from the Department. Lists of substitute materials

together with qualifying data shall be submitted on the Department's Request for Substitution form by the date set in the Procurement Schedule in Section 1.1, as evidenced by the time stamp of the Department, to the Procurement Officer for approval (the Request for Substitution form may be obtained from this individual). It is not the intent of the Department to exclude or limit the products. Any substitute material determined by the Department upon evaluation to be an acceptable equal, will be listed in an addendum to this solicitation, issued prior to the bid opening date. The Department is the sole judge as to the comparable quality and suitability of any substitute material and its decision shall be final. If a Bidder offers a product without the Department's pre-approval, the substitute material shall not be considered for award.

- 1.3.21 Independent Price Determination: By submitting a bid, the bidder certifies that the price submitted was independently arrived at without collusion.
- 1.3.22 Protests: Any protest shall be submitted in writing within five (5) working days after the posting of the notice of award; provided that a protest based upon the contents of the solicitation shall be submitted in writing prior to the date set for the receipt of offers. Any and all protests pursuant to Hawai'i Procurement Code, Chapter 103D-701 HRS and Section 3-126-3 HAR shall be submitted in writing to the Procurement Officer for this solicitation.
- 1.3.23 Incorporation By Reference: Bidders hereby agree that all documents referred to in the Table of Contents are hereby incorporated by reference into this solicitation.
- 1.3.24 Severability: If any covenant, condition, or provision of this solicitation is held to be invalid by any court of competent jurisdiction, such holding shall not affect the validity of any other covenant, condition, or provision contained herein or incorporated by reference.
- 1.3.25 Remedies; Attorneys Fees, and Costs: All remedies provided in this solicitation shall be deemed cumulative and additional, and not in lieu of or exclusive of each other or of any other remedy available at law or in equity arising hereunder. Should any legal proceedings at law or in equity arise under or in connection with this solicitation, the Contractor shall be responsible for all attorneys' fees and costs (including reasonable fees and charges for the services of paralegals or other personnel who operate for and under the supervision of such attorneys and whose time is usually charged to clients) and any other expenses incurred in connection with such proceedings.
- 1.3.26 Department's Right to Audit: Books and Records: The Contractor shall, at all times during the term hereof, maintain complete and accurate books and records of its operations, including employee time records, in a form consistent with good accounting practice, including such books and records as would normally be examined by an independent certified public accountant in performing an audit or examination of the Contractor's receipts and expenses in accordance with generally accepted auditing standards. The Department has the right to designate an independent auditor to review books and records that specifically relate to this project. Subcontractors shall be bound by the same requirements. See: SECTION 6.9 - CONTROL OF THE CONTRACT of the GENERAL PROVISIONS in its entirety.

- 1.3.27 Confidential Material: All bids are subject to public inspection as set forth in 3-122-30, HAR. Bidders shall request in writing nondisclosure of designated trade secrets or other proprietary data to be confidential. Such data shall accompany the bid and shall be readily separable from the bid in order to facilitate eventual public inspection of the non-confidential portion of the bid. To facilitate the release of the information requested, the Department is prepared to sign a Non-Disclosure Agreement if necessary, however, the Department cannot guarantee that designated data will be kept confidential. The offers are subject to disclosure rules set forth in Chapter 92F, HRS and Non-Disclosure Agreements are enforceable only to the extent that they do not conflict with the provisions of Chapter 92F, HRS. The Bidder bears the burden of establishing that the designated data is exempted from the disclosure requirements set forth in Chapter 92F.
- 1.3.28 Cancellation of the Solicitation and Offer Rejection: The Department reserves the right to cancel this solicitation and to reject any and all offers in whole or in part, and waive any defects, when it is determined to be in the best interest of the Department, pursuant to HAR 3-122-96 and 3-122-97.

The Department shall not be liable for any costs, expense, loss of profit, or damages whatsoever, incurred by the Offeror in the event this solicitation is cancelled or an offer is rejected.

1.4 GENERAL PROVISIONS, SPECIFICATIONS, AND STANDARD DETAILS.

The Special Provisions, plans, General Provisions, Water Standards, County of Kaua'i Department of Public Works ("DPW") Standard Specifications and Details, as amended, contract documents, and all supplemental documents are essential parts of the contract, and a requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for the complete work. In case of conflict or discrepancy within any part of the contract, the stricter requirements, including Hawai'i State Statutory requirements, shall govern. Unless it is apparent that a different order of precedence is intended, the special provisions shall govern over plans, general provisions, and Water Standards; plans shall govern over general provisions; general provisions shall govern over Water Standards; Water Standards shall govern over DPW Standard Specifications; figured dimensions and drawings take precedence over measurements by scale, and detail drawings; instructions to proposers shall be incorporated and made a part of the special provisions.

It is the responsibility of the prospective offerors, offerors, and Contractors to review the General Provisions, Water Standards, Specifications, and Standard Details and a submission of an offer to this solicitation shall be deemed an acknowledgement of the incorporation of these into this solicitation and the resulting contract, if any.

- 1.4.1 General Provisions for Construction Contracts: The General Provisions for Construction Contracts of the Department of Water, dated April 25, 2016 ("General Provisions") are included in this solicitation. A copy may be found in Appendix "B."

- 1.4.2 Water System Standards. The “Water System Standards”, 2002, as amended, as adopted by the Department of Water, County of Kaua‘i; Board of Water Supply, City and County of Honolulu; Department of Water Supply, County of Maui; Department of Water Supply, County of Hawai‘i (“Water Standards”) is by reference incorporated herein and made a part of these specifications. The Water Standards specifications are not bound in these contract documents, but shall by reference be incorporated herein and made a part hereof.
- 1.4.3 Department of Public Works, County of Kaua‘i Standard Specifications: Whenever reference is made to the DPW Standard Specifications, the specifications referred to is the “HAWAI‘I STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND PUBLIC WORKS CONSTRUCTION” of the State of Hawai‘i, 2005, as amended. These specifications are not bound in the Contract Documents, but shall by reference be incorporated herein and made a part hereof.
- 1.4.4 Department of Public Works, County of Kaua‘i, Standard Details: Whenever reference is made within these Special Provisions or the contract plans to the DPW Standard Details, the Details referred to is the “STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION”, September 1984 and all subsequent amendments. These specifications are not bound in the Contract Documents, but shall by reference be incorporated herein and made a part hereof.

1.5 PROCUREMENT OFFICER AND CONTRACT ADMINISTRATOR.

The Procurement Officer is responsible for administrating/facilitating all requirements of the solicitation process and is the **sole point of contact for Offerors** from the date of release of the solicitation until the selection of the successful Bidder.

The Contract Administrator shall be responsible for the contract administration once the contract is awarded and shall be the point of contact throughout the term of the contract.

If checked, the Procurement Officer and the Contract Administrator shall be the same individual.

The Procurement Officer and Contract Administrator are:

Procurement Officer:

Michael K. Hinazumi, P.E.
 Engineering Division
 Department of Water, County of Kaua‘i
 4398 Pua Loke Street
 Lihu‘e, HI 96766
 Phone Number: 808-245-5416
 Email: mhinazumi@kauaiwater.org

Contract Administrator:

[Click here to enter text.](#)
[Click here to enter text.](#)
 Department of Water, County of Kaua‘i
 4398 Pua Loke Street
 Lihu‘e, HI 96766
 Phone Number: 808-245-[Click here to enter text.](#)
 Email: [Click here to enter text.](#)

2 SCOPE OF WORK

2.1 SCOPE OF WORK.

This Contract consists of the following Scope of Work and includes all other necessary work, all as indicated in the contract drawings and specifications. The general location of the work is as shown on the contract plans and as described herein.

This contract consists of furnishing and installing materials for the installation of the Project consisting of Packages A, B and C, as indicated in the contract drawings and specifications.

(Base Bid) Package A – 0.5 MG YAMADA RESERVOIR includes a 0.5 million gallon (MG) reinforced concrete reservoir, approximately 260 linear feet (LF) of 12-inch diameter ductile iron water pipe (DIP), approximately 120 LF of 8-inch diameter DIP, and appurtenances; demolition; site clearing and grubbing; earthwork; concrete retaining walls; chain-link fencing; gate; asphaltic concrete pavement; drainage system; and grassing. The Project is located at the intersection of Pu‘ulima Road and Pu‘uwai Road in Kalāheo, Kaua‘i, Hawai‘i.

(Additive) Package B – 0.1 MG CLEARWELL RESERVOIR includes a 0.1 million gallon (MG) reinforced concrete reservoir, approximately 1,315 linear feet of 8-inch diameter ductile iron water pipe, and appurtenances; demolition; site clearing and grubbing; earthwork; concrete retaining wall; control building; hydropneumatic booster pump system; 1-1/2” water service lateral; chain-link fencing; gate; concrete access road; cellular confinement construction access road; asphaltic concrete pavement; drainage system; and grassing. The Project is located along Pu‘uwai Road in Kalāheo, Kaua‘i, Hawai‘i.

(Additive) Package C – WATER MAIN INSTALLATION includes 3, 6, 8, and 12-inch diameter ductile iron water pipe and appurtenances; trench excavation; connections to existing waterlines; temporary waterline and temporary service connections; demolition and removal of existing waterlines and appurtenances; replacement of existing service laterals, including water meters and meter boxes; and pavement restoration. The Project is located in the following streets: Kikala Road, Pu‘uwai Road, Po‘ohiwi Road, and an access road to T.M.K. 2-4-04:049.

Approximate Lengths (linear feet) of Pipe by Size:

Street	Waterline	12” DIP	8” DIP	6” DIP	3” DIP
Kīkala Road	B	-	1,150	14	-
Pu‘uwai Road	C, E, F, G	830	2,775	24	-
Po‘ohiwi Road	C, D	-	3,151	3,288	34
Access Road to T.M.K. 2-4-04-049	C, D	-	121	174	-

2.2 TIME OF COMPLETION.

- 2.2.1 It is understood and agreed that the work called for under this Project must and shall be completed within **Nine Hundred (900) CALENDAR DAYS** after written notice has been given to the Contractor to commence work. No extension of time will be granted for shipping and manufacturer's delays. The Contractor shall be subject to liquidated damages for delay or nonperformance as stated in this solicitation.
- 2.2.2 Work on the basic contract agreement is to be completed within the stipulated completion time from the date to the "Notice to Proceed." All work shall be done in co-operation with and coordinated with any other Contractors in a manner to allow completion of the entire construction within the scheduled time.

2.3 PERMITS.

The Contractor shall obtain all necessary permits needed for this job including, but not limited to those listed below and in the Special Provisions.

County of Kaua'i permits include but are not limited to grading permit, grubbing permit, stockpiling permit, building permit, road permit, and driveway approach permit from the Department of Public Works prior to the commencement of work within the County of Kaua'i's Rights-of-Ways. The Contractor shall pay for all required charges and fees associated with these permits.

The Contractor shall obtain a Community Noise Permit and/or Variance with the Department of Health, State of Hawai'i, if necessary. The Contractor shall pay for all required charges and fees associated with these permits.

The Contractor shall obtain all necessary Department of Army permits and/or federal permits prior to the commencement of work. The Contractor shall pay for all required charges and fees associated with these permits.

The Department of Water has obtained one National Pollutant Discharge Elimination System Individual Permit (NPDES Permit No. HI 0021916). The permit covers Discharges of Hydrotesting Waters from the project to State waters for Package A and Package B and Discharges of Storm Water Associated with Construction Activities for Packages A, B, and C. Should additional NPDES coverage and permits be required, the Contractor shall prepare the required documents and obtain additional approvals, as necessary.

Notice to proceed will be given to the Contractor prior to attaining any additional NPDES permits. No time extension will be granted for the Contractor's inability to attain additional NPDES permits and the Contractor shall pay for all required charges and fees associated with additional NPDES permits.

The Department of Water has obtained Conservation District Use Permit (CDUP) KA-3668

Job No. **09-01 K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5 MG YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR, PACKAGE C – WATER MAIN INSTALLATION, KALĀHEO,**

from the State of Hawai‘i, Department of Land and Natural Resources, Office of Conservation and Coastal Lands (see Appendix R). The Contractor shall comply with all conditions of the permit. The CDUP expires in 2023.

The Department of Water has obtained Class IV Zoning Permit Z-IV-2017-4, Use Permit U-2017-4, and Variance Permit V-2017-1 from the County of Kaua‘i Planning Commission (see Appendix Q). The Contractor shall comply with all conditions of the permits.

2.4 CONTRACTOR’S RESPONSIBILITY FOR EXISTING UTILITIES AND STRUCTURES.

The existence and location of underground utilities and structures as shown on the plans are from the best information available but are not guaranteed and other obstacles may be encountered in the course of the work. Prior to the start of excavation, the Contractor shall contact all utility companies and have them locate their respective lines affected. The Contractor shall be held responsible for any damage to and for the maintenance and protection of existing utilities and structures. See: SECTION 6 - PERFORMANCE OF CONTRACT of the GENERAL PROVISIONS in its entirety.

2.5 POWER AND WATER SUPPLIES.

The Contractor shall make all the necessary arrangements and installation work that may be required for power and water supplies for the work under this Contract. Cost for said power and water supplies shall be included in appropriate unit prices bid and no direct payment will be made therefore.

2.6 CONTRACTORS LICENSE REQUIRED.

The Department shall reject all bids received from contractors who are not licensed by the State Contractors License Board in accordance with Chapter 444, Hawai‘i Revised Statutes. It is the sole responsibility of the Bidder to review the requirements of this Project and determine the appropriate licenses that are required to complete the Project.

2.7 HOURS.

No work shall be done on Saturdays, Sundays, legal State Holidays and/or in excess of eight (8) hours each day without the written consent of the Contract Administrator. Should permission be granted to work at such times, the Contractor shall pay for all inspectional and administrative costs thereof. No work shall be done at night unless authorized by the Contract Administrator. No work shall be done at night during seabird fallout season (September 15 – December 15, annually). See: SECTION 6.9 and 6.12 of the GENERAL PROVISIONS.

2.8 QUANTITIES.

All bids will be compared on the basis of quantities of work to be done, as shown in the

Job No. 09-01 K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5 MG YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR, PACKAGE C – WATER MAIN INSTALLATION, KALĀHEO,

bid; the quantities shown in the Unit Price items are estimated, being given as a basis for comparison of bids. The Department reserves the right to increase or decrease the quantities or delete items entirely as may be required during the progress of the work. See: SECTION 7.2 and 7.3 of the GENERAL PROVISIONS.

2.9 MATERIALS FURNISHED FOR THE PROJECT.

All materials necessary for the completion of the project shall be furnished by the Contractor, unless specifically stated otherwise and full compensation thereof shall be included in the various items in the bid. All materials for this Project shall be ordered after the notice to proceed is issued and the shop drawings, if applicable, have been approved by the Department.

2.10 WORK TO BE DONE WITHOUT DIRECT PAYMENT.

Whenever it is specified in the contract that the Contractor is to do work or furnish materials of any kind for which no price is fixed in the contract, it shall be understood that such work or furnishing such materials was included in a unit price for the appropriate item, unless it is expressly specified that such work or material is to be paid for as extra work.

2.11 INTENT OF THE SPECIFICATIONS.

It is not the intent of the Department to limit Proposers to these specifications; however, the specifications designated as “requirements” contained herein are the minimum acceptable.

2.12 IMPLEMENTATION.

The Contractor will be required to:

- 2.12.1 Provide required permits for the construction of this Project, trained construction crew and project management necessary to ensure a complete constructed and fully functional water facilities as specified in this solicitation.
- 2.12.2 Provide all documentation, including all warranties and certification documents, on the construction materials being used.

2.13 GOVERNING LAW; APPLICATION OF LAW.

This solicitation and the Contract awarded based on such solicitation shall be governed by the laws of the State of Hawai‘i. The Contractor shall comply with all federal, State and local laws, regulations and ordinances, including occupational safety and health standards applicable to the performance of the services specified.

3 METHOD OF AWARD

3.1 METHOD OF AWARD.

- 3.1.1 Award, if made, shall be to the responsive, responsible Offeror submitting the lowest Total Sum Bid price.
- 3.1.2 Only those offers that meet all of the solicitation specifications, General Provisions, Special Provisions, and any other requirement contained herein will be considered for award. Any offer that proposes terms, conditions, or requirements that are contrary to those specified herein or does not meet the qualification requirements of this solicitation, as solely determined by the Department and as provided herein, may be considered nonresponsive and will be rejected as provided herein.

3.2 HAWAI'I REVISED STATUTES.

The Contractor's attention is called to the following chapters within the HRS which affect this Contract and the performance thereof:

Chapter 103, relating to expenditure of public money;
Chapter 104, relating to wages and hours of employees on public works;
Chapter 376, relating to industrial safety;
Chapter 386, relating to workmen's compensation;
Chapter 321, relating to the Health Department;
Section 507-17, relating to recovery on bond for material and labor used on public works;
and
Chapter 378, relating to fair employment practices

3.3 RESPONSIBILITY OF SUCCESSFUL BIDDER.

- 3.3.1 The successful Bidder is advised that it shall, immediately prior to award of the contract, furnish proof of compliance with the requirements of HAR §3-122-112, to wit: Chapter 237, tax clearance; Chapter 383, unemployment insurance; Chapter 386, workers' compensation; Chapter 392, temporary disability insurance; Chapter 393, prepaid health care; and one of the following: a) Be registered and incorporated or organized under the laws of the State (hereinafter referred to as a "Hawai'i business"); or b) Be registered to do business in the State (hereinafter referred to as a "compliant non-Hawai'i business."
- 3.3.2 To comply with these requirements, the successful Bidder shall produce the following documents to the Department to demonstrate compliance with this section.

3.3.2.1 HRS Chapter 237 Tax Clearance Requirement for Award and Final Payment. Instructions are as follows:

Pursuant to HRS §103D-328, successful Bidder shall be required to submit a tax clearance certificate issued by the Hawai'i State Department of

Taxation (“DOTAX”) and the U.S. Internal Revenue Service (“IRS”). The certificate is valid for six (6) months from the most recent approval stamp date on the certificate and must be valid on the date it is received by the Department of Water.

The tax clearance certificate shall be obtained on the State of Hawai‘i, DOT TAX CLEARANCE APPLICATION Form A-6 (Rev. 2003) which is available at the DOTAX and IRS offices in the State of Hawai‘i or the DOTAX website and by mail or fax:

DOTAX Website (forms & Information):

<http://www.state.hi.us/tax/alphalist.html#a>

DOTAX Forms by Fax/Mail: (808) 587-7572 / 1-800-222-7572

Completed tax clearance applications may be mailed, faxed or submitted in person to the Department of Taxation, Taxpayer Services Branch, to the address listed on the application.

DOTAX (fax): (808) 587-1488

IRS (fax): (808) 539-1573

The application for the clearance is the responsibility of the Bidder and must be submitted directly to the DOTAX or IRS and not to the Department of Water.

3.3.3 HRS Chapters 383 (Unemployment Insurance), 386 (Workers’ Compensation), 392 (Temporary Disability Insurance), and 393 (Prepaid Health Care) Requirements for Award. Instructions are as follows:

Pursuant to HRS §103D-310, the successful Bidder shall be required to submit an approved certificate of compliance issued by the Hawai‘i State Department of Labor and Industrial Relations (“DLIR”). The certificate is valid for six (6) months from the date of issue and must be valid on the date it is received by the Department.

The certificate of compliance shall be obtained on the State of Hawai‘i, DLIR APPLICATION FOR CERTIFICATE OF COMPLIANCE WITH SECTION 3-122-112, HAR, Form LIR#27 which is available at www.dlir.state.hi.us/LIR#27, or at the neighbor island DLIR District Offices. The DLIR will return the form to the Bidder who in turn shall submit it to the Department.

The application for the certificate is the responsibility of the Bidder and must be submitted directly to the DLIR and not to the Department of Water.

3.4 REQUIREMENT FOR AWARD.

To be eligible for award, the Bidder must comply as follows:

- 3.4.1 Hawai'i Business. A business entity referred to as a "Hawai'i business" is registered and incorporated or organized under the laws of the State of Hawai'i. As evidence of compliance, Bidder shall submit a CERTIFICATE OF GOOD STANDING issued by the State of Hawai'i Department of Commerce and Consumer Affairs Business Registration Division ("BREG"). A Hawai'i business that is a sole proprietorship, however, is not required to register with the BREG and therefore not required to submit the certificate. A Bidder's status as sole proprietor or other business entity and its business street address indicated on the OFFER form will be used to confirm that the Bidder is a Hawai'i business.
- 3.4.2 Compliant Non-Hawai'i Business. A business entity referred to as a "compliant non-Hawai'i business" is not incorporated or organized under the laws of the State of Hawai'i but is registered to do business in the State of Hawai'i. As evidence of compliance, Bidder shall submit a CERTIFICATE OF GOOD STANDING.

To obtain a CERTIFICATE OF GOOD STANDING go online to www.BusinessRegistrations.com and follow the prompt instructions. To register or to obtain a "Certificate of Good Standing" by phone, call (808) 586-2727 (M-F 7:45 to 4:30 HST). The "Certificate of Good Standing" is valid for six months from date of issue and must be valid on the date it is received by the Department.

- 3.4.3 Registration Costs. Bidders are advised that there are costs associated with registering and obtaining a "Certificate of Good Standing" from the DCCA.

3.5 TIMELY SUBMISSION OF ALL CERTIFICATES.

- 3.5.1 The certificates described in this section should be applied for and submitted to the Department as soon as possible after the Department notifies the successful Bidder that the Department intends to issue an award to the successful Bidder. If valid certificates are not submitted within **ten (10) calendar days** after the Department so notifies the successful bidder, the successful Bidder's offer may be disqualified and any prospective award (or actual award if mistakenly issued), even though the successful bidder's bid is otherwise responsive and responsible, may be canceled without any liability whatsoever to the Department. The Department, and not the successful bidder, shall determine whether all necessary certificates have been timely submitted.
- 3.5.2 If the Department cancels any prospective or actual award for failure to submit all required certificates, the Department reserves the right to make an award to the next lowest responsive and responsible Bidder who is able to submit all the required certificates.

3.6 FINAL PAYMENT REQUIREMENTS.

Contractor is also required to submit a tax clearance certificate for final payment on the Job No. **09-01 K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5 MG YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR, PACKAGE C – WATER MAIN INSTALLATION, KALĀHEO,**

contract. A tax clearance certificate, not over two months old, with an original green certified copy stamp, must accompany the invoice for final payment on the contract. In addition to a tax clearance certificate, an original “Certification of Compliance for Final Payment” (SPO Form-22), will be required for final payment. This form is attached hereto as Appendix F.

4 AWARD OF CONTRACT AND NOTICE TO PROCEED

4.1 AWARD.

The successful Bidder shall comply with SECTION 3 - AWARD AND EXECUTION OF CONTRACT of the GENERAL PROVISIONS in its entirety.

4.2 NOTICE OF AWARD.

The Procurement Officer will inform the successful Bidder of contract award selection within 48 hours of confirmation. Additionally, an official contract award notification letter will be executed by the Department and provided at the earliest date.

4.3 NOTICE TO PROCEED.

Upon contract execution, a “Notice to Proceed” letter will be provided to the Contractor specifying the “Commencement” (start work) date of the Contract. No work is to be undertaken by the Contractor prior to the commencement date specified in the Notice to Proceed letter. The Department is not liable for any work, contract, costs, expenses, loss of profits, or any damages whatsoever incurred by the Contractor prior to the official Notice to Proceed “Commencement” date.

APPENDIX A: Sample Contract.

(Attached separately)

APPENDIX B: General Provisions for Construction Contracts for the Department of Water, dated April 25, 2016 (bound separately).

APPENDIX C: Offer.

Contractor _____

OFFER

For

DEPARTMENT OF WATER, COUNTY OF KAUA‘I,
LĪHU‘E, KAUA‘I, HAWAI‘I

_____ 20 _____

Chief Procurement Officer
Department of Water
County of Kaua‘i
4398 Pua Loke Street
Līhu‘e, Hawai‘i 96766

Dear Sir:

Pursuant to and in compliance with your Invitation For Bids and other Contract Documents relating thereto, the undersigned Offeror, having familiarized itself with the terms of the contract, the local conditions affecting the performance of the contract and the cost of the work at the place where the work is done, the plans and specifications, “General Provisions for Construction Contracts of the Department of Water”, “Water System Standards, 2002”, Invitation For Bids, and other Contract Documents, hereby proposes and agrees to perform, within the time stipulated in the said documents, including all its component parts and everything required to be performed, and to provide and furnish any and all of the labor, materials, tools, expendable equipment, and all utility and transportation services necessary to perform the contract, in a workmanlike manner, in place complete all of the work covered by the contract in connection with these specifications and accompanying construction plans titled:

JOB NO. 09-01 K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5 MG YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR, PACKAGE C – WATER MAIN INSTALLATION, KALĀHEO,, KAUA‘I, HAWAI‘I

on file in the office of the Department of Water for,

TOTAL SUM OFFER _____ DOLLARS
(words)

(\$ _____) said total sums being itemized on the following pages:

Job No. 09-01 K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5 MG YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR, PACKAGE C – WATER MAIN INSTALLATION, KALĀHEO,

OFFER SCHEDULE

JOB NO. 09-01, K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5 MG YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR, PACKAGE C – WATER MAIN INSTALLATION, KALĀHEO,, KAUA‘I, HAWAI‘I

ITEM NO.	ESTIMATED QUANTITY	U/M	DESCRIPTION	UNIT PRICE	TOTAL
(Base Bid) PACKAGE A – 0.5 MG YAMADA RESERVOIR					
1	1	LS	Mobilization & Demobilization (Not to exceed 6% of the sum of all items excluding Lump Sum Offer of this item)		\$
2	14,000	CY	Site excavation, including clearing and grubbing, demolition, and hauling and disposal of excess material.	\$	\$
3	350	LF	4-foot high chain-link fence, including DWS 2500 concrete footing and all appurtenances, in place complete.	\$	\$
4	730	LF	6-foot high chain-link fence topped with extension arm and three strands of barbed wire, including DWS 2500 concrete footing and all appurtenances, in place complete.	\$	\$
5	1	EA	20-foot wide double-swing 6-foot high chain-link gate topped with extension arm and three strands of barbed wire, including DWS 2500 concrete footing, sign, and all appurtenances, in place complete.	\$	\$
6	1,000	SY	2" thick A.C. Pavement, Hot Mix State Design Mix V, for pavement restoration, driveway pavement, and site pavement, including base and subbase courses, in place complete.	\$	\$
7	200	CY	Aggregate base course for unpaved areas, in place complete.	\$	\$
8	381	LF	Reinforced Concrete Retaining Wall-A, in place complete.	\$	\$
9	243	LF	Reinforced Concrete Retaining Wall-B, in place complete.	\$	\$

Job No. 09-01 K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5 MG YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR, PACKAGE C – WATER MAIN INSTALLATION, KALĀHEO,

ITEM NO.	ESTIMATED QUANTITY	U/M	DESCRIPTION	UNIT PRICE	TOTAL
10	300	LF	Concrete gutter, in place complete.	\$	\$
11	30	LF	12" Ductile Iron Pipe Waterline; Cl. 53, including unclassified trench excavation, backfill, and all appurtenances, in place complete.	\$	\$
12	230	LF	12" Ductile Iron Pipe Waterline; Cl. 52, including unclassified trench excavation, backfill, and all appurtenances, in place complete.	\$	\$
13	120	LF	8" Ductile Iron Pipe Waterline; Cl. 52, including unclassified trench excavation, backfill, and all appurtenances, in place complete.	\$	\$
14	1	LS	Ductile Iron Fittings (ANSI A-21.10 & AWWA C110), including trench excavation and backfill, in place complete.		\$
15	6	EA	12" Gate Valve MJxMJ with C.I. Valve Box and Cover, including unclassified trench excavation, backfill, and all appurtenances, in place complete.	\$	\$
16	3	EA	8" Gate Valve MJxMJ with C.I. Valve Box and Cover, including unclassified trench excavation, backfill, and all appurtenances, in place complete.	\$	\$
17	7	EA	2-1/2" Brass Cleanout and Riser, including unclassified trench excavation, backfill, and all appurtenances, in place complete.	\$	\$
18	2	EA	12" Check Valve Assembly, including check valve, vault, vault cover, unclassified trench excavation, backfill, and all appurtenances, in place complete.	\$	\$
19	1	EA	4" Altitude Valve, including valve, vault, vault cover, unclassified trench excavation, backfill, and all appurtenances, in place complete.	\$	\$

Job No. 09-01 K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5 MG YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR, PACKAGE C – WATER MAIN INSTALLATION, KALĀHEO,

ITEM NO.	ESTIMATED QUANTITY	U/M	DESCRIPTION	UNIT PRICE	TOTAL
20	1	EA	Special drain inlet for grass area 11.00' to 11.99' deep, including unclassified trench excavation and backfill, in place complete.	\$	\$
21	1	EA	County DPW shallow drain manhole detail D-18 for pavement areas with grated cover, 8.00' to 8.99' deep, including unclassified trench excavation and backfill, in place complete.	\$	\$
22	2	EA	County DPW standard drain manhole detail D-22 for pavement areas with grated cover, 8.00' to 8.99' deep, in place complete.	\$	\$
23	1	EA	State standard drain manhole, Type A, for pavement areas, with grated cover, 19.00'-19.99', including unclassified trench excavation and backfill, in place complete.	\$	\$
24	270	LF	18" Reinforced Concrete Pipe Drainline, Class III, including unclassified trench excavation, backfill, and all appurtenances, in place complete.	\$	\$
25	75	LF	18" Corrugated High-Density Polyethylene Drainline, including unclassified trench excavation, backfill, and all appurtenances, in place complete.	\$	\$
26	35	LF	12" Ductile Iron Pipe Drainline, Cl. 53, including unclassified trench excavation, backfill, and all appurtenances, in place complete.	\$	\$
27	250	LF	6" corrugated, perforated HDPE drain line, including unclassified trench excavation, backfill, and all appurtenances, in place complete.	\$	\$
28	15	LF	6" corrugated HDPE drain line, including unclassified trench excavation, backfill, and all appurtenances, in place complete.	\$	\$
29	1	EA	CRM outlet headwall, inclusive of 4-foot high chain-link fence and concrete rubble pavement, in place complete.	\$	\$

Job No. 09-01 K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5 MG YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR, PACKAGE C – WATER MAIN INSTALLATION, KALĀHEO,

ITEM NO.	ESTIMATED QUANTITY	U/M	DESCRIPTION	UNIT PRICE	TOTAL
30	1	EA	0.5 Million Gallon reinforced concrete reservoir tank, including all appurtenances, in place complete.	\$	\$
31	1	LS	Chlorination and flushing of water system, including removal of temporary risers and incidental work, all in accordance with the specifications.		\$
32	1	LS	Furnish and install electrical equipment, and wiring, including but not limited to providing trenching and backfill, pullboxes power, control and instrumentation ducts, cables, junction boxes, connections to power control and instrumentation devices, painting testing, and all appurtenant electrical work in place complete and in accordance with the plans and specifications.		\$
33	1	LS	SCADA system, including but not limited to software programming of existing RTU; modifications to existing master SCADA; and all appurtenant SCADA work; in place complete, and accordance with the plans and specifications, ready for operation.		\$
			TOTAL PACKAGE A SUM OFFER (BASE BID) (Items 1 to 33 inclusive)		\$

Job No. 09-01 K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5 MG YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR, PACKAGE C – WATER MAIN INSTALLATION, KALĀHEO,

ITEM NO.	ESTIMATED QUANTITY	U/M	DESCRIPTION	UNIT PRICE	TOTAL
(Additive No. 1) PACKAGE B – 0.1 MG CLEARWELL RESERVOIR					
34	1	LS	Mobilization & Demobilization (not to exceed 6% of the sum of all items excluding Lump Sum Offer of this item).		\$
35	2,254	CY	Site excavation, including hauling and disposal of excess material	\$	\$
36	315	LF	6-foot high chain-link fence topped with extension arm and three strands of barbed wire, including DWS 2500 concrete footing, all appurtenances, in place complete.	\$	\$
37	1	EA	16-foot wide double-swing 6-foot high chain-link gate topped with extension arm and three strands of barbed wire, including DWS 2500 concrete footing, sign, and all appurtenances, in place complete.	\$	\$
38	1,385	SY	6" Thick Concrete Pavement for pavement restoration, driveway pavement, and site pavement in place complete.	\$	\$
39	760	SY	2" Thick AC Pavement Hot Mix State Design Mix IV for site pavement in place complete.	\$	\$
40	360	CY	Aggregate base course for Access Road and Paved Area, in place complete	\$	\$
41	29,700	SF	Cellular confinement construction access, for a complete job.	\$	\$
42	1	LF	Reinforced Concrete Retaining Wall, in place complete	\$	\$
43	135	LF	Concrete swale, in place complete.	\$	\$
44	960	LF	Concrete curb and gutter, in place complete.	\$	\$
45	50	LF	Concrete header, in place complete.	\$	\$
46	3	EA	Gutter diversion, in place complete.	\$	\$
47	2	EA	GRP transition, in place complete	\$	\$

Job No. 09-01 K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5 MG YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR, PACKAGE C – WATER MAIN INSTALLATION, KALĀHEO,

ITEM NO.	ESTIMATED QUANTITY	U/M	DESCRIPTION	UNIT PRICE	TOTAL
48	1,275	LF	8" Ductile Iron Pipe Waterline; Cl. 52, including unclassified trench excavation, backfill, and all appurtenances, in place complete.	\$	\$
49	40	LF	8" Ductile Iron Pipe Waterline; Cl. 53, including unclassified trench excavation, backfill, and all appurtenances, in place complete.	\$	\$
50	225	LF	1-1/2" Copper Pipe Waterline; Type K, including unclassified trench excavation and backfill, fittings, and all appurtenances, in place complete.	\$	\$
51	1	LS	Ductile Iron Fittings (ANSI A-21.10 & AWWA C110), included unclassified trench excavation and backfill, in place complete.		\$
52	8	EA	8" Gate valve MJ x MJ with C.I. valve box and cover, including unclassified trench excavation, backfill, and all appurtenances, in place complete.	\$	\$
53	1	EA	1" Air/Vacuum Relief Valve, including all appurtenances, in place complete.	\$	\$
54	1	LS	Connection for New 8" D.I. Water line to existing 8" Asbestos Cement Water line, including unclassified excavation, transition coupling, and appurtenances, in place complete.		\$
55	1	EA	County DPW standard drain inlet, Type G-2, for pavement area, 4.00' to 4.99', including unclassified trench excavation and backfill, in place complete.	\$	\$
56	1	EA	County DPW standard drain inlet, Type G-2, for pavement area, 5.00' to 5.99', including unclassified trench excavation and backfill, in place complete.	\$	\$
57	130	LF	6" corrugated, perforated HDPE drain line, including unclassified trench excavation,	\$	\$

Job No. 09-01 K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5 MG YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR, PACKAGE C – WATER MAIN INSTALLATION, KALĀHEO,

ITEM NO.	ESTIMATED QUANTITY	U/M	DESCRIPTION	UNIT PRICE	TOTAL
			backfill, and all appurtenances, in place complete.		
58	25	LF	6" corrugated HDPE drain line, including unclassified trench excavation, backfill, and all appurtenances, in place complete.	\$	\$
59	25	LF	12" Ductile Iron Drainline, including unclassified trench excavation, backfill, and all appurtenances, in place complete.	\$	\$
60	90	LF	12" PVC Drainline, including unclassified trench excavation, backfill, and all appurtenances, in place complete.	\$	\$
61	1	EA	CRM headwall, inclusive of 4-foot high chain-link fence, in place complete.	\$	\$
62	13	LF	4-foot high chain link fence on top of headwall, including all appurtenances, in place complete.	\$	\$
63	1	LS	0.1 Million Gallon reinforced concrete reservoir tank, including all appurtenances, in place complete.		\$
64	1	LS	Chlorination and flushing of water system, including removal of temporary risers and incidental work, all in accordance with the specifications.		\$
65	1	LS	Furnish and install electrical equipment, and wiring, including but not limited to trenching and backfill, pullboxes, power, control and instrumentation ducts, cables, junction boxes, connections to power, control and instrumentation devices, painting, testing, and all appurtenant electrical work in place complete and in accordance with the plans and specifications		\$
66	1	LS	Furnish and install telephone equipment, and wiring, including but not limited to trenching and backfill, pullboxes, testing, and all appurtenant electrical work in place		\$

Job No. 09-01 K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5 MG YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR, PACKAGE C – WATER MAIN INSTALLATION, KALĀHEO,

ITEM NO.	ESTIMATED QUANTITY	U/M	DESCRIPTION	UNIT PRICE	TOTAL
			complete and in accordance with the plans and specifications.		
67		Allo w.	Hawaiian Telcom (HTEL) cost sharing	\$	\$
68	1	LS	SCADA system, including but not limited to software programming of existing RTU; modifications to existing master SCADA; and all appurtenant SCADA work; in place complete, and accordance with the plans and specifications, ready for operation.		\$
69	1	LS	Control Building, in place complete.		\$
70	1	LS	Hydropneumatic booster pump, in place complete.		\$
			TOTAL PACKAGE B SUM OFFER (ADDITIVE NO. 1) (Items 34 to 70 inclusive)		\$

ITEM NO.	ESTIMATED QUANTITY	U/M	DESCRIPTION	UNIT PRICE	TOTAL
(Additive No. 2) PACKAGE C – WATER MAIN INSTALLATION					
71	1	LS	Mobilization & Demobilization (not to exceed 6% of the sum of all items excluding Lump Sum Offer of this item).		\$
72	1	LS	Clearing and grubbing.		\$
73	10,000	SY	Cold Planing Existing A.C. Pavement.	\$	\$
74	35	SY	4" Thick Concrete Pavement for trench pavement restoration and driveway pavement, including base and subbase courses, in place complete.	\$	\$
75	2,300	SY	2" Thick A.C. Pavement Hot Mix State Design Mix V for trench pavement restoration and driveway pavement, including base and subbase courses, in place complete.	\$	\$
76	10,000	SY	2" Thick A.C. Pavement Hot Mix State Design Mix V for pavement resurfacing, in place complete.	\$	\$
77	830	LF	12" Ductile Iron Pipe Waterline; Cl. 52, including unclassified trench excavation, backfill, and all appurtenances, in place complete.	\$	\$
78	7,197	LF	8" Ductile Iron Pipe Waterline; Cl. 52, including unclassified trench excavation, backfill, and all appurtenances, in place complete.	\$	\$
79	3,500	LF	6" Ductile Iron Pipe Waterline; Cl. 52, including unclassified trench excavation, backfill, and all appurtenances, in place complete.	\$	\$
80	34	LF	3" Ductile Iron Pipe Waterline; Cl. 52, including unclassified trench excavation, backfill, and all appurtenances, in place complete.	\$	\$
81	1	LS	Ductile Iron Fittings (ANSI A-21.10 & AWWA C110), in place complete.		\$

Job No. 09-01 K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5 MG YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR, PACKAGE C – WATER MAIN INSTALLATION, KALĀHEO,

ITEM NO.	ESTIMATED QUANTITY	U/M	DESCRIPTION	UNIT PRICE	TOTAL
82	5	EA	12" Gate Valve MJxMJ with C.I. Valve Box and Cover, including all appurtenances, in place complete.	\$	\$
83	5	EA	8" Gate Valve MJxMJ with C.I. Valve Box and Cover, including all appurtenances, in place complete.	\$	\$
84	5	EA	6" Gate Valve MJxMJ with C.I. Valve Box and Cover, including all appurtenances, in place complete.	\$	\$
85	9	EA	6" Gate Valve MJxFE with C.I. Valve Box and Cover, including all appurtenances, in place complete.	\$	\$
86	1	EA	3" Gate Valve MJxMJ with C.I. Valve Box and Cover, including all appurtenances, in place complete.	\$	\$
87	15	EA	1" Air/Vacuum Relief Valve, including all appurtenances, in place complete.	\$	\$
88	17	EA	Single Service Lateral and assembly, including all appurtenances, in place complete.	\$	\$
89	8	EA	Double Service Lateral and assembly, including all appurtenances, in place complete.	\$	\$
90	7	EA	Fire Hydrant, including all appurtenances, in place complete.	\$	\$
91	4	EA	2-1/2" Brass Cleanout and Riser, including all appurtenances, in place complete.	\$	\$
92	1	LS	Connection of New 3" Ductile Iron Waterline to Existing 3" PVC Waterline at WL C Sta. 56+71.0± o/s 2.1' ± RT, including all appurtenances, in place complete.		\$
93	1	LS	Connection of New 6" Ductile Iron Waterline B to Existing 6" Asbestos-Cement Waterline at WL B Sta. 11+61.3±, including all appurtenances, in place complete.		\$

Job No. 09-01 K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5 MG YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR, PACKAGE C – WATER MAIN INSTALLATION, KALĀHEO,

ITEM NO.	ESTIMATED QUANTITY	U/M	DESCRIPTION	UNIT PRICE	TOTAL
94	1	LS	Connection of New 12" Ductile Iron Waterline C to New 12" Ductile Iron Waterline at WL C Sta. (-) 0+3.7±, including all appurtenances, in place complete.		\$
95	1	LS	Connection of New 12" Ductile Iron Waterline C to Existing 6" Cast Iron Waterline at WL C Sta. 19+92.39 o/s 13.4' ±LT, including all appurtenances, in place complete.		\$
96	1	LS	Connection of New 6" Ductile Iron Waterline D to Existing 6" Cast Iron Waterline at WL D Sta. 0+00, including all appurtenances, in place complete.		\$
97	1	LS	Connection of New 6" Ductile Iron Waterline D to Existing 6" Ductile Iron Waterline at WL D Sta.33+43.3±, including all appurtenances, in place complete.		\$
98	1	LS	Connection of New 12" Ductile Iron Waterline E to New 12" Ductile Iron Waterline at WL E Sta. 0+00, including all appurtenances, in place complete.		\$
99	1	LS	Connection of New 8" Ductile Iron Waterline F to New 8" Ductile Iron Waterline at WL F Sta. 0+00, including all appurtenances, in place complete.		\$
100	1	LS	Connection of New 8" Ductile Iron Waterline F to Existing 8" Ductile Iron Waterline at WL F Sta.0+16.3±, including all appurtenances, in place complete.		\$
101	1	LS	Connection of New 8" Ductile Iron Waterline G to New 8" Ductile Iron Waterline at WL G Sta. 0+00, including all appurtenances, in place complete.		\$
102	1	LS	Connection of New 8" Ductile Iron Waterline G to Existing 8" Existing Asbestos-Cement Waterline at WL G		\$

Job No. 09-01 K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5 MG YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR, PACKAGE C – WATER MAIN INSTALLATION, KALĀHEO,

ITEM NO.	ESTIMATED QUANTITY	U/M	DESCRIPTION	UNIT PRICE	TOTAL
			Sta.0+13.5±, including all appurtenances, in place complete.		
103	1	LS	Chlorination and flushing of water system, including removal of temporary risers and incidental work, all in accordance with the specifications.		\$
104	580	LF	Tree Root Barrier, in place complete.	\$	\$
			TOTAL PACKAGE C SUM OFFER (ADDITIVE NO. 2) (Items 71 to 104 inclusive)		\$

Job No. 09-01 K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5 MG YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR, PACKAGE C – WATER MAIN INSTALLATION, KALĀHEO,

RECAPITULATION

Kalāheo Water System Improvements, Kalāheo, Kaua'i, Hawai'i

BASE BID

Offer Schedule A – Yamada 0.5 MG Reservoir, Total Package A

Sum Offer (Items 1-33, Inclusive) \$ _____

ADDITIVE NO. 1

Offer Schedule B – Clearwell 0.1 MG Reservoir, Total Package B

Sum Offer (Items 34-70, Inclusive) \$ _____

ADDITIVE NO. 2

Offer Schedule C – Water Main Installation, Total Package C

Sum Offer (Items 71-104, Inclusive) \$ _____

GRAND TOTAL PACKAGE A, B, and C

(Items 1-104, Inclusive) \$ _____

SCHEDULE B
HAWAI'I PRODUCTS PREFERENCE

In accordance with HRS §103D-1002, the Hawai'i products preference is applicable to this solicitation. Hawai'i Products ("HP") are available for those items noted on Schedule B, below. The Hawai'i products list is available on the SPO webpage at www.spo.hawaii.gov/for-state-county-personnel/manual/procurement/solicitation/goods-services-construction/preferences/hawaii-product-preferences/ or go to the SPO Home page, click on "For Vendors" tab; click on Preferences, Hawai'i Product Preferences to view. Offeror transmitting a Hawai'i Product (HP) shall identify the HP on Schedule B-1.

Any person desiring a Hawai'i product preference shall have the product(s) certified and qualified if not currently on the Hawai'i products list, prior to the deadline for receipt of offer(s) specified in the procurement notice and solicitation. The responsibility for certification and qualification shall rest upon the person requesting the preference. Persons desiring to qualify their product(s) not currently on the Hawai'i product list shall complete form SPO-038, Certification for Hawai'i Product Preference and submit, via email to the Procurement Officer issuing the solicitation, and provide the solicitation number and title in the subject line, and include all additional information required by the Procurement Officer. For each product, one form shall be completed and transmitted (i.e. 3 products should have 3 separate forms completed). Form SPO-038 is available on the SPO webpage at <http://hawaii.gov/spo> under the 'Quicklinks' menu; click on 'Forms for Vendors, Contractors, and Service Providers'.

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

Change in Availability of Hawai'i product. In the event of any change that materially alters the Offeror's ability to supply Hawai'i products, the Offeror shall notify the Procurement Officer in writing no later than five (5) working days from when the Offeror knows of the change and the parties shall enter into discussions for the purposes of revising the contract or terminating the contract for convenience.

The following is a list of products that the Department anticipates will be used in this particular project; however the list is not all inclusive and additional products may be qualified.

HAWAI'I PRODUCTS LIST

HP Description	Manufacturer/Supplier	Class
Aggregates and Sand – Basalt, rock, cinder, limestone and coral		
Aggregates – Recycled asphalt and concrete		
Asphalt and paving materials		
Cement and concrete products		
Pre-cast concrete products		
Signs – traffic, regulatory, and construction		
Soil amendments, mulch, compost		

Bidders intending to use or supply a Hawai'i Product must list the price and total cost of each item f.o.b. jobsite, unloaded, including applicable general excise tax and use tax on this form. Failure to designate a Hawai'i product will mean that the Bidder is offering a non-Hawai'i product and award, if made to the bidder, will be on the basis that the bidder will deliver or use a non-Hawai'i product.

The Bidder shall list only the Manufacturers/Suppliers certified and qualified on Schedule B.

If the Department has awarded a contract under HRS, § 103D-1002, finds that in the performance of that contract there has been a failure to comply with HRS, § 103D-1002, the contract shall be voidable and the findings shall be referred for debarment or suspension proceedings under HRS 103D-702. Any purchase made or any contract awarded or executed in violation of this section shall be void and no payment shall be made by the Department on account of the purchase or contract.

SCHEDULE B-1
SCHEDULE OF MATERIAL COST
(if Hawai'i preference requested)

HAWAI'I PRODUCT	MANUFACTURER	CLASS	APPROX. QUANTITY	UNIT	TOTAL COST OF MATERIAL
Aggregates and Sand – Basalt, rock, cinder, limestone and coral					
Aggregates – Recycled asphalt and concrete					
Asphalt and paving materials					
Cement and concrete products					
Pre-cast concrete products					
Signs–traffic, regulatory and construction					
Soil amendments, mulch, compost					

SCHEDULE C
MANDATORY LICENSING REQUIREMENT

“A” general engineering contractors and “B” general building contractors are reminded that due to the Hawai‘i Supreme Court’s January 28, 2002 decision in Okada Trucking Co., Ltd. V. Board of Water Supply, et al., 97 Haw. 450 (2002), they are prohibited from undertaking any work, solely or as part of a larger project, that would require the general contractor to act as a specialty contractor in any area in which the general contractor has no license. Although the “A” and “B” contractor may still submit an offer on and act as the “prime” contractor on an “A” and “B” project (*See, HRS § 444-7 for the definitions of an “A” and “B” project.*), respectively, the “A” and “B” contractor may only perform work in the areas in which they have the appropriate “C” specialty contractor’s license (*An “A” or “B” contractor obtains “C” specialty contractor’s licenses either on its own, or automatically under HAR § 16-77-32.*). The remaining work must be subcontracted out to appropriately licensed “C” specialty contractors. It is the sole responsibility of the contractor to review the requirements of this project and determine the appropriate licenses that are required to complete the project.

LISTING OF SUBCONTRACTORS

Sec. 103D-302, H.R.S., provides that each offer for Public Works Construction Contracts shall include the name of each person or firm to be engaged by the Offeror as a joint contractor or subcontractor in the performance of the Public Works Construction Contract. The Offer shall also indicate the nature and scope of the work to be performed by such joint contractors or subcontractors. All offers which do not comply with this requirement shall be rejected pursuant to Sec. 103D-302(b) H.R.S.

To comply with the above provisions, the offeror shall complete the schedule of the nature and scope of work by listing, where applicable, the names of the joint contractors and subcontractors to be used after the description of the nature and scope of the work.

ALL JOINT CONTRACTORS OR SUBCONTRACTORS TO BE ENGAGED ON THIS PROJECT

The Offeror certifies that the following is a complete listing of all joint contractors and/or subcontractors who will be engaged by the Offeror on this Project to perform the nature and scope of work indicated **regardless of the percentage of the value of the work to be performed by the joint contractor or subcontractor**, pursuant to Section 103D-302, Hawai‘i Revised Statutes, and understands that failure to comply with this requirement shall be just cause for rejection of the Offer.

The Offeror further understands that only those joint contractors or subcontractors listed shall be allowed to perform work on this Project. If no joint contractor or subcontractor for any subdivision of work is listed, it shall be construed that the work shall be performed by the Offeror with Offeror’s employees.

All Offerors must be sure that they possess, and that the joint contractors or subcontractors listed in the Offer possess, all the necessary specialty licenses needed to perform the work for this Project. The Offeror shall be solely responsible for assuring that all specialty licenses required to perform the work is covered in the Offer.

The Offeror shall include the license number of the joint contractors or subcontractors listed below. Failure to provide the correct names and license numbers as registered with the Contractors Licensing Board may cause rejection of the offer submitted.

It is the sole responsibility of the contractor to review the requirements of this Project and determine the appropriate licenses that are required to complete the Project.

Job No. 09-01 K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5 MG
YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR, PACKAGE C – WATER
MAIN INSTALLATION, KALĀHEO,

LISTING OF ALL JOINT CONTRACTORS OR SUBCONTRACTORS

	Contractor Classification	Name of Joint Contractor or Subcontractor	License Number
C-1	Acoustical and Insulation Contractor		
C-2	Mechanical Insulation Contractor		
C-3	Asphalt Paving and Surfacing Contractor		
C-3a	Asphalt Concrete Patching, Sealing, and Striping Contractor		
C-3b	Play Court Surfacing Contractor		
C-4	Boiler, Hot-Water Heating and Steam Fitting Contractor		
C-5	Cabinet, Millwork, and Carpentry Remodeling and Repairs Contractor		
C-5a	Garage Door and Window Shutters Contractor		
C-5b	Siding Application Contractor		
C-6	Carpentry Framing Contractor		
C-7	Carpet Laying Contractor		
C-9	Cesspool Contractor		
C-10	Scaffolding Contractor		
C-12	Drywall Contractor		
C-13	Electrical Contractor		
C-14	Sign Contractor		
C-15	Electronic Systems Contractor		
C-15a	Fire and Burglar Alarm Contractor		
C-15b	Telecommunications Contractor		
C-16	Elevator Contractor		
C-16a	Conveyor Systems Contractor		
C-17	Excavating, Grading, and Trenching Contractor		
C-19	Asbestos Contractor		
C-20	Fire Protection Contractor		

Job No. 09-01 K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5 MG YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR, PACKAGE C – WATER MAIN INSTALLATION, KALĀHEO,

	Contractor Classification	Name of Joint Contractor or Subcontractor	License Number
C-20a	Fire Reprasant Systems Contractor		
C-21	Flooring Contractor		
C-22	Glazing and Tinting Contractor		
C-22a	Glass Tinting Contractor		
C-23	Gunite Contractor		
C-24	Building Moving and Wrecking Contractor		
C-25	Institutional and Commercial Equipment Contractor		
C-27	Landscaping Contractor		
C-27a	Hydro Mulching Contractor		
C-27b	Tree Trimming and Removal Contractor		
C-31	Masonry Contractor		
C-31a	Cement Concrete Contractor		
C-31b	Stone Masonry Contractor		
C-31c	Refractory Contractor		
C-31d	Tuckpointing and Caulking Contractor		
C-31e	Concrete Cutting, Drilling, Sawing, Coring, and Pressure Grouting Contractor		
C-32	Ornamental, Guardrail, and Fencing Contractor		
C-32a	Wood and Vinyl Fencing Contractor		
C-33	Painting and Decorating Contractor		
C-33a	Wall Coverings Contractor		
C-33b	Taping Contractor		
C-33c	Surface Treatment Contractor		
C-34	Soil Stabilization Contractor		
C-35	Pile Driving, Pile and Caisson Drilling, and Foundation Contractor		
C-36	Plastering Contractor		

Job No. 09-01 K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5 MG YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR, PACKAGE C – WATER MAIN INSTALLATION, KALĀHEO,

	Contractor Classification	Name of Joint Contractor or Subcontractor	License Number
C-36a	Lathing Contractor		
C-37	Plumbing Contractor		
C-37a	Sewer and Drain Line Contractor		
C-37b	Irrigation and Lawn Sprinkler Systems Contractor		
C-37c	Vacuum and Air Systems Contractor		
C-37d	Water Chlorination and Sanitation Contractor		
C-37e	Treatment and Pumping Facilities Contractor		
C-37f	Fuel Dispensing Contractor		
C-38	Post Tensioning Contractor		
C-40	Refrigeration Contractor		
C-40a	Prefabricated Refrigerator Panels Contractor		
C-41	Reinforcing Steel Contractor		
C-42	Roofing Contractor		
C-42a	Aluminum and Other Metal Shingles Contractor		
C-42b	Wood Shingles and Wood Shakes Contractor		
C-42c	Concrete and Clay Tile Contractor		
C-42e	Urethane Foam Contractor		
C-42g	Roof coatings Contractor		
C-43	Sewer, Sewage Disposal, Drain, and Pipe Laying Contractor		
C-43a	Reconditioning and Repairing Pipeline Contractor		
C-44	Sheet Metal Contractor		
C-44a	Gutters Contractor		
C-44b	Awnings and Patio Cover Contractor		
C-48	Structural Steel Contractor		

Job No. 09-01 K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5 MG YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR, PACKAGE C – WATER MAIN INSTALLATION, KALĀHEO,

	Contractor Classification	Name of Joint Contractor or Subcontractor	License Number
C-48a	Steel Door Contractor		
C-49b	Hot Tub and Pool Contractor		
C-51	Tile Contractor		
C-51a	Cultured Marble Contractor		
C-51b	Terrazzo Contractor		
C-52	Ventilating and Air Conditioning Contractor		
C-55	Waterproofing Contractor		
C-56	Welding Contractor		
C-57	Well Contractor		
C-57a	Pumps Installation Contractor		
C-57b	Injection Well Contractor		
C-60	Solar Power Systems Contractor		
C-61	Solar Energy Systems Contractor		
C-61a	Solar Hot Water Systems Contractor		
C-61b	Solar Heating and Cooling Systems Contractor		
C-62	Pole and Line Contractor		
C-62a	Pole Contractor		
C-63	High Voltage Electrical Contractor		
C-68	Classified Specialist		
	Licensed Surveyor		
	Licensed Geotechnical Engineer		
	Licensed Structural Engineer		
	Archaeologist		
	Cultural Monitor		
	Licensed Civil Engineer		
	Supervising Control and Data Acquisition (SCADA) Contractor		
*			

Job No. 09-01 K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5 MG YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR, PACKAGE C – WATER MAIN INSTALLATION, KALĀHEO,

	Contractor Classification	Name of Joint Contractor or Subcontractor	License Number
*			
*			
*			
*			
*			

* Contractor to add licenses as required to complete the scope of work. Attach additional sheet as needed.

It is understood and agreed that the Department reserves the right to reject any and/or all offers and waive any defects when, in the Department’s opinion, such rejection or waiver shall be for the best interest of the Department.

For purpose of evaluating the criterion described in this solicitation, it is understood and agreed that offers will be compared on the basis of the Total Sum Offer which shall be considered to be the total sum of actual or corrected amounts proposed on each item. The offerors signed Offer shall constitute the Offeror’s official offer. The Department reserves the right to designate the contract amount based on selected Offeror’s Total Sum Offer depending on the funds available for this Project.

It is also understood and agreed that the work called for under this Project must and shall be completed within **Nine Hundred (900)** consecutive calendar days after written notice has been given to the successful Offeror to commence work. It is also understood and agreed that the quantities given herewith are approximate only and are subject to increase or decrease and that the undersigned will perform all quantities of work, as either increase or decrease, in accordance with the provisions of the specifications.

It is also understood and agreed that the estimated quantities shown for items for which a UNIT PRICE is listed in the Offer are only for the purpose of comparing on a uniform basis offers offered for the work under this contract, and the undersigned agrees that the undersigned is satisfied with and will not dispute said estimated quantities as a means of comparing the offers. It is understood and agreed that the Offeror will make no claims for anticipated profit or loss of profit because of a difference between quantities of the various classes of work done or the materials and equipment actually installed and the said estimated quantities. On UNIT PRICE offers, payment will be made only for the actual number of units incorporated into the finished project at the contract UNIT PRICE.

It is also understood and agreed that if the product of the UNIT PRICE offer and the number of units does not equal the total amount stated by the Offeror in the offer for any item, it will be assumed that the error was made in computing the total amount. For purpose of evaluating the criterion described in this solicitation, the stated UNIT PRICE alone will be considered as representing the Offeror’s intention and the total amount offered on such item shall be considered to be the amount arrived at by multiplying the UNIT PRICE by the number of units.

It is also understood and agreed that the liquidated damages in the amount of **\$1,000.00** for each and every calendar day in excess thereof prior to completion of the contract beyond the specified and approved completion date, shall be withheld from payments due to the Contractor, pursuant to the Damages for Delay provision contained in this solicitation.

Job No. **09-01 K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5 MG YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR, PACKAGE C – WATER MAIN INSTALLATION, KALĀHEO,**

It is also understood and agreed that if this offer is accepted, the successful offeror will contract with the Board and said offeror shall furnish the required bonds to the Board within ten (10) days from the date of receiving from the Board the contract prepared and ready for execution.

It is further understood and agreed that the successful offeror will provide all necessary materials, labor, tools, equipment, and other incidental necessary to do all the work and furnish all the materials specified in the contract in the manner and time herein prescribed and according to the requirements of the Department as therein set forth.

The undersigned further understands and agrees that by submitting this Offer, 1) the Offeror is declaring that the Offer is not in violation of Chapter 84, Hawai'i Revised Statutes, and 2) Offeror is certifying that the price(s) submitted was (were) independently arrived at without collusion.

It is also understood and agreed that if this Offer is accepted and the undersigned shall fail to or neglect to contract as aforesaid, the Board may determine that the offeror has abandoned the contract and thereupon forfeiture of the security accompanying the Offer shall operate and the same shall become the property of the Board.

Enclosed herewith is a Bidder's Bond (Bid Security)	()	for the sum
Surety Bond	()	
Legal Tender	()	
Certificate of Deposit	()	
Share Certificate	()	
Cashier's Check	()	
Treasurer's Check	()	
Teller's Check	()	
Certified Check	()	

of _____ DOLLARS
(\$ _____) payable to the Department of Water, being not less than the sum required under Sub-Section 2.9 "Bid Security" of the "General Provisions for Construction Contracts of the Department of Water", dated April 25, 2016.

Evidence of the undersigned Offeror having the authority to submit this Offer and to enter a contract is herewith furnished.

Respectfully submitted,

Name of Offeror

Authorized Signature

Print/Type Name & Title of above

Address, Zip Code

Telephone

Contractor's License No.

State of Hawai'i General Excise Tax License No.

Federal Employer Identification No.

Type of Organization: (Please designate)

- Sole Proprietorship Partnership
- Corporation Joint Venture
- Other (*please specify*) _____

State of Incorporation: Hawai'i Other (*please specify*) _____

Name of Performance Bond Surety Co. _____

Address _____

Authorized to do Business in the State of Hawai'i? Yes or No

If corporation, state who will sign contract and signatory's title:

Name	Title
_____	_____
Name	Title
_____	_____

If the Offeror is a CORPORATION, the legal name of the corporation shall be set forth on the Offer, together with the signature(s) of the Officer(s) authorized to sign on behalf of the corporation and the corporate seal affixed thereto. Evidence of the authority of the Officer(s) to sign on behalf of the Corporation SHALL be attached to this page and included in the Offer. Acceptable evidence of authority to sign includes, but is not limited to, a copy of the articles of incorporation, corporate resolution, or corporate by-laws. (See HRS Ch. 415, Hawai'i Business Corporation Act).

If the Offeror is a LIMITED LIABILITY COMPANY, the legal name of the company shall be set forth on the Offer, together with the signature(s) of the member of the limited liability company or manager of the manager-managed limited liability company authorized to sign on behalf of the entity. Evidence of the authority of the Officer(s) authorized to sign on behalf of the company SHALL be attached to this page and included in the Offer.

If the Offeror is a PARTNERSHIP, the legal name of the firm shall be set forth on the Offer, together with the signature(s) of the General Partner(s) authorized to sign on behalf of the partnership. Evidence of the authority of the General Partner(s) authorized to sign on behalf of the partnership SHALL be attached to this page and included with the Offer. Acceptable evidence of authority to sign for the partnership includes, but is not limited to, a copy of the partnership registration statement or authorization signed by all of the partners. (See HRS Ch. 425, Partnerships).

If Offeror is a SOLE PROPRIETORSHIP, Offeror's signature shall be placed above.

NOTE: PLEASE DO NOT DETACH THIS SAMPLE OFFER FROM THE SPECIFICATIONS. FILL IN ALL BLANK SPACES WITH INFORMATION REQUIRED OR OFFER MAY BE REJECTED.

APPENDIX D: Insurance.

(Attached separately)

APPENDIX E: Wage Certificate for Service Contracts

WAGE CERTIFICATE FOR CONSTRUCTION CONTRACTS

Projects subject to HRS 104

TO: Chief Procurement Officer

SUBJECT: Solicitation No.: _____

PROJECT: _____

Pursuant to **HRS 103-55.5 Wages and Hours of Employees on Public Works Construction Contracts**, I hereby certify that if awarded the contract in excess of \$2,000, the work to be performed will be performed under the following conditions:

1. Individuals engaged in the performance of the contract on the job site shall be paid:
 - a. Not less than the wages that the director of labor and industrial relations shall have determined to be prevailing for corresponding classes of laborers and mechanics employed on public works projects; and
 - b. Overtime compensation at one and one-half times the basic hourly rate plus fringe benefits for hours worked on Saturday, Sunday, or a legal holiday of the State or in excess of eight hours on any other day; and
2. All applicable laws of the federal and state governments relating to workers' compensation, unemployment compensation, payment of wages, and safety shall be fully complied with.

Offeror: _____

By: _____

Title: _____

Date: _____

APPENDIX F: Certification of Compliance for Final Payment.

CERTIFICATION OF COMPLIANCE FOR FINAL PAYMENT
(Reference §3-122-112, HAR)

Reference: _____
(Contract Number) (IFB/RFP Number)

_____ affirms it is in
(Company Name)
compliance with all laws, as applicable, governing doing business in the State of Hawai‘i to include the following:

1. Chapter 383, HRS, Hawai‘i Employment Security Law – Unemployment Insurance;
2. Chapter 386, HRS, Worker’s Compensation Law;
3. Chapter 392, HRS, Temporary Disability Insurance;
4. Chapter 393, HRS, Prepaid Health Care Act; and

maintains a “Certificate of Good Standing” from the Department of Commerce and Consumer Affairs, Business Registration Division.

Moreover, _____
(Company Name)
acknowledges that making a false statement shall cause its suspension and may cause its debarment from future awards of contracts.

Signature: _____

Print Name: _____

Title: _____

Date: _____

APPENDIX G: Apprenticeship Program.

Bidders seeking preference for this shall:

- a. Be a party to an apprenticeship program registered with the State Department of Labor and Industrial Relations (DLIR) at the time of its Offer for each apprenticeable trade the Proposer will employ to construct the public works project for which the Offer is made; and
- b. For each apprenticeable trade the proposer will employ for this project, submit with its Offer fully executed and authorized CERTIFICATION OF BIDDER'S PARTICIPATION IN APPROVED APPRENTICESHIP PROGRAM UNDER ACT 17. Schedule F attached to this solicitation verifying participation in apprenticeship program(s) registered with the DLIR.
- c. The Contractor shall certify each month that work is being conducted on the project and that it continues to be a participant in the relevant apprenticeship program for each trade it employs. Monthly certification shall be made on MONTHLY REPORT OF CONTRACTOR'S PARTICIPATION IN APPROVED APPRENTICESHIP PROGRAM UNDER ACT 17 (Schedule F-I).

SCHEDULE F - CERTIFICATION OF BIDDER'S PARTICIPATION IN APPROVED APPRENTICESHIP PROGRAM UNDER ACT 17

I. Bidder's Identifying Information			
A. Legal Business Name:			
B. Project Bid Title & Reference No.:			
C. Contact Person's Name:			
1. Phone No.:		2. E-Mail:	
II. Apprenticeable Trades To Be Employed*	B. Apprenticeship Sponsor* (One Sponsor Per Form)	C. No. Enrolled (# of apprentices currently enrolled as of bidder's request date)	D. No. Completed (# of apprentices who completed the apprenticeship program in the 12 months prior to request date)
A. (List)			
4.1			
4.2			
4.3			
4.4			
4.5			
4.6			
III. Bidder's Certification			
I certify that the above information is accurate to the best of my knowledge, I understand that my willful misstatement of facts may cause forfeiture of the preference under Act 17 and may result in criminal action. I give permission for outside sources to be contacted and for them to disclose any information necessary to verify the bidder's preference.			
_____		_____	
A. Name (Type)		B. Title	
_____		_____	
C. Signature (original signature required)		D. Date	
IV. Apprenticeship Sponsor's Contact Information			
A. Training Coordinator's Name: _____			
B. Address: _____			
C. Phone No.: _____ D. E-Mail: _____ E. Fax No: _____			
V. Apprenticeship Program Sponsor's Certification			
I certify that the above information is accurate to the best of my knowledge. I understand that my willful misstatement of facts may cause forfeiture of the bidder's preference and may result in criminal action. I give permission for outside sources to be contacted and for them to disclose any information necessary to verify the bidder's preference under Act 17.			
_____		_____	
A. Name of Authorized Official		B. Title	
_____		_____	
C. Signature (original signature required)		D. Date	

* Name of Apprenticeable Trade and Apprenticeship Sponsor must be the same as recorded in the List of Construction Trades in Registered Apprenticeship Programs that is posted on the State Department of Labor and Industrial Relations website. (Rev. 08/25/2010)

SCHEDULE F-1 - MONTHLY REPORT OF CONTRACTOR'S PARTICIPATION IN APPROVED APPRENTICESHIP PROGRAM UNDER ACT 17

I. Contractor's Identifying Information		II. Reporting Period	
A. Legal Business Name:		A. Month: (choose)	B. Year: (choose)
B. Project Bid Title & Reference No.:			
C. Contact Person's Name:			
1. Phone No.:		2. E-Mail:	
III. Apprenticeship Program (Complete a separate form for <i>each</i> apprenticeship program in which workers are employed on the project)			
15.1 Contractor was a party to an apprenticeship program or programs with the following sponsor: (Give sponsor's name(s).*		15.2 Was the contractor a party to the program during the <i>entire</i> report month?	
		1. YES <input type="checkbox"/>	
		2. NO <input type="checkbox"/> If NO, state applicable period and why (may be subject to sanctions.)	
III. Contractor's Certification			
I certify that the above information is accurate to the best of my knowledge. I understand that my willful misstatement of facts may cause forfeiture of the preference under Act 17 and may result in criminal action. I give permission for outside sources to be contacted and for them to disclose any information necessary to verify the bidder's preference.			
_____		_____	
A. Name (Type)		B. Title	
_____		_____	
C. Signature (original signature required)		D. Date	
IV. Apprenticeship Sponsor's Contact Information			
A. Training Coordinator's Name: _____			
B. Address: _____			
C. Phone No.: _____		D. E-Mail: _____	
E. Fax No: _____			
V. Apprenticeship Program Sponsor's Certification			
I certify that the above information is accurate to the best of my knowledge. I understand that my willful misstatement of facts may cause forfeiture of the bidder's preference and may result in criminal action. I give permission for outside sources to be contacted and for them to disclose any information necessary to verify the bidder's preference under Act 17.			
_____		_____	
A. Name of Authorized Official		B. Title	
_____		_____	
C. Signature (original signature required)		D. Date	

* Name of Name of Apprenticeship Sponsor must be the same as recorded in the list of Construction Trades in Registered Apprenticeship Programs that is posted on the State Department of Labor and Industrial Relations website. (Rev. 08/25/2010)

APPENDIX H: Notice of Intent to Propose.

NOTICE OF INTENT

DATE

Chief Procurement Officer
Department of Water
County of Kaua'i
4398 Pua Loke Street
Lihu'e, HI 96766

Dear Sir:

In accordance with the Provisions of Section 103D-310, Hawai'i Revised Statutes, you are hereby notified that it is the intent of the undersigned to offer on **JOB NO. 09-01 K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5 MG YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR, PACKAGE C – WATER MAIN INSTALLATION, KALĀHEO,, KAUA'I, HAWAI'I**, for which Offers will be due on **Friday, May 4, 2022** as required.

I am informed that this Notice of Intent must be received by the Manager no later than 4:30 p.m. Hawai'i Standard Time on **Wednesday, April 27, 2022.**

VERY TRULY YOURS,

SIGNATURE

PRINT OR TYPE NAME & TITLE OF SIGNER

Hawai'i State Specialty License
Type and Classification:

NAME OF FIRM

CONTRACTORS LICENSE NO.

Hawai'i State Business
License No.:

ADDRESS

CITY, STATE & ZIP CODE

TELEPHONE NO.

Job No. **09-01 K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5 MG YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR, PACKAGE C – WATER MAIN INSTALLATION, KALĀHEO,**

All prospective offerors must be currently licensed by the Hawai'i Department of Commerce and Consumer Affairs, Division of Professional and Vocational Licensing.

"A" general engineering contractors and "B" general building contractors are reminded that due to the Hawai'i Supreme Court's January 28, 2002 decision in Okada Trucking Co., Ltd. v. Board of Water Supply, et al., 97 Haw. 450(2002), they are prohibited from undertaking any work, solely or as part of a larger project, which would require the general contractor to act as a specialty contractor in any area where the general contractor has no license. Although the "A" and "B" contractor may still submit a Offer on and act as the "prime" contractor on an "A" or "B" project (See, HRS §444-7 for the definitions of an "A" or "B" project.), respectively, and the "A" and "B" contractor obtains "C" specialty contractor's licenses either on its own, or automatically under HAR §16-77-32.). The remaining work must be performed by appropriately licensed entities. It is the sole responsibility of the contractor to review the requirements of this project and determine the appropriate licenses that are required to complete the project.

APPENDIX I: “DWSRF” Boilerplate and Cross-Cutter Agency Consultation – Federal Requirements for Consultants and Contractors

(Attached separately)

APPENDIX J: NPDES Documents

(Attached separately)

APPENDIX K: Archaeological Inventory Survey

(Attached separately)

APPENDIX L: Hazardous Materials Survey Report

“Hazardous Materials Survey Report, Kalāheo Water Treatment Plant Improvements – Selected Structures, Kaua'i, Hawai'i, dated June 29, 2011

(Attached separately)

APPENDIX M: Employment of State Residents on Construction Procurement Contracts.

1) Definitions

“Contract” means contracts for construction under Chapter 103D HRS.

“Contractor” has the same meaning as in section 103D-104, HRS; provided that contractor includes a subcontractor where applicable

“Construction” has the same meaning as in section 103D-104 HRS

“Procurement Officer” has the same meaning as in section 103D-104 HRS

“Resident” means a person who is physically present in the state at the time the person claims to have established the person’s domiciled in the state and shows the person’s intent is to make Hawai‘i the person’s primary residence.

“Shortage trade” means a construction trade in which there is a shortage of Hawai‘i residents qualified to work in the trade.

2) Requirements of Contractor

The contractor awarded this contract shall ensure that Hawai‘i Residents compose not less than eighty percent (80%) of the workforce employed to perform this Contract, calculated as follows:

The eighty percent (80%) requirement shall be determined by dividing the total number of hours worked on a contract by Residents by the total number of hours worked by all employees of the Contractor in the performance of the Contract. Hours worked for any subcontractor of the contractor shall count towards the calculation for purposes of this subsection. The hours worked by employees within shortage trades, as determined by the Department of Labor and Industrial Relations, shall not be included in the calculations for purposes of this subsection.

This requirement shall be applicable during the entire duration of this Contract. A notarized Certification for Employment of State Residents on Construction Procurement Contracts (Schedule I) shall be submitted on a monthly basis with your request for progress payments. If no request for progress payments are made for any month, the Contractor is still responsible to submit the certification on a monthly basis.

3) Penalties

Failure to comply with this requirement shall be subject to any of the following sanctions:

- A. Temporary suspension of work on the project until the Contractor or subcontractor complies with Act 68;
- B. Withholding of payment on the Contract or subcontract as applicable, until the Contractor or subcontractor complies with Act 68;
- C. Permanent disqualification of the Contractor or subcontractor from any further work on the project;

- D. Recovery by the Department of any moneys expended on the Contract or subcontract, as applicable; or
- E. Proceedings for debarment or suspension of the contractor or subcontractor under section 103D-702.

4) Conflict with Federal Law

Act 68 shall not apply if the application of the Act is in conflict with any federal law, or if application of Act 68 will disqualify the Department from receiving federal funds or aid.

CERTIFICATION OF COMPLIANCE
FOR
EMPLOYMENT OF STATE RESIDENTS
ACT 68, SESSION LAWS OF HAWAI'I 2010

Project Title: _____

DOW Project No.: _____

Contract No.: _____

As required by Act 68, Session Laws of Hawai'i 2010 – Employment of State Residents on Construction Procurement Contracts, I hereby certify under oath, that I am an officer of _____ (*Name of Company*) and for the month of _____, 20____, _____ (*Name of Company*) is in compliance with Act 68, SLH 2010, by employing a workforce of whom not less than eighty percent are Hawai'i residents, as calculated according to the formula in the solicitation, to perform this Contract.

- I am an officer of the Contractor for this contract.
- I am an officer of the Subcontractor for this contract.

CORPORATE SEAL

(Name of Company)

(Signature)

(Print Name)

(Print Title)

NOTARY CERTIFICATION

APPENDIX N: Certification of Compliance with HRS 396-18, Safety and Health Programs for Contractor Bidding On Board Construction Jobs

PROJECT NAME: _____

SOLICITATION NO.: _____

This is to certify that the undersigned will comply with the requirements of HRS 396-18, as follows:

(A) Pursuant to HRS 396-18, all bids and proposals in excess of \$100,000 shall include a signed certification from the bidder that a written safety and health plan for the job will be available and implemented by the notice to proceed dates of the project. The written safety and health plan shall include:

- (1) A safety and health policy statement reflecting management commitment;
- (2) A description of the safety and health responsibilities of all levels of management and supervisors on the job, and a statement of accountability appropriate to each;
- (3) The details of:
 - (a) The mechanism for employee involvement in job hazard analysis;
 - (b) Hazard identification, including periodic inspections and hazard correction and control;
 - (c) Accident and “near-miss” investigations; and
 - (d) Evaluations of employee training programs.
- (4) A plan to encourage employees to report hazards to management as soon as possible and to require management to address these hazards promptly; and
- (5) A certification by a senior corporate or company manager that the plan is true and correct.

(B) Failure to submit the required certification may be grounds for disqualification of the bid.

(C) Failure to have available on site or failure to implement the written safety and health plan by the project’s Notice to Proceed Dates shall be considered willful noncompliance and be sufficient grounds to disqualify the award and terminate the contract.

Name of Contractor: _____

Signature and Title: _____

Date: _____

APPENDIX O: Special Provisions.

TABLE OF CONTENTS FOR SPECIAL PROVISIONS

SECTION SP-1 – GENERAL REQUIREMENTS

<u>SECTION</u>	<u>DESCRIPTION</u>
1.1	General Provisions, Specifications and Standard Details
1.2	Preconstruction Conference
1.3	Contractor’s Responses by Hardcopy or Facsimile
1.4	Failure to Complete On Time and Liquidated Damages
1.5	Measurements
1.6	Project Record Drawings
1.7	Substitutions
1.8	Storage, Work Zone, Construction Access
1.9	Preservation of Property
1.10	Extra Work
1.11	Building Laws
1.12	Delivery of Materials at Site
1.13	Defective Materials
1.14	Clean-up
1.15	Environmental Protection
1.16	Project Sign
1.17	Submittals
1.18	Contractors Operations

SECTION SP-2 – WATER SYSTEM STANDARDS – OTHER ADDENDUMS AND AMENDMENTS

SECTION SP-3 – SECTION SP-3 – DUCTILE IRON PIPE AND PVC (C-900) PIPE

Job No. 09-01 K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5 MG YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR, PACKAGE C – WATER MAIN INSTALLATION, KALĀHEO,

SECTION SP-4 - PIPING AND FITTINGS

SECTION SP-5 - REMOVAL AND DISPOSAL OF HAZARDOUS MATERIALS

SECTION SP-6 - ENVIRONMENTAL POLLUTION CONTROL

SECTION SP-7 – DOOR HARDWARE

SECTION SP-8 - ALUMINUM HORIZONTAL ACCESS DOORS

SECTION SP-9 - PROTECTIVE COATINGS

SECTION SP-10 – EXTERIOR COATINGS

SECTION SP-11 - ROOF SLAB

SECTION SP-12 - CELLULAR CONFINEMENT SYSTEM FOR CONSTRUCTION ACCESS

SECTION SP-13 – STEEL DOORS AND FRAMES

SECTION SP-14 - ALUMINUM FIXED LOUVER

SECTION SP-15 - HYDROPNEUMATIC BOOSTER PUMP PACKAGE

SECTION SP-16 - GEOTECHNICAL REQUIREMENTS AND MONITORING

SECTION SP-17 - HYDROMULCH

SECTION SP-18 - ROOT BARRIER

SECTION SP-19 – FIELD OFFICE

SECTION SP-20 - ELECTRICAL WORK FOR PACKAGE A – 0.5 MG YAMADA RESERVOIR

SECTION SP-21 - SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA) SYSTEM FOR
PACKAGE A – 0.5 MG YAMADA RESERVOIR

SECTION SP-22 - ELECTRICAL WORK FOR PACKAGE B – 0.1 MG CLEARWELL RESERVOIR

SECTION SP-23 - SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA) SYSTEM FOR
PACKAGE B – 0.1 MG CLEARWELL RESERVOIR

SECTION SP-24 - NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMITS

SECTION SP-25 - CONTROLLED LOW STRENGTH MATERIAL

SECTION SP-26 - MISCELLANEOUS REQUIREMENTS

**Job No. 09-01 K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5 MG
YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR, PACKAGE C – WATER
MAIN INSTALLATION, KALĀHEO,**

SECTION SP-27 - CONSTRUCTION RIGHT-OF-ENTRY

SECTION SP-28 - CEMENT RUBBLE MASONRY

SECTION SP-29 - GROUTED RUBBLE PAVEMENT

SECTION SP-30 – DRINKING WATER STATE REVOLVING FUND

SECTION SP-31 - PERMITS

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SPECIAL PROVISIONS

SECTION SP-1 – GENERAL REQUIREMENTS

- 1.1 GENERAL PROVISIONS, SPECIFICATIONS, AND STANDARD DETAILS: The special provisions, plans, general provisions, Water Standards, DPW Standard Specifications and Details, contract documents and all supplemental documents are essential parts of the contract, and a requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for the complete work. In case of conflict or discrepancy within any part of the contract, the stricter requirements, including Hawai'i State Statutory requirements, shall govern. Unless it is apparent that a different order of precedence is intended, the special provisions shall govern over plans, general provisions and Water Standards; plans shall govern over general provisions; general provisions shall govern over Water Standards; Water Standards shall govern over DPW Standard Specifications; figured dimensions and drawings take precedence over measurements by scale, and detail drawings; instructions to proposers shall be incorporated and made a part of the special provisions.
- 1.1.01 GENERAL PROVISIONS FOR CONSTRUCTION CONTRACTS OF THE DEPARTMENT OF WATER, COUNTY OF KAUA'I: The “GENERAL PROVISIONS FOR CONSTRUCTION CONTRACTS OF THE DEPARTMENT OF WATER, COUNTY OF KAUA'I”, April 25, 2016 as amended, is by reference incorporated herein and made a part of these specifications.
- 1.1.02 WATER SYSTEM STANDARDS: The “WATER SYSTEM STANDARDS”, 2002, as amended, as adopted by the Department of Water, County of Kaua'i; Board of Water Supply, City and County of Honolulu; Department of Water Supply, County of Maui; Department of Water Supply, County of Hawai'i is by reference incorporated herein and made a part of these specifications. These specifications are not bound in these contract documents, but shall by reference be incorporated herein and made a part of these specifications.

SECTION 302 - WATER MAINS AND APPURTENANCES

The following shall supplement the applicable subsections of Division 300 - Construction of the “Water System Standards”, 2002.

Make the following amendments to said section:

SECTION 302.02 – TRENCH EXCAVATION

Add the following paragraph to the “A. General” subsection:

Because construction will occur within residential neighborhoods, the Contractor shall secure all areas under construction with due regard for the safety of all persons and property at all times.

Amend the first paragraph of the “B. Payment” subsection to read:

Payment for trench excavation (without classification), backfill, select borrow, pipe cushion, and cost to safely secure all areas under construction will not be paid for separately but shall

be included in the Unit Price for the furnishing and installation of the various items in the Proposal.

SECTION 302.03 – TRENCH BACKFILL

Add the following paragraph to the “A. General” subsection:

If backfilling ground is continuously wet, pipe cushion and backfill material shall consist of coarse aggregate, ASTM C 33, Size Number 67, and shall be completely encapsulated with non-woven geotextile filter fabric unless approval for other material is granted.

Amend the first paragraph of the “G. Payment” subsection to read:

Payment for aggregate and sand pipe cushion surrounding the pipe, pipe bedding, non-woven geotextile filter fabric pipe cushion encasement, trench backfill, select borrow, warning tape, and backfill at valve boxes, meter boxes, manholes, and handholes will not be paid for separately but shall be included in the Unit Price for the furnishing and installation of the various items in the Proposal.

SECTION 302.04 – SHEATHING

Add the following paragraph to the “A. General” subsection:

Contractor shall provide and maintain sheathing and bracing as necessary to support excavation and trenching and shall comply with Occupational Safety & Health Administration (OSHA) requirements. The contractor shall deem a competent person for trench excavation and that person shall be on-site during all trench excavation and backfill.

Amend the entire “B. Payment” subsection to read:

Payment for installation and removal of sheathing and bracing, and for additional excavation (without classification), additional aggregate and sand cushion to surround the pipe, additional non-woven geotextile filter fabric to surround the cushion, additional bedding, and additional backfill required because of sheathing or bracing work will not be paid for separately but shall be included in the Unit Price for the furnishing and installation of the various items in the Proposal.

SECTION 302.05 – DEWATERING

Amend the first paragraph of the “A. General” subsection to read:

In locations where water is present in the trench, the Contractor must dewater by pumping or other means to keep the trench free of water during the installation of pipe cushion, the pipe itself, the testing, connection, relocation, lowering of the water mains, and until backfilling is completed to a point 12 inches above the top of the pipe. The Contractor shall provide proper facilities for delivering all pump water to its intended outfall location and attain all necessary permits required for discharge.

If the Contractor elects to discharge dewatering effluent into State Waters or existing drainage systems, the Contractor shall obtain NPDES General Permit Coverage authorizing discharges associated with construction activity dewatering from the Department of Health, Clean Water Branch (DOW-CWB). The Contractor shall prepare and submit permit application (CWB-NOI Form G) to DOH-CWB and shall not begin dewatering activities until DOH-CWB has issued Notice of General Permit Coverage (NGPC) and shall conduct dewatering operations in accordance with the conditions in NGPC. Contractor shall submit a copy of NPDES dewatering Application and Permit to the Manager.

Amend the entire “B. Payment” subsection to read:

Payment for dewatering activities, including but not limited to the preparation and implementation of NPDES General Permit Coverage authorizing discharges associated with construction activity dewatering, and the installation, maintenance, monitoring, and removal of Best Management Practices (BMPs), will not be paid for separately but shall be included in the Unit Price for the furnishing and installation of the various items in the Proposal.

For all fines received by the Department for non-compliance with the Notice of General Permit Coverage (NGPC), the Contractor shall reimburse the Department within 30 days for the full amount of the outstanding cost the Department has incurred, or the Department will deduct the cost from the Contractor’s progress payment.

SECTION 302.06 – “ADOBE” OR CLAY

Amend the entire “B. Payment” subsection to read:

Exclusive of the payments due for work defined in Section 302.07 – MUD REMOVAL AND CRUSHED ROCK TRENCH STABILIZATION, no separate payment for excavation (without classification) and removal of adobe, clay or other unsuitable material from the pipe trench or for necessary backfill material approved by the Manager to replace those materials will be made; the compensation for such work shall be deemed to be included in the Unit Price for the furnishing and installation of the various items in the Proposal.

SECTION 302.07 – MUD REMOVAL AND CRUSHED ROCK TRENCH STABILIZATION

Amend the first paragraph of the “B. Payment” subsection to read:

Payment for excavation (without classification) to remove and dispose of mud or undesirable materials from the pipe trench whether native or caused by contractor means and methods will not be paid for separately but shall be included in the Unit Price for the furnishing and installation of the various items in the Proposal.

SECTION 302.08 – BLASTING

Amend the entire “A. General” and “B. Payment” subsections to read:

No blasting shall be allowed on this project.

SECTION 302.09 – EXCAVATION FOR MANHOLES

Amend the second paragraph of the “B. Payment” subsection to read:

Payment for excavation (without classification) for manholes will not be paid for separately but shall be deemed to be included in the Unit Price for the furnishing and installation of Manholes.

SECTION 302.10 - EXCAVATION FOR THRUST BLOCKS, BEAMS, AND TEST BLOCKS

Amend the entire “B. Payment” subsection to read:

Payment for excavation (without classification) and backfill of concrete thrust blocks, thrust beams, reaction blocks, and test blocks will not be paid for separately but shall be included in the Unit Price for installation of Concrete Thrust Blocks, Thrust Beams, Reaction Blocks, and Test Blocks or Waterline installation line items.

SECTION 302.11 – SURPLUS EXCAVATION

Amend the entire “B. Payment” subsection to read:

Payment for the removal and disposal of surplus excavation material will not be paid for separately but shall be included in the Unit Price for the furnishing and installation of the various items in the Proposal.

SECTION 302.12 - DUCTILE IRON PIPE

Add the following paragraph to the “A. General” subsection:

Transition couplings shall be Romac Style “501”, Style “RC501”, or approved equal. D.I. to A.C. transition couplings shall be 14" in length.

Add the following paragraphs to the “E. Payment” subsection:

The Unit Price for furnishing and installation of the various sizes of Ductile Iron Pipe shall be inclusive of trench excavation (without classification), trench backfill, pipe cushion, warning tape, sheathing and dewatering of trench, removal and disposal of adobe, clay, mud, and other unsuitable material from the trench, and removal and disposal of surplus excavation material, and all associated cost for licensed Geotechnical Engineer monitoring, analysis, and testing.

Payment for furnishing and installation of transition couplings shall not be made directly, costs for furnishing and installation of transition couplings shall be included in the Lump Sum for the various Connections to Existing Water Mains in the Proposal.

SECTION 302.14 PLASTIC PIPE

Add the following paragraphs to the “A. General” subsection:

The contractor shall furnish and install Polyvinyl Chloride (PVC) pipe for this project if required. All types and sizes of PVC pipes shall be AWWA C900, Pressure Class 200, DR14 pipe for pipes larger than 2 ½" or schedule 80 PVC pipe for sizes 2 1/2" and smaller.

Pipe cushion material as called for on the plans shall adhere to the requirements of "Water System Standards" Section 209.02, Pipe Cushion. When ground water is encountered or when required by the Engineer, the pipe cushion shall be wrapped in non-woven geotextile fabric in accordance with the "Water System Standards" Section 212.05, Geotextile Fabrics. The contractor shall retain the services of a licensed Geotechnical Engineer to monitor the quality of pipe cushion material, installation, and compaction of the pipe cushion, geotextile encasement, and trench backfill. The Department of Water will require periodic sieve testing of the pipe cushion material during the course of construction.

If PVC installation will be within State Highways Right-of-Way, installation, work, and materials used for this project shall comply with the requirements in Section 624 – Water System, Section 703.21 – Trench Backfill Material, Section 716 – Geotextiles, and Section 716.03 – Geotextiles for Underdrain Applications of the "Specifications for Road and Bridge Construction", State of Hawai'i, dated 2005, unless otherwise approved by the authoritative agency.

Transition couplings shall be Romac Style "501", Style "RC501", or approved equal. C-900 PVC to A.C. transition couplings shall be 14" in length.

Amend the first paragraph of the "B. Payment" subsection to read:

Payment for furnishing and installation of various sizes of PVC Pipe including all necessary joints accessories and fusion process and accompanying ground restraints, will be made at the respective Unit Price per linear foot based on the actual linear feet of PVC pipe installed (exclusive of valves, fittings, bends, and adapters), cleaned or pigged and successfully hydrotested in the field.

Add the following paragraphs to the "B. Payment" subsection:

The Unit Price for furnishing and installation of the various sizes of PVC Pipe shall be inclusive of trench excavation (without classification), trench backfill, pipe cushion, geotextile filter fabric encasement, conducting cable, warning tape, sheathing, removal and disposal of adobe, clay, mud, and other unsuitable material from the trench, removal and disposal of surplus excavation material, and all associated cost for licensed Geotechnical Engineer monitoring, analysis, and testing.

Payment for furnishing and installation of transition couplings shall not be made directly, costs for furnishing and installation of transition couplings shall be included in the Lump Sum for the various Connections to Existing Water Mains in the Proposal.

SECTION 302.15 - FITTINGS AND SPECIALS (DUCTILE IRON, CONCRETE CYLINDER, PLASTIC PVC PIPE)

Add the following paragraph to the "A. General" subsection:

The contractor shall furnish and install EBAA Iron Series 2000PV MEGALUG Mechanical Joint Restraint for plain end PVC pipe at all mechanical joint fittings and EBAA Iron Series 2100 MEGAFLANGE Restrained Flange Adapter for plain end PVC pipe at all flange joints. Both shall be installed in accordance with the manufacturer's guidelines.

Amend the first paragraph of the "B. Payment" subsection to read:

Payment for furnishing and installing Cast Iron and Ductile Iron Fittings will be made at the Lump Sum Price, complete in place. The Contractor shall be responsible for the actual number of cast iron and ductile iron fittings furnished, installed and tested in the field. If a line item for Cast Iron and Ductile Iron fittings is not specifically provided, the contractor shall include the cost in the furnishing and installation of the waterline unit price.

Amend the fourth paragraph of the "B. Payment" subsection to read:

Payment for furnishing and installation PVC Fittings, including copper toning wire will not be paid for separately but shall be included in the Unit Price for furnishing and installation of the various sized PVC Pipes in the proposal.

Amend the fifth paragraph of the "B. Payment" subsection to read:

Payment for furnishing and installation Flanged by Bell Adapters, Flanged Dismantling Joints, MEGALUG Mechanical Joint Restraint, and MEGAFLANGE Restrained Flange Adapters will not be paid for separately but shall be included in the Lump Sum Price for Cast Iron and Ductile Iron Fittings, in place complete.

SECTION 302.16 - GATE VALVES AND BUTTERFLY VALVES

Amend the first paragraph of the "A. General" subsection to read:

The contractor shall furnish and install all permanent and temporary gate valves and butterfly valves at locations shown on the plans or as directed by the Engineer. Unless otherwise specified, the installation shall be in accordance with the Standard Details. Specifications for furnishing and installing Temporary Gate Valves will comply with this section of the specification.

Amend the fourth paragraph of the "A. General" subsection to read:

Concrete anchor block with non-corrosive straps will not be required for this project.

Add the following paragraph to the "B. Payment" subsection:

The Unit Price for furnishing and installing Gate Valves and Butterfly Valves and furnishing and installing Temporary Gate Valves shall be inclusive of trench excavation (without classification), cast iron valve box, trench backfill, pipe cushion, warning tape, sheathing and dewatering of trench, removal and disposal of adobe, clay, mud, and other unsuitable material from the trench, and removal and disposal of surplus excavation material.

SECTION 302.17 - AIR RELIEF VALVES

Add the following paragraph to the “A. General” subsection:

Air relief valves shall be One-Inch Val-Matic Valve & Manufacturing Corp. Combination Air Valve 201C.2 with screened hood, or approved equal.

Amend the second paragraph of the “B. Payment” subsection to read:

The Unit Price for furnishing and installation of Air Relief Valve shall be full compensation for all labor, materials, tools and equipment for excavation (without classification) and backfill, sheathing and dewatering of trench, installation of copper pipes, fittings, various types of valves, ARV, cinder or crush rock cushion, brick saddle, ARV pipe stand, concrete footing, roofing felt, stainless steel straps, screened hood, paint, testing, and all other incidentals to complete this work.

SECTION 302.18 - SERVICE LATERALS, CONNECTIONS AND PIPES

Add the following paragraphs under “A. General” subsection:

New service laterals shall be terminated with an angle valve in the existing meter boxes to facilitate the reconnection to the water meter.

Where existing meters are located within private properties, the new service lateral will be terminated within the public right-of-way and include a new Type “B” or Type “X” meter box with cast iron cover.

When a new lateral is being installed for an existing Department of Water consumer, the contractor shall furnish and install lateral piping including all fittings and appurtenances between the new meter and the existing consumer piping and perform reconnection work, and include a new meter box and cover.

When an existing lateral is being abandoned, the contractor shall cut and plug the existing lateral at the main. The existing meter box and cover shall be cleaned and transported to the Department’s Baseyard in Līhu‘e or Puhi, unless otherwise directed by the Engineer.

Amend the entire “D. Payment” subsection to read:

Payment covered under service laterals and connections and appurtenances shall be as follows: Payment for furnishing and installing various sizes of new service laterals and service connections, regardless of the lengths of the laterals or connections, will be made at the Unit Price per each unit based on the actual number installed and tested.

The Unit Price for furnishing and installing various sizes of new service laterals, service connections, and appurtenances shall be full compensation for all labor, materials, tools, and equipment for all handling, hauling, unloading, placing, testing, and all other incidental necessary to complete the work.

No separate payment for the furnishing and installation of taps into mains, reconnections to existing consumer piping, temporary connections, cut and plug and removal of existing

laterals, transferal of meters, pipes, fittings, ball corps, ball stops, angle valves, globe valves, double hub fittings, tapping tees, service saddles, meter boxes and covers, meter splices, brass pipes, caps, PVC conduits, warning tape, polyethylene wrap, plastic lateral for isolation, nor any other appurtenances will be made. Additionally, no separate payment will be for trench excavation (without classification) and backfill, sheathing and dewatering of trench, pipe cushion, nor transporting existing meter boxes and covers to the Department's Baseyard in Līhu'e or Pūhi. The compensation for this work and items shall be deemed to be included in the Unit Price for New Service Laterals.

SECTION 302.19 – METER BOXES

Amend the entire "B. Payment" subsection to read:

Payment for the furnishing and installation of meter boxes including frames and covers will not be paid for separately but shall be included in the Unit Price for Service Laterals or Air Relief Valve Assemblies.

Payment for the furnishing and installation of Meter Boxes shall be full compensation for all labor, materials, tools and equipment for all handling, hauling, unloading, placing, bricks, concrete, cast iron covers, painting, concrete slabs and all other incidentals necessary to complete the work.

No separate payment for excavation (without classification) and backfill of Meter Boxes will be made; the compensation for such work shall be deemed to be included in the Unit Price for Service Laterals or Air Relief Valve Assemblies.

SECTION 302.20 - FIRE HYDRANTS

Amend the third paragraph of the "B. Payment" subsection into the following paragraphs:

Payment for excavation (without classification), backfill, sheathing and dewatering of trench, and fire hydrant markers will not be paid for separately but shall be included in the Unit Price for the furnishing and installation of Fire Hydrants.

No separate payment for the furnishing and installation of hydrant elbow, hydrant extension, pipe cushion, flat brick support, and all other appurtenances will be made; the compensation for such work shall be deemed to be included in the Unit Price for Fire Hydrants.

SECTION 302.21 - FIRE HYDRANT MARKERS

Amend the first paragraph of the "B. Payment" subsection to read:

Payment for hydrant markers will not be paid for separately but shall be included in the Unit Price for the furnishing and installation of Fire Hydrants.

SECTION 302.22 - CONCRETE BLOCKS, JACKETS, BEAMS, CURB GUARDS FOR FIRE HYDRANTS AND METER BOXES, MANHOLE AND VALVE BOX COLLAR

Amend the entire "B. Payment" subsection to read:

Job No. **09-01 K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5 MG YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR, PACKAGE C – WATER MAIN INSTALLATION, KALĀHEO,**

Payment for concrete reaction blocks, thrust beams, thrust blocks and test blocks will be made at the Unit Price per each either by specific proposal line item or as a portion within the furnishing and installation of waterline line item. The Unit Price for concrete reaction blocks, thrust beams, thrust blocks and test blocks shall be full compensation for all labor, materials, tools and equipment for all excavation (without classification), backfill, sheathing, dewatering, concrete, forms, tie wire and chairs, bracings, straps, structural struts, surface finishing, curing, mixing, hauling, furnishing and placing reinforcing steel, and all other incidental materials and work necessary to construct the concrete reaction block, thrust block or thrust beam, in place complete.

Payment for concrete jackets will be made at the Unit Price per linear feet of concrete jacket installed for the various sizes of pipe, regardless of pipe size either by specific proposal line item or as a portion within the furnishing and installation of waterline line item. The Unit Price for concrete jackets shall be full compensation for all labor, materials, tools and equipment for all excavation (without classification), backfill, sheathing, dewatering, concrete, forms, tie wire and chairs, bracings, straps, surface finishing, curing, mixing, hauling, furnishing and placing reinforcing steel, and all other incidental materials and work necessary to construct the concrete jackets in place complete.

Payment for concrete jackets for smaller utility conduits crossing the project's waterlines shall not be made separately. Costs for furnishing and installation of concrete jackets, including miscellaneous items such as warning tapes, shall be deemed to be included in the Unit Price for furnishing and installation of the various sizes and types of pipes in the Proposal.

SECTION 302.24 - VALVE BOXES

Amend the first paragraph of the "A. General" subsection to read:

Valve boxes for air relief valves, butterfly valves and cleanouts shall be installed in accordance with the Standard Details. Valve boxes for temporary and permanent gate valves shall be furnished and installed in conformance with Standard Detail V11 of the WATER SYSTEM STANDARDS or as defined on the construction drawing for this project. Valve boxes shall be installed 3 feet minimum clear from gutter, curbs, utilities and any structures. For this section, Valve Box specifications for Temporary and Permanent Gate Valves are identical.

Amend the entire "B. Payment" subsection to read:

Payment for the furnishing and installing of valve boxes including cast iron frames and covers and adjusting valve boxes to the required grade will not be paid for separately but shall be included in the Unit Price for Gate Valves or Temporary Gate Valves or Tapping Valves or Cleanout assemblies.

Payment shall be full compensation for all labor, materials, tools and equipment for all excavation (without classification) and backfill, cast iron frames and covers, concrete settlement slab, reinforced concrete collar and leveling slab, standpipe (concrete, cast iron, ductile iron, or welded steel pipe), brick leveling course, crushed rock fill, pipe cushion, painting, general area clean up, and all other incidentals necessary to complete the work.

No separate payment for backfilling around valve boxes with black sand, sand or coral chips and for temporary backfill and additional excavation (without classification) to expose the risers after chlorination will be made; the compensation for such work shall be deemed to be included in the Unit Price for Gate Valves, Temporary Gate Valves, Tapping Valves, or Cleanout assemblies.

SECTION 302.30 – CONNECTIONS, RELOCATIONS & LOWERING OF WATER MAINS AND LATERALS

Amend the first paragraph of the “A. General” subsection to read:

Whenever connections to, disconnections from, relocations to, or lowering of existing mains, service laterals, or hydrant laterals are required, the Contractor shall perform all work necessary for the installation of the new or temporary water facility or abandonment of the existing water facility, as shown on the plans, under the coordination of the Manager or his authorized representative.

Add the following paragraph under “A. General” subsection:

The contractor shall utilize temporary waterlines to provide continuous water service and fire protection to existing consumers, as needed.

For this project, Connections to Existing Water Main involve connecting to various types of pipe. The Contractor shall not saw or cut or damage existing asbestos cement pipe. Asbestos cement pipes, fittings, and appurtenances shall be removed at the nearest coupling. The Contractor shall remove and dispose of asbestos cement pipes, fittings, and appurtenances in accordance with Section 302.31.

Amend the entire “B. Payment” subsection to read:

Payment for Connection to Existing Water Main, Connection to Existing Service Lateral, or Connection to Existing Hydrant Lateral which may include the furnishing and installing of pipes, fittings, fire hydrants, gate valves, tapping sleeves and valves, service saddles, hub clamps and other appurtenant materials, will be included in the Lump Sum Price for Connection to Existing Water Main or in the Unit Price for Connection to Existing Service Lateral, Connection to Existing Hydrant Lateral, or temporary bypasses and disconnects.

The Lump Sum Price or Unit Price shall represent full compensation for furnishing all materials, labor, tools, equipment, and incidentals required for excavation (without classification), backfill, sheathing and dewatering of trench, relocating existing gate valves, connections, relocations, disconnections, removal, or lowering of the existing mains as called for on the plans and in accordance with these specifications and inclusive of all incidentals required to complete the work.

No separate payment for cutting, plugging, relocating existing main, lowering of existing mains, providing temporary water service (if necessary), providing temporary fire protection (if necessary), or abandoning of existing mains will be made; the compensation for such work shall be deemed to be included in the Lump Sum for Connections to Existing Water Main or

in the Unit Price for Connection to Existing Service Lateral or Connection to Existing Hydrant Lateral.

No separate payment for installation of bypass lines including cutting, plugging and abandoning existing bypass lines will be made; the compensation for such work shall be deemed to be included in the Lump Sum for Connections to Existing Water Main or in the Unit Price for Service Lateral Connections or Connection to Existing Hydrant Lateral.

SECTION 302.31 – REMOVING OR DEMOLISHING, REINSTALLING OR RETURNING EXISTING PIPES AND APPURTENANCES

Add the following paragraphs under “A. General” subsection:

The contractor shall be responsible for removal and disposal of existing pipes and appurtenances abandoned within the State and County Right-of-Way. Removal and disposal of pipes shall follow all applicable OSHA, HIOSH, State of Hawai‘i and Federal Regulations. Abatement personnel shall oversee removal and disposal, when required. Unless otherwise directed by the Manager, pipes and appurtenances shall become the property of the Contractor and shall be expeditiously removed from the construction site.

Care shall be exercised when removing and disposing of asbestos cement pipe and appurtenances. If the contractor causes the asbestos cement pipe or appurtenance to become friable, he will not be reimbursed for extra costs incurred to handle, containerize, transport, and dispose of the waste. Disposal of asbestos cement pipe and appurtenances shall be at an approved asbestos disposal site and all disposal related costs shall be borne by the contractor. Disposal of all hazardous materials shall be completed within 24 hours of removal from the water system and shall not be stored within the project site beyond the 24 hour period.

Temporary pipes, fittings, valves, cleanouts, valve boxes with frames and covers, and appurtenances that were installed to provide temporary water service and fire protection shall be salvaged, cleaned, and transported to the Department’s Baseyard in Līhu‘e or Puhi.

Amend the first paragraph of the “B. Payment” subsection to read:

Payment for the removal, cleaning, and transporting of existing fire hydrants, standpipes, cleanouts, and air relief valves will be made at the Unit Price per each unit, based on the actual number removed and accepted by the Manager. If a specific proposal line item is not provided, the contractor shall incorporate the costs into the unit price of the furnishing and installation of the applicable waterline. The Unit Price includes full compensation for all labor, materials, tools, and equipment for removing, cleaning, plugging existing water mains, providing temporary water service, restoring disturbed area, and transporting salvaged fire hydrants, standpipes, air relief valves, and appurtenances to the Department’s Baseyard in Līhu‘e or Puhi.

Add the following paragraphs to the “B. Payment” subsection:

Payment for removal of existing gate and tapping valves will be made at the Unit Price per each unit, based on the actual number removed and accepted by the Manager. If a specific proposal line item is not provided, the contractor shall incorporate the costs into the unit price

of the furnishing and installation of the applicable waterline. The Unit Price includes full compensation for all labor, materials, tools, and equipment for removing existing valve box components, removing concrete settlement slab, plugging of existing water mains, installing concrete and dirt backfilling, restoration of disturbed area, and cleaning and transporting the salvaged cast iron frames and covers to the Department's Baseyard in Līhu'e or Puhi.

Payment for removal of temporary gate valves and valve box components will be made at the Unit Price per each unit, based on the actual number removed and accepted by the Manager. If a specific proposal line item is not provided, the contractor shall incorporate the costs into the unit price of the furnishing and installation of the applicable waterline. The Unit Price includes full compensation for all labor, materials, tools, and equipment for removing the temporary gate valves and valve box components, removing concrete settlement slab, installing concrete and dirt backfill, restoration of disturbed area, and cleaning and transporting salvaged gate valves and cast iron frames and covers to the Department's Baseyard in Līhu'e or Puhi.

Payment for the removal of temporary pipes and fittings will be made at the Lump Sum or Unit Price for Removal Temporary Water Main. The Lump Sum or Unit Price includes full compensation for all labor, materials, tools, and equipment for excavating (without classification), sheathing, dewatering, disconnecting and removing the temporary pipe and fittings, backfill and restoration of disturbed area, and cleaning and transporting salvaged pipes and fittings to the Department's Baseyard in Līhu'e or Puhi.

Payment for the removal and disposal of existing pipes, fittings, and appurtenances within the State and County Right-of-Way will be made at the Lump Sum or Unit Price for Removal of Water Main. The Lump Sum or Unit Price shall be full compensation for all labor, materials, tools and equipment for excavating (without classification), sheathing, dewatering, disconnecting, removing, processing, storing, hauling, and disposing of abandoned pipes and fittings, backfill and restoration of disturbed area, abatement personnel, disposal and inspection fees, cutting and plugging of existing water mains and laterals, and all other incidental materials and work necessary for the complete removal of abandoned pipes, fittings, and appurtenances.

Payment for the removal and disposal of existing pipes and appurtenances not specified above shall be considered incidental and shall not be paid for separately but shall be included in the Unit Price or Lump Sum for the various items in the proposal. Payment shall be full compensation for all labor, materials, tools and equipment for excavating (without classification), sheathing, dewatering, disconnecting, removing, hauling, storing, and disposing of abandoned pipes and fittings, backfilling and restoring disturbed area, disposal and inspection fees, cutting and plugging of existing water mains and laterals, and all other incidental materials and work necessary for the complete removal of abandoned pipes and appurtenances.

SECTION 302.35 - VALVE MARKERS

Amend the entire "B. Payment" subsection to read:

Payment for the furnishing and installation of Valve Markers will not be paid for separately, but shall be included in the Unit Price for the installation of various sized of gate or tapping

valves. Payment shall be full compensation for all labor, materials, tools and equipment for all excavation (without classification), backfill, concrete, painting, and all other incidental materials and work necessary to complete the work.

SECTION 302.36 – SLOW CURING ASPHALT PAVEMENT (COLD MIX)

Amend “B. Payment”, replace the first paragraph with the following:

Payment for furnishing, placement, maintenance and removal of SLOW CURING ASPHALT (Cold Mix) shall be deemed to be included in the Unit Price for furnishing and installation of the various sizes and types of pipes in the Proposal.

SECTION 302.37 - RESTORING PAVEMENTS, DRIVEWAYS, SIDEWALKS, CURBS, GUTTERS, FENCES, WALLS, AND MISCELLANEOUS

Add the following paragraphs under “A. General” subsection:

Asphalt concrete (A.C.) pavement resurfacing work shall include cold planing a 2-inch thick layer of existing A.C. pavement and resurfacing with a minimum 2-inch thick layer of new A.C. pavement (State Mix IV or V). Cold planing and resurfacing of A.C. pavement shall be in accordance with the Hawai‘i Standard Specifications for Road and Bridge Construction, 2005. The contractor shall construct the project per the approved construction drawings details and notes and verify potential AC thicknesses that could be encountered prior to submitting a proposal.

Existing pavement striping disturbed by this project shall be restored using thermoplastic extrusion. Painting is not acceptable. Installation of thermoplastic extrusion shall be in accordance with the Hawai‘i Standard Specifications for Road and Bridge Construction, 2005.

Existing reinforced concrete sidewalks, curbs, gutters, ramps, driveways, and swales disturbed by this project shall be restored to State Highways Standards in accordance with the Hawai‘i Standard Specifications for Road and Bridge Construction, 2005 and the Highway’s Division, Design Branch, Standard Plans, 2008.

Amend the entire “C. Payment” subsection to read:

Unless otherwise specified, payment for restoring fences, mail boxes, walls, landscaping, highway signs, highway markers and reflectors, and thermoplastic pavement striping shall not be measured nor paid for directly but shall be considered incidental to the construction work.

Payment for Restoring A.C. Pavement, inclusive of base and subbase courses, will be made at the Unit Price per square yard based on the minimum quantity required to be replaced on the approved plans, measured on the basis of the area of trenches specified for excavation plus an additional of twelve inches on each side of the trench for restoration within the State Right-of-Way or six inches on each side of the trench for restoration within the County Right-of-Way. The Unit Price shall be full compensation for all labor materials, tools, and equipment, for all handling, removing, placing, maintaining and all other incidental materials and work necessary to complete the Restoring A.C. Pavement work.

Payment for Cold Planing Existing A.C. Pavement and A.C. Pavement Resurfacing will each be made at the Unit Price per square yard based on the minimum quantities required as noted on the approved plans. Each Unit Price shall be full compensation for all labor materials, tools, and equipment, for all handling, removing, placing, maintaining and all other incidental materials and work necessary to complete the Cold Planing of Existing A.C. Pavement and A.C. Pavement Resurfacing work.

Payment for A.C. Pavement resurfacing, will be made at the Unit Price per square yard based on the minimum quantity required to be replaced on the approved plans, measured on the basis of the area of roadway required to be resurfaced within the State Right-of-Way or County Right-of-Way. The Unit Price shall be full compensation for all labor materials, tools, and equipment, for all handling, removing, placing, maintaining and all other incidental materials and work necessary to complete the A.C. Pavement resurfacing work.

Unless otherwise specified, payment for restoration of Reinforced Concrete Sidewalk, Curbs, and Ramps, Reinforced Concrete Driveway, AC Driveways and Reinforced Concrete Swale shall not be measured nor paid for directly but shall be considered incidental to the construction work. If specified as a Unit Price, the Unit Price shall be full compensation for all labor materials, tools, and equipment, for all handling, removing, placing, finishing, maintaining, installation of forms, steel or weld wire fabric reinforcement, base course, and all other incidental materials and work necessary to complete the restoration of Reinforced Concrete Sidewalk, Curbs, and Ramps, Reinforced Concrete Driveway, AC Driveway and Reinforced Concrete Swale work.

Add the Following Section:

SECTION 302.40 - BRACING OF UTILITY POLES

When excavating close to utility poles, when specified on the plans, or when directed by the Manager, the Contractor shall brace the utility pole if the utility pole is owned by Hawaiian Telcom or pay for bracing if the utility pole is owned by Kaua'i Island Utility Cooperative (KIUC). In addition to "Bracing of Utility Poles", the utility agency(s) may require the contractor to stabilize the ground adjacent to the pole(s). "Bracing of Utility Poles" and stabilizing the ground adjacent to the utility pole(s) includes all labor, materials, tools, and equipment necessary to install braces for existing utility poles, stabilize the ground adjacent to the utility poles, and for their removal when bracing and/or stabilizing are no longer necessary. Payment for bracing of utility poles or reimbursement for utility poles braced by KIUC or stabilizing the ground adjacent to the utility poles will not be made directly but shall be included in the Unit Price for the various items in the proposal.

Add the Following Section:

SECTION 302.41 – TRAFFIC CONTROL

Unless provided a specific line item in the proposal, Payment for traffic control work will not be made directly but shall be included in the Unit Price for the various items in the proposal.

SECTION 302.42 - REMOVING AND SALVAGING/DISPOSING OF MATERIALS

Payment for removal and salvage or disposal of materials (fire hydrants, standpipes, valve boxes, etc.) and for the restoration of the area shall not be made directly; costs for these items of work shall be included in the unit price offer for the various items in the proposal.

Add the Following Section:

SECTION 302.43 – EROSION CONTROL / BMP

Payment for all erosion control / BMP measures shown on the drawings will not be made directly but shall be included in the Unit Price for waterline installation.

1.1.03 DEPARTMENT OF PUBLIC WORKS, COUNTY OF KAUA‘I STANDARD SPECIFICATIONS: Whenever reference is made within these Special Provisions or the contract plans to the DPW Standard Specifications, the specifications referred to is the “HAWAI‘I STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND PUBLIC WORKS CONSTRUCTION” of the State of Hawai‘i, 2005, and all subsequent amendments. These specifications are not bound in these contract documents, but shall by reference be incorporated herein and made a part of these specifications.

1.1.04 DEPARTMENT OF PUBLIC WORKS, COUNTY OF KAUA‘I, STANDARD DETAILS: Whenever reference is made within these Special Provisions or the contract plans to the DPW Standard Details, the Details referred to is the “STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION”, September 1984 and all subsequent amendments. The DPW Standard Details are not bound in these contract documents, but shall be incorporated herein and made a part of these specifications by reference.

1.1.05 SPECIAL DEFINITIONS: The following definitions shall apply unless the context indicates otherwise. Wherever the terms “Engineer” or “Owner” are used in any document which forms a part of this contract, they shall mean the Department of Water, County of Kaua‘i and its authorized agents.

1.2 PRECONSTRUCTION CONFERENCE: The Contractor shall arrange a preconstruction conference with the Project Manager, along with other affected agencies, firms and individuals within seven (7) days after issuance of “Notice to Proceed”.

The Contractor shall submit a construction schedule to the Department of Water at the conference. This construction schedule shall be closely adhered to throughout the period of the contract.

At the preconstruction conference, the Contractor shall submit to the Department, the name of its authorized superintendent of the job.

The Contractor shall notify the Department at least three (3) working days prior to the start of construction.

1.3 CONTRACTOR’S RESPONSES BY HARDCOPY OR FACSIMILE: The Contractor may respond in writing by submitting a hardcopy or by facsimile only to the following Department’s requests:

A. Notice of Intention to Propose.

- B. Request for Clarification.
- C. Pre-Proposal Due Date Modification or Withdrawal of Offers.

The hardcopy or facsimile shall be submitted as specified in the applicable subsection and shall include the following information:

To: Chief Procurement Officer
 Department of Water, County of Kaua'i

Fax Number: 1-808-245-5813

Attention: Procurement Officer

From:

Date:

Subject: (Subject of Facsimile)
 Job No. / Job Name

- 1.4 **FAILURE TO COMPLETE ON TIME AND LIQUIDATED DAMAGES:** The Contractor shall complete the work within the number of calendar days specified in the contract. The specified number of calendar days shall commence from the date designated in the Notice to Proceed.

Completion of the work within the required time is important since delay in the prosecution of the work will inconvenience the public, obstruct traffic and interfere with business.

If the Contractor fails to complete the work on or before the final completion date specified in the contract, damages will be sustained by the Department of Water, County of Kaua'i. Since the amount of damage, exclusive of the actual cost of engineering, inspection and superintendence, including necessary traveling expenses, is difficult, if not impossible to definitely ascertain and prove, the amount of such damages are fixed in advance at the sum of One Thousand Dollars (\$1,000.00) for each and every calendar day which the Contractor has delayed in the completion of the contract; and the Contractor shall pay that amount as liquidated damages and not by way of penalty, and in case the same are not paid, the Department may deduct the amount thereof from any monies due or that may become due to the Contractor under the contract.

- 1.5 **MEASUREMENTS:** Figured dimensions and drawings take precedence over measurements by scale. The Contractor must verify all measurements at the site and be responsible for the accuracy of the same.

- 1.6 **PROJECT RECORD DOCUMENTS:**

- 1.6.01 **SECTION INCLUDES:** Overview of maintenance of documents, recording requirements, and submittal of Project Record Documents.

- 1.6.02 **MAINTENANCE OF DOCUMENTS:**

- A. Maintain a record copy of the following Project Record Documents on-site and record actual revisions to the work:
 - (1) Contract Drawings.
 - (2) Specifications.
 - (3) Amendments.
 - (4) Change orders and other modifications to the Contract.
 - (5) Reviewed submittals.
 - (6) Permits. (Road, Building, Noise, NPDES, etc.)
 - (7) Specified installer/tradesman certificates.
 - (8) Update Revisions to BMP plans as required by NPDES permit(s).
 - (9) Other Project Record Documents as indicated in specific Specification sections.
- B. Store Project Record Documents apart from other documents. Provide separate files, racks, and secure storage for Project Record Documents.
- C. Record information concurrent with construction progress.
- D. Label and file Project Record Documents in accordance with these Specifications. Label each document "PROJECT RECORD" in neat, large, printed letters.
- E. Maintain Project Record Documents in a clean, dry and legible condition.
- F. Keep Project Record Documents available for inspection.

1.6.03 RECORDING REQUIREMENTS:

- A. Use an erasable red pencil (not ink or indelible pencil) to clearly record information or changes on the Drawings by graphic line and note as required. Use an erasable yellow pencil to clearly mark for verification all major components shown as constructed.
- B. Use different colors for overlapping changes if required for clarification.
- C. Record information concurrently with construction progress. Do not conceal any work until required information is recorded. Date all entries reflecting change.
- D. Legibly mark each item on the Drawings to record actual construction, including:
 - (1) Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - (2) Field changes of dimension and detail.
 - (3) Changes made by Contract amendments and modifications.
 - (4) Details not on original Drawings.

- (5) References to related shop drawings.
- E. Specifications: Legibly mark each item to record actual construction, including the following:
 - (1) Manufacturer's name and product model and number.
 - (2) Product substitutions or alternates utilized, as approved by DOW.
 - (3) Changes made by amendment and contract modifications.
- F. As-Built Drawings: The contractor shall provide and keep up-to-date a complete set of as-built prints for this project which shall be corrected regularly, showing every change from the original contract drawing set, including all addenda, change orders job decisions, etc. The as-built prints shall be used only as a record set and shall be kept on the job site available for the Department's review.

At the time of the final inspection, the contractor shall furnish the Department with one hard copy set of the as built drawings for review. After DOW provides review comments to the contract, the contractor shall provide one hard copy Mylar set with all original signatures and redline changes (**also CADD format and PDF format on CD**) showing all of the changes from the original contract set drawings including addenda, change orders, job decisions, etc. The "As-built Drawings" will be required to include the information stated in the General Provisions and prior to final acceptance as stated in the General Provisions. The "RECORD TRACINGS" block shall be utilized and signature blocks for the contractor, engineer and DOW Manager shall be provided on all sheets.

1.6.04 SUBMITTALS:

- A. At the completion of construction, deliver Project Record Documents.
- B. Transmit the Project Record Documents with a cover letter listing.
 - (1) Date.
 - (2) Project title and number.
 - (3) Contractor's name, address, and telephone number.
 - (4) Number and title of each Project Record Document.
 - (5) Signature of Contractor or authorized representative.

1.7 SUBSTITUTIONS

- A. The materials or products specified herein by trade name shall be provided as specified. Notwithstanding any reference in the specifications to any article, device, product, material, fixture, form or type of construction by name, make or catalog number, such references shall be interpreted as establishing a standard of quality and shall not be construed as limiting competition. Brand names where used on the plans or in the specifications shall be presumed to be followed by the words "or approved equal." Such approval will be granted only under

the following conditions: Substitution of a brand other than specifically name in the contract documents will be approved by the Department of Water if it meets the following conditions:

That it is equal or superior to the brand name in the specifications in construction, efficiency and utility.

That it is equal or less in cost to the Owner.

That during the construction period, the material or product specified cannot be delivered to the job in time to complete the work in proper sequence due to conditions beyond the control of the Contractor.

- B. To receive consideration, request for substitutions must be accompanied by documentary proof of the quality, difference in price and delivery, if any, in the form of certified quotations from suppliers of both specified and proposed materials or products. In case of a difference in price, the County shall receive all-benefit of the difference in cost involved by change order or credit the County with any savings so obtained.
- C. If substitution of any brand other than the one specifically named requires changes to work detailed or specified under other headings, then the Contractor assumes all responsibility for this work.
- D. Substitution request must be received by said date in Section 1.9 “Substitute Materials” (Section 1-Administration, Page 20).

1.8 STORAGE, WORK ZONE, CONSTRUCTION ACCESS: Department of Water shall not assume the responsibility to approve proposed storage areas, work zones, construction traffic pattern in and out of the project site. The Contractor shall be responsible for all additional NPDES permits, as well as, all updates to approved BMPs per NPDES permit approval requirements.

1.9 PRESERVATION OF PROPERTY: Due care shall be exercised to avoid injury to existing roadway improvements or facilities, utility facilities, adjacent property and roadside trees, shrubs and other plants that are not to be removed.

Roadside trees, shrubs and other plants that are not to be removed, and pole lines, fences, walls, signs, markers and monuments, buildings and structures, manholes and handholes, conduits, pipelines under or above ground, drain and sewer and water lines, all roadway facilities and any other improvements or facilities within or adjacent to the project shall be protected from injury or damage and if ordered by the Department of Water, the Contractor shall provide and install suitable safeguards, approved by the Department of Water, to protect such objects from injury or damage. If such objects are injured or damaged by reason of the Contractor’s operations, they shall be replaced or restored at the Contractor’s expense. The facilities shall be replaced or restored to a condition as good as when the Contractor entered upon the work, or as good as required by specifications accompanying the contract. The Department of Water may require the Contractor to make or cause to be made such temporary repairs borne by the Contractor and may be deducted from any moneys due or to become due to the Contractor under this contract. The fact that any underground facility is not shown upon the plans shall not relieve the Contractor of his or her responsibility. It shall be the Contractor’s responsibility to ascertain the existence of any underground improvements or facilities which may be subject to damage by reason of this operation.

Full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in protecting or repairing property shall be considered as included in the prices paid for the various contract items of work and no additional compensation will be allowed.

- 1.10 EXTRA WORK: No work of any kind in connection with the work covered by these specifications and plans shall be considered as extra work, or entitles the Contractor to extra compensation, except when the work has been ordered in writing by the Department of Water, and specifically referred to as EXTRA WORK and the amount of compensation stated in the change order.
- 1.11 BUILDING LAWS: The Contractor shall comply with the local laws, ordinances, rules and regulations bearing on the work and he must obtain and pay for all permits, licenses, certificates and give all notices required thereby.
- 1.12 DELIVERY OF MATERIALS AT SITE: Have all materials delivered at the site in such quantities as will ensure the uninterrupted progress of the work and the least obstruction of the premises and the adjoining property.
- 1.13 DEFECTIVE MATERIALS: When requested, furnish, without charge, samples of all materials entering into the work. All materials not conforming to the requirements of these specifications shall be considered as defective and all such materials, whether in place or not, shall be rejected.
- 1.14 CLEAN UP: On the completion of each day's work during this construction project, the Contractor shall remove from the site all debris, tools and excess material resulting from his or his subcontractor's the work and leave the work and any affected surroundings area broom clean.
- 1.15 ENVIRONMENTAL PROTECTION: The Contractor shall comply with the requirements for pollution control in performing all construction activities as set forth in the General Provisions.
- 1.16 PROJECT SIGN: The Contractor shall furnish, erect, maintain and remove one (1) project sign. The project signboard shall be 3/4 inch thick "AC" exterior grade fir plywood, 4 feet in height and 8 feet long. Sign shall be painted with one prime coat and two finish coats. The sign layout detail and sign and post details shall be submitted to the Department for approval. The project sign shall be erected at the site designated by the Department of Water within seven (7) calendar days after approval of the sign layout. The Contractor shall apply and pay for all permits and fees required for the placement of the sign. The sign layout shall include the Department of Water's logo (graphic to be provided by the Department of Water) and the following information:

**JOB NO. 09-01, PROJECT NO. K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS,
PACKAGE A – 0.5 MG YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL
RESERVOIR, PACKAGE C – WATER MAIN INSTALLATION, KALĀHEO,
KAUA'I, HAWAII
DEPARTMENT OF WATER**

1.17 SUBMITTALS:

- 1.17.01 SECTION INCLUDES: Overview of transmittal of submittals, submittals requirements, definition of submittal for review and definition of submittal for closeout.

**Job No. 09-01 K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5 MG
YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR, PACKAGE C – WATER
MAIN INSTALLATION, KALĀHEO,**

1.17.02 RELATED SECTIONS: Section 1.6 Project Record Documents.

1.17.03 TRANSMITTAL OF SUBMITTALS:

- A. General: Transmit submittals, number of copies as indicated in subsequent articles, to the following address:

Kaua'i Department of Water
Attn: Contract Administrator
4398 Pua Loke Street
Lihu'e, Kaua'i, Hawai'i 96766

- B. Submittals for Review: Transmit one (1) copy to the Department of Water for review. The Department will retain electronic set and return one (1) reviewed set. Should the contractor require more returned, he shall provide the additional sets at his or her cost. Where more copies are called for in any section of these Special Provisions, the Contractor shall be required to submit said number of prints for approval.

Whenever possible, submittals/transmittals shall also be submitted electronically.

- C. Submittals for Closeout:

(1) Operations and Maintenance Manuals:

- a. Preliminary Submittal: Transmit one (1) copy of manual to the Department of Water two (2) weeks prior to final inspection. These copies will be returned after final inspection, with comments.
- b. Final Submittal: Revise manuals and submit two (2) copies to the Department of Water two (2) weeks after receipt of comments to Preliminary Submittal.

(2) Project Record Documents: Submit Project Record Documents at the time of final inspection.

1.17.04 SUBMITTAL REQUIREMENTS:

- A. Required submittals shall include:

- 1) Shop drawings.
- 2) Piping layout.
- 3) Manufacturer's Data.
- 4) Certificates of Warranty.
- 5) Any others as called for in the plans, specifications, or by the Engineer.

- B. The Contractor's stamp and verification of drawings shall consist of the following information:

CONTRACTOR NAME

PROJECT: _____

JOB NO.: _____

THIS SUBMITTAL HAS BEEN CHECKED BY THIS GENERAL CONTRACTOR. IT IS CERTIFIED CORRECT, AND IN COMPLIANCE WITH CONTRACT DRAWINGS AND SPECIFICATIONS. ALL AFFECTED CONTRACTORS AND SUPPLIERS ARE AWARE OF, AND WILL INTEGRATE THIS SUBMITTAL INTO THEIR OWN WORK.

DATE RECEIVED: _____

SUBMITTAL NUMBER: _____

SPECIFICATION SECTION: _____

SPECIFICATION PARAGRAPH: _____

DRAWING NUMBER: _____

SUBCONTRACTOR NAME: _____

SUPPLIER NAME: _____

MANUFACTURER NAME: _____

CERTIFIED BY: _____

- C. This stamp, "filled in", should appear on the title sheet of each shop drawing, on a cover sheet of submittals in an 8½"x11" format, or on a one face of a cardstock tag (min. 3"x6") tied to each sample. The tag on samples should state what the sample is, so that, if the tag is accidentally separated from the sample, it can be matched up again.
- D. The person signing the Contractor's submittal stamp shall be the person with authority to act for the Contractor in connection with the contract during the performance of the contract. The signature shall be in original ink. Stamped signature will not be acceptable.
- E. Prepare submittals to show that the material, equipment, or work shown is in accordance with contract requirements and has been checked for dimensions and relationship with work of all other trades involved. All deviations from the plans and specifications shall be noted.
- F. Approval shall extend only to general conformance and shall not relieve the Contractor from his or her responsibility for coordinating his or her work with other trades and complying with the provisions of the contract documents for lengths, fits, quality of materials, quantities, applicable code requirements and other details. Approval does not authorize changes from the contract requirements unless stated in a separate letter or change order.
- G. Submittals shall be made in sufficient time to allow the Engineer not less than twenty regular working days for examining the drawings. The Contractor shall make submittals at the earliest possible date after the Notice to Proceed date to meet the

construction schedule. The Engineer will not consider delays caused by the Contractor's failure to make submittals on time as justifiable reasons for contract time extensions.

- H. When the submittals have been reviewed by the Engineer, two sets of submittals will be returned to the Contractor appropriately stamped. If major changes or corrections are necessary, the submittal may be rejected and one set will be returned to the Contractor with such changes or corrections indicated, and the Contractor shall correct and resubmit six copies of the drawings, unless otherwise directed by the Engineer. No changes shall be made by the Contractor to the resubmitted shop drawings other than those changes indicated by the Engineer. The resubmittal shall be so indicated on the shop drawing.
- I. Prior to approval of such drawings, any work which the Contractor may do on fabrications covered by the same is at his or her own risk, as the County will not be responsible for any expense incurred by the Contractor for changes to make the same conform to the drawings as finally approved.
- J. Upon approval of the above drawings, lists, prints and other data, a copy of the same shall be kept with the job site plans, and the fabrications furnished shall be in conformance with the same. However, approval of above drawings, lists, prints, specifications and other data shall in no way release the Contractor from his or her responsibility for the proper fulfillment of the requirements of this contract nor for fulfilling the purpose of the installation nor from his or her liability to replace the same should it prove defective or fail to meet the specified requirements.
- K. Submittal Clarity:
 - (1) Drawings:
 - a. Prepare finished drawings so that prints, reproducibles, and reductions to half size will be clear and legible.
 - b. Make free-hand lettering no less than 5/32 inch high and typewritten notes no less than 1/8 inch high to allow for reduction. Do not crowd lettering.
 - (2) Manufacturer's Literature:
 - a. Submit a minimum of one original of manufacturer's printed material. Remaining number of submittals may be reproductions. Ensure reproductions of original materials are clear and legible.
 - b. Clearly mark the item(s) and/or information applicable to this project with arrows, bubbles, etc. Do not use high-lighted markings.
 - c. Provide the name and phone number of manufacturer's sales and service representative for each device submitted.

1.17.05 DEFINITION OF “SUBMITTALS FOR REVIEW”:

- A. Catalog Data: Manufacturer’s standard printed information on materials, products and systems, which shows performance characteristics, dimensions, material of fabrication, and other characteristics necessary to assure conformity with the design requirements. Where other items or information not related to the work of this project are included in the literature submitted, the item(s) and/or information applicable to this project shall be clearly marked.
- B. Shop Drawings: Drawings necessary to show fabrication details to ensure compliance with contract documents.
- C. Block Diagrams: Block Diagrams necessary to show system connections and details to ensure compliance with contract documents.
- D. Wiring Diagrams: Drawings showing the point-to-point or schematic wiring of a piece of equipment or between pieces of equipment in a system.
- E. Calculations: The methods and results of calculations in documented form where specified.
- F. Material / Parts List: A list of system components or material components.
- G. Samples / Colors: Samples, including colors, of proposed materials.
- H. Certifications: A written statement, signed by a qualified party, attesting that items or services are in accordance with specified requirements. Typically, this written statement is accompanied by additional information to substantiate the statement.
- I. Installation Instructions / Test Procedures: Manufacturer’s instructions, step-by-step if necessary, showing the field installation and testing of parts, components, equipment, and other similar items.
- J. Test Reports: Results of specified test requirements.
- K. Meetings: Schedule, agenda, attendees, and location for required meetings and meeting notes.
- L. Other: Other submittal information as described in individual specification sections.

1.17.06 DEFINITION OF “SUBMITTALS FOR CLOSEOUT”:

- A. Operations and Maintenance (O&M) Manuals:
 - (1) Format:
 - a. Hardcopy: Three (3) full sets

- 1) Size: 8½"x11". Fold 11"x17" drawings to 8½"x11" size. Reduce drawings larger than 11"x17" format to 11"x17" format.
- 2) Binders: Use commercial quality expandable post binders meeting the following requirements:
 - (a) Binder Covers: 1/8" thick construction (minimum).
 - (b) Hinges: Continuous, metal piano hinge.
 - (c) Binder Expandability: 3½" – 5½".
 - (d) Sheet Size: 8½"x11".
 - (e) Binder Cover Material: Heavy vinyl.
 - (f) Binder Printing: Provide custom printed spine and front imprinted with the following information:

County of Kaua‘i
 Department of Water
 (Print O&M manual titles and project title)

- (g) Manufacturer’s Reference: Specialty Loose Leaf, Inc.
 - 3) Fill: Do not fill binders more than 75% full.
 - 4) Indexed Tabs: Internally subdivide the binder contents with permanent page dividers, logically organized, with tab titling clearly printed under reinforced laminated plastic tabs.
- b. Adobe PDF Electronic Copy: Provide a facsimile of the hardcopy O&M Manual in Adobe PDF Electronic Format on compact disk(s).
 - c. Electronic Data: Provide electronic files on compact disk(s) or jump drive of any material created electronically by Integrator, in file format in which document was created, that is, Microsoft Word, AutoCAD, etc., including but not limited to:
 - 1) Drawing Files.
 - 2) Installation Instructions.
 - 3) Software Documentation.
 - 4) Operating and Maintenance Instructions.
 - d. Odd Sized Material: Where O&M information does not lend itself to incorporation into 8½"x11" format, such as the material listed, below, provide it separate from the O&M Manuals. However, clearly label

each item, and provide reference in the O&M Manual to the material that is provided separate from the O&M Manuals.

- 1) Edge-glued books or manuals without 3-hole punched binding.
- 2) Material of a size other than 8½"x11".
- 3) Compact disks in jewel cases.

(2) Contents:

- a. Table of Contents: Prepare a Table of Contents, for each volume, with each product or system description identified, and include with each volume of manual. Type on 24-pound white paper.
- b. Directory: Provide names, addresses, and telephone number of Prime Contractor, Integrator, Installation Contractor, other subcontractors, and major equipment suppliers. Clearly identify contact for warranty support.
- c. General: Provide operations and maintenance data for equipment described in the individual sections of the Specification. Prepare and include additional data when the need for such data becomes apparent during training.
- d. Description of System and Component Parts:
 - 1) System block and interconnection diagrams.
 - 2) Control diagrams by controls vendor and as-installed control drawing by Contractor.
 - 3) As-installed wiring diagrams, that is, ladder diagrams, point to point diagrams, loop diagrams, circuit directories of panel boards, and similar items.
 - 4) Manufacturer's printed installation, operating, and maintenance instructions for the exact item of equipment supplied.
 - 5) Catalog data containing information required for service, future additions or substitutions.
 - 6) Function, normal operating characteristics, and limiting conditions.
 - 7) Performance curves, engineering data and tests.
 - 8) Complete nomenclature and commercial number of replaceable parts.
- e. System Operating Procedures:

Job No. 09-01 K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5 MG
YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR, PACKAGE C – WATER
MAIN INSTALLATION, KALĀHEO,

- 1) Description of sequence of operation by control manufacturer.
 - 2) Routine and normal operating instructions.
 - 3) Sequences required.
 - 4) Special operating instructions.
- f. System and Equipment Maintenance Procedures:
- 1) Routine operations.
 - 2) Guide to “trouble-shooting”
 - 3) Disassembly, repair and reassembly.
 - 4) Alignment, adjusting and checking.
- g. Maintenance instructions for special finishes, including recommended cleaning methods and materials and special precautions identifying detrimental agents.
- h. Spare Parts List: List of manufacturer’s spare parts provided with the job, manufacturer’s current prices for spare parts, and recommended quantities to be maintained in storage.
- B. Project Record Documents: Provide Project Record Documents as required.
- C. Spare Parts / Maintenance Materials:
- (1) Provide products, spare parts, maintenance and extra materials in quantities specified in individual specification sections prior to Final Acceptance.
 - (2) Deliver to Project site and place in location as directed by the Department of Water. Contractor shall obtain receipt.
- D. Test Reports: Results of specified test requirements. Provide Table of Contents of test results and incorporate into Operation and Maintenance Manuals described above.
- E. Warranty Certificates:
- (1) For each item required by specific sections of this specification, provide a notarized warranty certificate.
 - (2) Execute and assemble documents from subcontractors, suppliers, and manufacturer.
 - (3) For each item of copyrighted software provide under this contract, provide a software license certificate naming the Department of Water as the licensee and stating the number of licenses provided.

- (4) Provide Table of Contents of software licenses and incorporate into Operation and Maintenance Manuals described above.

1.18 CONTRACTOR'S OPERATIONS: The Contractor must employ, insofar as possible, such methods and means of carrying out his work so as not to cause any interruption or interference to the Department of Water's or the landowner's operations. Where the Contractor's operations would result in interruptions which would hamper the operations, the Contractor shall coordinate his schedule of work with the Department of Water or the landowner, accordingly.

In the event that the Contractor obtains permission from the landowner for use of any area or resources outside of the designated lot(s), County Right-of-Way, State Highway's Right-of-Way, and/or designated easement(s), the Contractor shall meet the requirements of Division 300, Section 301.15 – USE AND/OR DAMAGE TO PRIVATE PROPERTY (PROPERTY OWNED OTHER THAN BY THE CONTRACTOR) of the Water System Standards, 2002.

END OF SECTION

SECTION SP-2 – WATER SYSTEM STANDARDS – OTHER ADDENDUMS AND AMENDMENTS

- 2.1 SECTION 211 BRASS PRODUCTS: All waterworks brass fittings shall be in compliance with the amended Section 1417 of Safe Drinking Water Act (SDWA) which takes on January 4, 2014. The amendment includes a change to the definition of “Lead-Free” by reducing lead content from 8% to a weighted average of not more than 0.25% in the wetted surface material. All waterworks brass fittings install for potable water service on January 4, 2014 and beyond shall conform to the amended definition of “Lead-Free”.

As indicated in Section 211 of “Water System Standards,” dated 2002 – Brass Products, all brass fittings shall conform to the NSF standard 61 and Section 1417 of the Safe Drinking Water Act (SDWA). In addition, all brass fittings shall conform to NSF standard 372.

***All service saddles used on the project shall be stainless steel. This specification shall supersede the approved construction drawing detail callouts. The following will be allowed on the project:**

Ford Meter Box Company, Inc (Stainless Steel Saddle-Double Band FS323)

Powerseal (3417AS – Double Strap)

Romac Industries (Style 306 Double Bolt)

- 2.2 SECTION 303 – STRUCTURES

The following shall supplement the applicable subsections of Division 300 - Construction of the “Water System Standards,” dated 2002.

Make the following amendments to said section:

SECTION 303.03 – CONCRETE WORK:

Amend the entire paragraph “1. Cement” of the “B. Materials” subsection to read:

Cement shall conform to “Standard Specifications for Portland Cement” (ASTM C150) for Type II cement. Only one brand of cement from one manufacturing plant may be used.

The Contractor shall submit a certificate of a test with each lot of cement proposed for use on the project. The Manager may require additional test of the cement as required.

Add the following paragraphs to paragraph “3. Concrete Aggregates” of the “B. Materials” subsection:

- A. Aggregate shall not contain elongated particles in quantities considered deleterious. A thin, flat or elongated particle is defined as a particle having a maximum dimension in excess of five times its minimum dimension.
- B. When crushed stone is used, the crusher shall be equipped with a screening system which will entirely separate dust from the stone and convey dust to a separate bin.

Add the following paragraphs to paragraph “4. Admixture” of the “B. Materials” subsection:

Use integral waterproofing admixture to concrete for bottom slab, walls and columns of Reservoir(s). The admixture shall be added at the plant and shall conform to ASTM C94 and be approved for use with potable water by the NSF. Admixture shall be “KIM” as manufactured by Kryton or other approved manufacturer. Dosage rate shall be as recommended by the manufacturer.

Add shrinkage reducing admixture to concrete for walls and floor slab of reservoir. Shrinkage dosage shall be such that it compensates for total shrinkage anticipated of concrete. Total shrinkage shall be based on historical or test data by ready mix concrete producer. Dosage shall be as determined by ready mix concrete producer to compensate for total shrinkage anticipated.

Amend the entire “Table 300-9 – CONCRETE CLASSES AND USES” of the “C. Proportioning Concrete Mix” subsection to read:

Table 300-9 – CONCRETE CLASSES AND USES						
Class of Concrete	Minimum 28-Day Compressive Strength (psi)	Minimum Sacks per Cu. Yd. of Concrete	Maximum Water, Gals per Sack of Concrete	Maximum Size of Aggregate (in.)	Slump Range (in.)	Location Required In Project
DWS4000	4,000	7.0	--	3/4	3-5	Reservoir walls, columns, floor slabs (including jackets), roof slabs, and footings. Retaining Wall footing, keys, and walls. Equipment Bldg., floor slab, thickened edge footings and roof slabs. Pump Pads
DWS3000	4,000	7.0*	--	--	3-5	First 4-1/2 inch pour above construction joints of all reservoir walls. *One half the amount of coarse aggregate used in DWS4000 mix.
DWS2500	2,500	--	--	--	2-4	Manholes, catch basins, pipe jackets (not under reservoir), duct lines, pipe reaction

Table 300-9 – CONCRETE CLASSES AND USES						
Class of Concrete	Minimum 28-Day Compressive Strength (psi)	Minimum Sacks per Cu. Yd. of Concrete	Maximum Water, Gals per Sack of Concrete	Maximum Size of Aggregate (in.)	Slump Range (in.)	Location Required In Project
						blocks, curbs, gutters, drainage ditches, sidewalks, and head walls.

Amend the “P. Conveying, Placing and Handling” subsection such that wherever “DWS 3000M” is stated, it is replaced with “DWS4000M.”

Amend the “Q. Construction and Expansion Joints” subsection as follows:

Delete paragraphs “3. Roof Sliding Joint” and “4. Waterstops.”

SECTION 303.06 - REINFORCED CONCRETE RESERVOIR

Add the following paragraphs under paragraph “1. Construction and Expansion Joints” of the “C. Concrete Work” subsection:

Waterstops

- A. Waterstops shall be of an approved type, supplied by an approved manufacturer and shall be plastic made of virgin polyvinylchloride compound, shall be ribbed, uniform in dimensions, dense, homogeneous, free from porosity, and as detailed on Drawings.
- B. No reclaimed PVC shall be used in the compound.
- C. Waterstop shall be held in place in the forms by use of split forms or other approved method that will positively hold the waterstop in the correct position and to the correct alignment. All horizontal and vertical waterstops, which are not accessible during the pouring, shall be tied off in two directions every 12 inches in such a manner that bending over one way or another is prevented. All waterstops shall be properly spliced and joints shall be checked for strength and pinholes after splicing. Splices shall be strong enough to develop a pulling force of 75 percent of the strength of the waterstop and shall be watertight. Connect the ends of the radial waterstop in the wall footing joints to the circumferential waterstop in the wall to wall footing joint and to the circumferential waterstops in the floor to wall footing joints if they should exist.
- D. The finished waterstop material shall meet the following minimum requirements:
 - 1. Tensile strength 2,000 psi ASTM D-412
 - 2. Ultimate elongation 350% ASTM D-412
 - 3. Shore Hardness 70-80 ASTM D-2240
 - 4. Specific Gravity 1.3 ASTM D-792
 - 5. Stiffness in Flexure 600 psi ASTM D-747
 - 6. Cold Brittleness -35 degrees F ASTM D-746
 - 7. Water Absorption 48 hours 0.32% max ASTM D-570

8. Tear Resistance 290 lb./in. ASTM D-624

- E. OMEGA PLASTICS, 2636 Byington-Solway Rd., Knoxville, TN 37921 (Phone 865-344-0929) and SIKA GREENSTREAK, 3400 Tree Court Industrial Blvd., St. Louis, MO 63122 (Phone 800-325-9504) are two of several suppliers who can furnish waterstops meeting these requirements. Approved equal material may also be used.

The top surface reveal of construction joints in the floor of the reservoir shall be sealed with SIKAFLEX 2C POLYURETHANE ELASTOMERIC SEALANT, as manufactured by SIKA CORPORATION, 201 Polito Ave., Lyndhurst, NJ 07071 (Phone: 800-933-SIKA); PSI-270 RESERVOIR SEALANT, as manufactured by POLYMERIC SYSTEM INC., Phoenixville, PA (Phone: 610-935-1170); SELECT SEAL U-227 RESERVOIR GRADE, as manufactured by SPC, Upland, CA (Phone: 714-985-5571); or approved equal.

The interior surface of horizontal construction joint in the wall of the reservoir shall be sealed with CIM 1000 Trowel Grade, by C.I.M. Industries Inc., 23 Elm St., Peterborough, NH 03458 (Phone 800-543-3458) (Website www.cimindustries.com). The surface of the concrete shall be prepared, and the compound applied per manufacturer's recommendation.

Add the following paragraph to paragraph "4. Interior Perimeter Seal" of the "C. Concrete Work" subsection:

The sealing compound shall be CIM 1000, by C.I.M. Industries Inc., 23 Elm St., Peterborough, NH 03458 (Phone 800-543-3458) (Website www.cimindustries.com). The surface of the concrete shall be prepared, and the compound applied per manufacturer's recommendation.

Amend the entire paragraph "5. Roof Sliding Joint" of the "C. Concrete Work" subsection to read:

The roof sliding joint at the top of the reservoir wall shall be constructed as detailed on the plans. The Neoprene Bearing Pad shall be of the dimension and hardness shown on the Drawings and shall be made by an approved manufacturer. The material for 40 durometer neoprene pads shall conform to ASTM D-2000 M2BC414A14C12F17 and the material for 30 durometer pads shall conform to ASTM D-2000 M2BC310A14C12F17. Unless otherwise specified on the Drawings, neoprene pads shall be of 40 durometer. KIRKHILL RUBBER CO., 12023 Woodruff Ave., Downey CA 90241 (Phone: 562-803-1117) and WEST AMERICAN RUBBER COMPANY, LLC, 750 N. Main St., Orange, CA 92868 (Phone 877-229-2726) are two of several suppliers who can furnish neoprene pads meeting these requirements. Approved equal materials may be used.

Closed Cell Neoprene Pads shall be used as a filler material in flexible joints, in areas not taken up by the solid neoprene bearing pads. The material shall be medium grade closed cell neoprene conforming to 2A3 of ASTM D 1056-85 and as further specified herein and on the Drawings.

- | | |
|-------------------------------|-------------|
| 1. Compressive Deflection | 9 – 13 psi |
| 2. Shore 00 Durometer | 60 – 80 PCF |
| 3. Density | 12 – 28 PCF |
| 4. Water Absorption by Weight | 5% |
| 5. Temperature Range: | |

Low (Flex without cracking)	-30 degrees F
High Continuous	150 degrees F
High Intermittent	200 degrees F
6. Heat Aging (7 days at 150°F)	
Lineal Shrinkage (max.)	5%
7. Tensile Strength	115 psi min.
8. Elongation	180% min.
9. Resilience (bayshore % rebound average ½” thickness @ 72 degrees F)	20 – 40%

RUBATEX R413N or R423N, CYPRESS SPONGE 431N or 432N, or approved equal are acceptable material.

All Neoprene Bearing Pads and Closed Cell Neoprene Pads shall be glued to the concrete with an approved rubber cement material to prevent uplift of the pads during concrete pour.

Amend the entire paragraph “6. Surface Finish” of the “C. Concrete Work” subsection to read:

The exterior and interior wall and column surfaces shall be finished to show no unsightly defects, fins, and irregularities. All form tie holes shall be repaired flush with surface. On all interior surfaces shall be made smooth by applying Sikaguard 75 to cover and patch air holes and other imperfections. All exterior surfaces shall have an architectural finish.

Revise the title of the “G. Payment” subsection to “I. Payment.”

Add subsection “G. Earthquake Cables” as follows:

Earthquake cables used to connect the wall to wall footing/grade beam shall consist of 7 wire galvanized strands, meeting the minimum ultimate strength for 3/8-inch and ½-inch strands (as required on the Drawings) of 21,000 pounds and 38,200 pounds respectively. The strands shall be hot-dipped galvanized before stranding with a minimum zinc coating of 0.85 oz./square foot (sf).

The Closed Cell Neoprene sleeves for the seismic cables shall conform to the minimum dimensions shown on the Drawings to permit unrestrained flexing of the strands inside the sleeves under the maximum projected radial wall movement. The Closed Cell Neoprene sleeves shall have the following properties:

1. Material shall be medium grade conforming to 2A3 of ASTM D 1056-85.
2. Compressive Deflection: 9 – 13 psi
3. Shore 00 Durometer: 60 – 80 PCF
4. Density: 12 – 28 PCF
5. Water Absorption by Weight: 5%
6. Temperature Range:

Low (flex without cracking):	-30 degrees F
High continuous:	150 degrees F
High intermittent:	200 degrees F
7. Heat aging (7 days at 150°F)

Lineal Shrinkage (max.):	5%
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- 8. Tensile Strength: 115 psi min.
- 9. Elongation: 180% min.
- 10. Resilience (bayshore % rebound average
½” thickness @ 72 degrees F): 20 – 40%
- 11. “MONARCH” by ARMACELL, CYPRESS SPONGE 431N or
432N, or approved equal are acceptable material.

Add subsection “H. Lateral Restraints, Roof to Wall” as follows:

Extra Strong pipe shall conform to ASTM A53 Grade B or ASTM A500 Grade A. Rod shall conform to ASTM A307. Hot-dipped galvanizing shall conform to ASTM A123-78.

SECTION 303.22 – MISCELLANEOUS IRON AND METAL WORK

Add the following to E. Aluminum:

Aluminum frame and insect screen shall be custom designed and fabricated by contractor. The insect screen shall SWG (standard wire gage) 32 with mesh spacing at 14x14.

SECTION 303.33 – CHAIN LINK FENCE AND GATE

Amend the last paragraph of “C. Installation” to read:

For Kauai Only: The contractor shall furnish padlocks for all gates, hatches, ladder guards and hasps. Locks shall be CyberLock Model PL-02 Electronic Padlock. CyberLock is a Wilson Bohannan padlock with 2” x 3/8” shackle and CyberLock weather-resistant 6-pin Schlage format cylinder. The Contractor shall turn over the locks to the Department of Water for programming. No substitutes will be accepted.

2.3 LOCK QUANTITIES:

Location	Number of Padlocks
Package A - Yamada Reservoir	6 padlocks
Package B - Clearwell Reservoir	8 padlocks

SECTION SP-3 – SECTION SP-3 – DUCTILE IRON PIPE AND PVC (C-900) PIPE

3.1. DUCTILE IRON:

3.1.01. GENERAL: The Contractor shall furnish and install Ductile Iron (DI) pipe in accordance with “Water System Standards, State of Hawai‘i, dated 2002”. DI pipe shall meet the requirements of Section 202.01. Fittings for DI pipe shall be ductile iron mechanical joint fittings meeting the requirements of Section 202.01.A – Fittings, unless specifically stated otherwise in the plans. Installation shall be in accordance with the Water System Standards.

3.1.02. SUBMITTALS: The Contractor shall submit manufacturer’s data on DI pipe, joints, fittings and geotextile fabric certifying that the product provided meets the specified item.

Prior to excavation the Contractor shall provide submittal that certifies that the pipe cushion material meets requirements below. Onsite sand must be tested by a licensed geotechnical engineer and test results submitted to the Department of Water Engineer for approval.

3.1.03. TRENCH EXCAVATION AND BACKFILL: Trench excavation and backfill shall meet the requirements of “Water System Standards” Sections 302 Water Mains and Appurtenances; Section 302.02 – Trench Excavation; Section 302.03 Trench Backfill; Section 302.04 Sheathing; Section 302.05 Dewatering; Section 302.06 Adobe or Clay; Section 302.07 Mud Removal and Crushed Rock Stabilization; Section 302.09 Excavation for Manholes; Section 302.10 Excavation for Thrust Blocks, Beams and Test Blocks; Section 302.11 Surplus Excavation; and Section 302.14 Plastic Pipe.

Pipe Cushion Material shall meet the requirements of “Water System Standards” Section 209.02 Pipe Cushion. Pipe cushion material shall be free from hard lumps, debris, salt, hazardous substances above its corresponding regulatory action level, and other deleterious substances.

When groundwater is encountered, pipe cushion material shall be wrapped in a non-woven geotextile fabric as specified in Section 212.05 – Geotextile Fabrics. However if groundwater is encountered within the State Highway’s Right-of-Way, pipe cushion material shall conform to ASTM C 33, size number 67, and shall be completely encapsulated with geotextile conforming to Subsection 716.03 – Geotextiles for Underdrain Applications as stated in the “Standard Specifications for Road and Bridge Construction, State of Hawai‘i, dated 2005”.

3.1.04. INSTALLATION: Ductile iron pipe installation shall meet the requirements of Water System Standards Section 302 – Water Mains and Appurtenances, additionally for pipe installation within the State Highway’s Right-of-Way, pipe installation shall also adhere to the requirements of “Standard Specifications for Road and Bridge Construction, State of Hawai‘i, dated 2005”, Section 624 – Water System and Section 703.21 – Trench Backfill Material.

Contractor shall retain the services of a licensed Geotechnical engineer to monitor the quality of pipe cushion material, installation and compaction of the pipe cushion and trench backfill. Department of Water will require periodic sieve testing of the pipe cushion material during the course of construction. Results of the Geotechnical engineer’s tests shall be

provided to the Department of Water within seven (7) calendar days of sampling. Contractor shall be responsible for all associated costs for the licensed Geotechnical engineer, sieve analysis and testing.

All exposed DI pipe, valves, and fittings shall be coated as specified in “Water System Standards,” dated 2002, unless otherwise indicated in the Special Provision, or as directed by the Department of Water Engineer. Color shall be Kaua‘i Green.

3.2. PVC (C-900) PIPE:

3.2.01. GENERAL: The Contractor shall furnish and install Plastic pipe in accordance with “Water System Standards, State of Hawai‘i, dated 2002”. PVC pipe shall meet the requirements of Section 204.01. Fittings for PVC pipe shall be mechanical joint fittings meeting the requirements of Section 204.01.D – Fittings, unless specifically stated otherwise in the plans. Installation shall be in accordance with the Water System Standards.

3.2.02. SUBMITTALS: The Contractor shall submit manufacturer’s data on PVC pipe, joints, fittings and geotextile fabric certifying that the product provided meets the specified item.

Prior to excavation the Contractor shall provide submittal that certifies that the pipe cushion material meets requirements below. Onsite sand must be tested by a licensed geotechnical engineer and test results submitted to the Department of Water Engineer for approval.

3.2.03. TRENCH EXCAVATION AND BACKFILL: Trench excavation and backfill shall meet the requirements of “Water System Standards” Sections 302 Water Mains and Appurtenances; Section 302.02 – Trench Excavation; Section 302.03 Trench Backfill; Section 302.04 Sheathing; Section 302.05 Dewatering; Section 302.06 Adobe or Clay; Section 302.07 Mud Removal and Crushed Rock Stabilization; Section 302.09 Excavation for Manholes; Section 302.10 Excavation for Thrust Blocks, Beams and Test Blocks; Section 302.11 Surplus Excavation; and Section 302.14 Plastic Pipe.

Pipe Cushion Material shall meet the requirements of “Water System Standards” Section 209.02 Pipe Cushion. Pipe cushion material shall be free from hard lumps, debris, salt, hazardous substances above its corresponding regulatory action level, and other deleterious substances.

When groundwater is encountered, pipe cushion material shall be wrapped in a non-woven geotextile fabric as specified in Section 212.05 – Geotextile Fabrics. However if groundwater is encountered within the State Highway’s Right-of-Way, pipe cushion material shall conform to ASTM C 33, size number 67, and shall be completely encapsulated with geotextile conforming to Subsection 716.03 – Geotextiles for Underdrain Applications as stated in the “Standard Specifications for Road and Bridge Construction, State of Hawai‘i, dated 2005”.

3.2.04. INSTALLATION: Plastic pipe installation shall meet the requirements of Water System Standards Section 302 – Water Mains and Appurtenances, additionally for pipe installation within the State Highway’s Right-of-Way, pipe installation shall also adhere to the requirements of “Standard Specifications for Road and Bridge Construction, State of Hawai‘i, dated 2005”, Section 624 – Water System and Section 703.21 – Trench Backfill

Material.

Contractor shall retain the services of a licensed Geotechnical engineer to monitor the quality of pipe cushion material, installation and compaction of the pipe cushion and trench backfill. Department of Water will require periodic sieve testing of the pipe cushion material during the course of construction. Results of the Geotechnical engineer's tests shall be provided to the Department of Water within seven (7) calendar days of sampling. Contractor shall be responsible for all associated costs for the licensed Geotechnical engineer, sieve analysis and testing.

SECTION SP-4 - PIPING AND FITTINGS

4.1 HIGH DENSITY POLYETHYLENE PIPE AND FITTINGS FOR DRAINAGE SYSTEM:

- 4.1.01 GENERAL: The Contractor shall furnish and install high density polyethylene (HDPE) drainage pipe and fittings as shown on the plans and specified herein.

Pipe shall have annular interior and exterior corrugations. Corrugated pipe shall conform to AASHTO M252, Type C or AASHTO M294, Type C. Corrugated, perforated pipe shall conform to AASHTO M252, Class II. Fittings shall conform to AASHTO M252 or AASHTO M294.

- 4.1.02 SUBMITTALS: The Contractor shall submit shop drawings and manufacturer's data on HDPE pipe, couplings, fittings, and geotextile fabric certifying that the product provided meets the specified item.

Prior to excavation, the Contractor shall provide a submittal that certifies that the pipe cushion material meets the requirements below. On-site sand must be tested by a licensed geotechnical engineer and test results submitted to the Department of Water Engineer for approval.

- 4.1.03 MATERIAL: Pipe and fittings shall be made of virgin polyethylene compounds that comply with the cell classification 424420C or 435400C, as defined and described in ASTM D3350, except that carbon black content shall not exceed 4%.

- 4.1.04 JOINTS: Joints shall be made with couplings. Connection shall meet the soil-tightness requirements of AASHTO M252 or M294. Gasketed connections shall incorporate a closed-cell synthetic expanded rubber gasket meeting the requirements of ASTM D1056 Grade 2A2. Gaskets shall be installed by the pipe manufacturer.

- 4.1.05 MANUFACTURER: Manufacturer of HDPE pipe and fittings shall be ADS, Inc. or approved equal.

- 4.1.06 TRENCH EXCAVATION AND BACKFILL: Trench excavation and backfill shall meet the requirements of "Water System Standards," dated 2002, Section 302 – Water Mains and Appurtenances; Section 302.02 – Trench Excavation; Section 302.03 – Trench Backfill; Section 302.04 – Sheathing; Section 302.05 – Dewatering; Section 302.06 – Adobe or Clay; Section 302.07 – Mud Removal and Crushed Rock Stabilization; Section 302.09 – Excavation for Manholes; and Section 302.11 – Surplus Excavation.

Pipe cushion material shall meet the requirements of "Water System Standards," dated 2002, Section 209.02 – Pipe Cushion. Pipe cushion material shall be free from hard lumps, debris, salt, hazardous substances above its corresponding regulatory action level, and other deleterious substances. When groundwater is encountered, pipe cushion material shall be wrapped in a non-woven geotextile fabric as indicated on the drawings and as specified in Section 212.05 – Geotextile Fabrics. However, if groundwater is encountered within the State Highways right-of-way, pipe cushion material shall conform to ASTM C33, size number 67, and shall be completely encapsulated with geotextile conforming to Section

716.03 – Geotextiles for Underdrain Applications as specified in “Hawai‘i Standard Specifications for Road and Bridge Construction,” State of Hawai‘i, dated 2005.

- 4.1.07 INSTALLATION: HDPE pipe installation shall be in accordance with ASTM D2321 and pipe manufacturer’s recommended installation guidelines. Minimum cover in trafficked areas shall be one foot or as indicated on the plans, whichever is greater. Additionally, for pipe installation within State Highways right-of-way, pipe installation shall also adhere to the requirements of “Hawai‘i Standard Specifications for Road and Bridge Construction,” State of Hawai‘i, dated 2005, Section 624 – Water System and Section 703.21 – Trench Backfill Material.

The Contractor shall retain the services of a licensed geotechnical engineer to monitor the quality of pipe cushion material and installation and compaction of the pipe cushion and trench backfill. The Department of Water will require periodic sieve testing of the pipe cushion material during the course of construction. Results of the geotechnical engineer’s tests shall be provided to the Department of Water within seven (7) calendar days of sampling. The Contractor shall be responsible for all associated costs for the licensed geotechnical engineer, sieve analysis, and testing.

- 4.1.08 PAYMENT: Payment for HDPE PIPE AND FITTINGS will be made at the respective Unit Price Offer for the various items. Payment shall represent full compensation for furnishing all material, labor, tools, equipment and incidentals, including excavation and backfill, required to complete the work as indicated on the plans and as specified in this section.

4.2 GALVANIZED STEEL PIPE AND FITTINGS:

- 4.2.01 GENERAL: The Contractor shall furnish and install galvanized steel pipe and fittings as shown on the plans and specified herein. Galvanized steel pipe and fittings shall be Schedule 40 hot dipped.

- 4.2.02 SUBMITTALS: The Contractor shall submit manufacturer’s data on galvanized steel pipe and fittings certifying that the product provided meets the specified item.

- 4.2.03 INSTALLATION: Galvanized steel pipe and fittings shall be installed according to conventional industry procedures.

- 4.2.04 PAYMENT: Payment for GALVANIZED STEEL AND FITTINGS shall not be made separately; the compensation shall be a part of the Unit Price or Lump Sum Offer for which it is a part.

4.3 BRONZE FITTINGS AND APPURTENANCES:

- 4.3.01 GENERAL: The Contractor shall furnish and install bronze fittings and appurtenances as shown on the plans and specified herein. All waterworks bronze fittings and appurtenances shall be in compliance with the amended Section 1417 of Safe Drinking Water Act (SDWA) which takes on January 4, 2014. The amendment includes a change to the definition of “Lead-Free” by reducing lead content from 8% to a weighted average of not more than 0.25% in the wetted surface material. All waterworks brass fittings install for potable water

service on January 4, 2014 and beyond shall conform to the amended definition of “Lead-Free”.

All bronze fittings shall be ASTM B584 lead-free bronze.

4.4 SILENT CHECK VALVE:

- 4.4.01 GENERAL: The Contractor shall furnish and install silent check valves as shown on the plans and specified herein. Silent check valves shall be the globe style with flanges.
- 4.4.02 SUBMITTALS: The Contractor shall submit dimensional drawings, parts list drawings, and operation and maintenance manuals. The Contractor shall submit manufacturer’s data and test certificates certifying that the product provided meets the specified item.
- 4.4.03 MATERIALS: Body of the check valves shall be ASTM A126 Class B cast iron. Seat and disc shall be ASTM B584 lead-free bronze. Compression spring shall be ASTM A313 Type 316 stainless steel. Valve interiors and exteriors shall be coated with an NSF/ANSI 61 certified fusion bonded epoxy in accordance with AWWA C550. Color of exterior coating shall be Kaua’i Green.
- 4.4.04 DESIGN: The valve design shall incorporate a center guided, spring-loaded disc and have a short linear stroke that generates a flow area equal to the nominal valve size. All component parts shall be field replaceable without the need of special tools. Valves shall be provided with a replaceable guide bushing held in position by the spring. The spring shall be designed to withstand 100,000 cycles without failure and provide a cracking pressure of 0.5 psi. The valve disc and seat shall be designed and manufactured to ensure positive seating at all pressures. The leakage rate shall not exceed the allowable rate for metal seated valves allowed by AWWA C508. Valve seats shall be contained with a machined counterbore and restrained by the mating flange and gasket. Valves shall have a resilient seal on the seat to provide zero leakage at both high and low pressures without overloading or damaging the seal. The seal design shall provide both a metal-to-metal and a metal-to-resilient seal. Valves shall have flat face flanges in accordance with ASME B16.1 for Class 125 or Class 250 iron flanges.
- 4.4.05 MANUFACTURER: Valves shall be Series 1800 as manufactured by Val-Matic Valve & Mfg. Corporation, or Series 581 Silent Globe Check Valve by Cla-Val, or approved equal.
- 4.4.06 MANHOLES: Manholes for check valves shall conform to “Water System Standards” Section 302.23 – Manholes, unless otherwise indicated on the plans or special provisions.
- 4.4.07 PAYMENT: Payment for furnishing and installing silent check valves shall be made at the Unit Price Offer for CHECK VALVE ASSEMBLY, based on the actual number of the various sizes and types of valves installed and tested.

The Unit Price Offer for furnishing and installing CHECK VALVE ASSEMBLY shall be full compensation for all labor, materials, tools, and equipment for all handling, hauling, unloading, placing, jointing, testing, painting, and all other incidentals necessary to complete the work in place complete.

No separate payment for the furnishing and installation of reinforced concrete manholes, double-leaf aluminum covers with PVC drain pipes, brick support, excavation and backfill, drainage sumps with covers at bottom of manholes, crushed rock below manholes for drainage, flanged coupling adapters, pipe spools, pipe penetrations with sealant through manhole walls, and all incidentals and appurtenances shall be made; the compensation for such work shall be deemed to be included in the Unit Price Offer for CHECK VALVE ASSEMBLY.

4.5 ALTITUDE VALVE:

4.5.01 GENERAL: The Contractor shall furnish and install altitude valve as shown on the plans and specified herein.

4.5.02 SUBMITTALS: The Contractor shall submit dimensional drawings, parts list drawings, and operation and maintenance manuals. The Contractor shall submit manufacturer’s data and test certificates certifying that the product provided meets the specified item.

4.5.03 DESIGN: The valve shall control the high water level in reservoirs without the need for floats or other devices. It shall be a non-throttling type valve (either fully open or fully closed). The valve remains fully open; allowing normal flow to fill the reservoir until the maximum level shut-off point is reached and then closes drip tight at the set point. The valve automatically opens to refill the reservoir once the level drops a fixed distance below the high water level. This valve is designed for one-way flow only.

4.5.03.1 Material Specification for the Altitude Control Valves Main Valve as follows:

Component	Material
Body & Cover	Ductile Iron-ASTM A536 Cast Steel
Main Valve Trim	Stainless Steel
Seat	Stainless Steel
Stem, Nut and Spring	Stainless Steel Seal
Disc	Buna-N® Rubber
Diaphragm	Nylon Reinforced Buna-N®
Internal Trim Parts	Stainless Steel, Bronze, Brass
End Detail	Flanged
Pressure Rating	Class 150 lb. (250psi Max.)
Temperature Range	Water to 180°F
Any other wetted metallic parts	Stainless Steel; Bronze; Brass
Coating	Fusion Bonded Epoxy Coating (Interior and Exterior); ANSI / NSF 61 Approved / AWWA coating specifications C116-03.

4.5.03.2 Main Valve: The main valve shall be hydraulically operated, single diaphragm actuated, globe or angle pattern. The valve shall consist of three major components; the body with seat installed, the cover with bearing installed and the diaphragm assembly. The diaphragm assembly shall be the only moving part and shall form a sealed chamber in the upper portion of the valve, separating the operating pressure from line pressure. Packing glands, stuffing boxes and/or

rolling diaphragm technology will not be permitted and there shall be no pistons operating the main valve or pilot controls. No fabrication or welding shall be used in the manufacturing process. Y-pattern valves shall not be permitted. Main valve shall comply with NSF/ANSI Standard 61 and certified lead free to NSF/ANSI 372 as a safe drinking water system component.

4.5.03.3 Main Valve End Connections: End Connections for control valve shall be flanged per ASME/ANSI B16.42, Class 150 or Class 300 (2" thru 36") or Threaded End Connections (2", 2-1/2" and 3") or Grooved End Connections (2" thru 8").

4.5.03.4 Main Valve Body:

- A. No separate chamber(s) below the diaphragm shall be allowed between the main valve cover and body. No fabrication or welding shall be used in the manufacturing process.
- B. The valve shall contain a resilient, synthetic rubber disc with a rectangular cross-section contained on three and one half sides by a disc retainer and forming a tight seal against a single removable seat insert. No O-ring type discs (circular, square, or quad type) shall be permitted as the seating surface. The disc guide shall be of the contoured type to permit smooth transition of flow and shall hold the discs firmly in place. The disc retainer shall be of a sturdy one-piece design capable of withstanding opening and closing shocks. It must have straight edge sides and a radius at the top edge to prevent excessive diaphragm wear as the diaphragm flexes across this surface. No hours-glass shaped disc retainers shall be permitted and no V-type or slotted-type disc guides shall be used.
- C. The diaphragm assembly containing a non-magnetic stainless steel stem; of sufficient diameter to withstand high hydraulic pressures and shall be fully guided at both ends by a bearing in the main valve cover and an integral bearing in the valve seat. The valve seat shall be a solid, one-piece design and shall have a minimum five-degree taper on the seating surface for a positive, drip-tight shut off. No center guides shall be permitted. The stem shall be drilled and tapped in the cover end to receive and affix such accessories as may be deemed necessary. The diaphragm assembly shall be the only moving part and shall form a sealed chamber in the upper portion of the valve, separating the operating pressure from the line pressure. No bolts or cap screws shall be permitted for use in the construction of the diaphragm assembly.
- D. The flexible, non-wicking, FDA approved diaphragm shall consist of nylon fabric bonded with synthetic rubber compatible with the operating fluid. The diaphragm's center hole for the main valve stem must be sealed by the vulcanized process or a rubber grommet sealing the center stem hole from the operating pressure. The diaphragm must withstand a Mullins Burst Test of a minimum of 600 X per layer of nylon fabric and shall be cycled tested 100,000 times to insure longevity. The diaphragm shall not be used as the seating surface. The diaphragm shall be fully supported in the valve body

and cover by machined surfaces which support no less than one-half of the total surface area of the diaphragm in either the fully opened or fully closed position. Bellofram type rolling diaphragms shall not be permitted.

- E. The main valve seat and stem bearing in the valve cover shall be removable. The cover bearing and seat in the 6" and smaller size valve shall be threaded into the cover and body. The valve seat in the 8" and larger size valves shall be retained by flat head machine screws for ease of maintenance. The lower bearing of the valve stem shall be contained concentrically within the seat and shall be exposed to the flow on all sides to avoid deposits. To insure proper alignment of the valve stem, the valve body and cover shall be machined with a locating lip. No "pinned" covers to the valve body shall be permitted. Cover bearing, disc retainer and seat shall be made of the same material. All necessary repairs and/or modifications other than replacement of the main valve body shall be possible without removing the valve from the pipeline. The valve shall be designed such that both the cover assembly and internal diaphragm assembly can be disassembled and lifted vertically straight up from the top of a narrow opening/vault. Y-pattern valves shall not be permitted. The seat shall be of the solid one piece design. Two piece seats or seat inserts shall not be permitted. Packing glands and/or stuffing boxes shall not be permitted.

4.5.03.5 Pilot Control System:

- A. The pilot control shall be of a diaphragm-actuated, three-way type that operates on the differential force between the height of the water in the reservoir and an adjustable springload. The spring-load shall be an arrangement of smaller springs on a plate within the control. When actuated, the pilot control shall vent the cover of the main valve to atmosphere through the internal working of the pilot control to open the valve wide. When the desired level in the reservoir is reached, the static height of the tank shall head through a customer supplied sensing line connected directly to the reservoir. When the control shifts at high water level supply pressure shall be directed into the valve cover through the internal workings of the pilot control to close the valve. The pilot control senses the reservoir head by means of a sensing line connected between the pilot control and the reservoir. The pilot control shall be bracket mounted to the main valve.
- B. A valve position indicator shall be installed on the main valve cover and shall consist of a brass indicator rod fastened to the main valve stem which moves up and down inside a clear Pyrex tube contained in a bar brass housing open on two sides to permit clear vision of the brass indicator rod.
- C. The pilot control system shall include a strainer, closing speed needle valve and all required control accessories, equipment, control tubing and fittings. The pilot system shall include isolation ball valves on sizes 4" and larger as standard equipment. Five different adjustment spring settings shall be available, in ranges of 5 to 200 feet. Pilot to be manufactured by control valve manufacturer.

D. Material Specification for Pilot Control System:	
Component	Material
<u>Altitude Pilot Control</u>	
Pilots Body & Cover	Bronze, Low Lead CuZn21Si3P or UNS C87850
Pilot Trim	Brass & Stainless Steel
Seals & Diaphragm	Nitrile
Connections	FNPT
Pressure rating	150 psi Max.
Temperature Range	Water to 180°F Max.
Control Tubing	Copper
Control Fittings	Brass

4.5.03.6 Factory Assembly:

- A. Each control valve shall be factory assembled.
- B. The Quality Management System of the factory shall be certified in accordance with ISO 9001: 2008.
- C. For all control valves, the factory assembly shall include the complete main valve, pilot valve(s), and all associated accessories and control equipment.
 - d. During factory assembly the control valve manufacture shall make all necessary adjustments and correct any defects.

4.5.03.7 Nameplates:

- A. Each Control Valve and associated pilot(s) shall be provided with an identifying nameplate.
- B. Nameplates, depending on type and size of control valve, shall be mounted in the most practical position possible, typically on the inlet side of the valve body.
- C. Nameplates shall be brass and a minimum of 3/32" thick, 3/4" high and 2-3/4" long.
 - d. Pertinent control valve data shall be etched or stamped into the nameplate. Data shall include control valve Catalog number, function, size, material, pressure rating, end connection details, type of pilot controls used and control adjustment range.

4.5.03.8 Factory Testing:

- A. Each control valve shall be factory tested.
- B. The Quality Management System of the factory shall be certified in accordance with ISO 9001: 2008
- C. Tests shall conform to approved test procedures.

- D. The standard factory tests shall include a valve body and cover leakage test, seat leakage test and a stroke test. Control valves and pilot valves, in the partially open position, with both ends closed off with blind flanges (valves) and pipe plugs (pilots), shall be subject to an air test. The applied air pressure shall be 90 psi minimum. All air pressure tests shall be applied for a minimum of 15 minutes. No visible leakage is permitted through the valve seat, the pressure boundary walls of the valve body, valve cover, pilot body, pilot cover or the body-cover joint.
- E. Control valve manufacturer shall, upon request, offer additional testing, such as high pressure hydrostatic testing, positive material inspection testing, ferrite testing, liquid penetration inspection testing, magnetic particle examination testing and radiographic examination testing.

- 4.5.04 MANUFACTURER: Valves shall be 211-01 Altitude Valve for One-Way Flow by Cla-Val or approved equal.
- 4.5.05 MANHOLES: Manholes for altitude valves shall conform to “Water System Standards” Section 302.23 – Manholes, unless otherwise indicated on the plans or special provisions.
- 4.5.06 PAYMENT: Payment for furnishing and installing altitude valves shall be made at the Unit Price Offer for ALTITUDE VALVE, based on the actual number of the various sizes and types of valves installed and tested.

The Unit Price Offer for furnishing and installing ALTITUDE VALVE ASSEMBLY shall be full compensation for all labor, materials, tools, and equipment for all handling, hauling, unloading, placing, jointing, testing, painting, and all other incidentals necessary to complete the work in place complete.

No separate payment for the furnishing and installation of reinforced concrete manholes, double-leaf aluminum covers with PVC drain pipes, brick support, excavation and backfill, drainage sumps with covers at bottom of manholes, crushed rock below manholes for drainage, flanged coupling adapters, pipe spools, pipe penetrations with sealant through manhole walls, and all incidentals and appurtenances shall be made; the compensation for such work shall be deemed to be included in the Unit Price Offer for ALTITUDE VALVEASSEMBLY.

4.6 FLANGED COUPLING ADAPTERS:

- 4.6.01 GENERAL: The Contractor shall furnish and install flanged coupling adapters as shown on the plans and specified herein.
- 4.6.02 SUBMITTALS: The Contractor shall submit shop drawings and manufacturer’s data on flanged coupling adapters certifying that the product provided meets the specified item.
- 4.6.03 MATERIALS: Followers and middle rings shall be ductile iron conforming to ASTM A536. Coating shall be fusion-bonded powder epoxy conforming to NSF International Standard 61; color shall be Kaua‘i Green.

- 4.6.04 MANUFACTURER: Flanged coupling adapters shall be Dresser or approved equal. Model number and size shall be as indicated on the plans.
- 4.6.05 INSTALLATION: Flanged coupling adapters shall be installed in accordance with the manufacturer's recommendations, applicable code requirements, and "Water System Standards," dated 2002.
- 4.6.06 PAYMENT: Payment for FLANGED COUPLING ADAPTERS will be not be made directly but shall be a part of the Unit Price Offer for the item of which the FLANGED COUPLING ADAPTER is a part.

4.7 CURB BOXES:

- 4.7.01 GENERAL: The Contractor shall furnish and install silent check valves as shown on the plans and specified herein. Curb boxes shall be Arch pattern with steel stationary rod and plug style lid with standard pentagon bolt.
- 4.7.02 SUBMITTALS: The Contractor shall submit shop drawings and manufacturer's data on curb boxes certifying that the product provided meets the specified item.
- 4.7.03 MATERIALS: Lid and base shall be cast iron conforming to ASTM A48, Class 25. Brass plug shall conform to AWWA C800. Curb boxes shall be painted with black shop coat.
- 4.7.04 MANUFACTURER: Curb boxes shall be manufactured by The Ford Meter Box Company, Inc. or approved equal. Curb box model number(s) shall be as shown on the construction drawings.
- 4.7.05 INSTALLATION: Curb boxes shall be installed in accordance with the manufacturer's recommendations, applicable code requirements, and the "Water System Standards," dated 2002.
- 4.7.06 SPARE KEYS: The Contractor shall provide three (3) spare curb box pentagon keys per curb box installed at no additional cost to the Department of Water. The keys shall be cast steel with zinc plating for corrosion resistance.
- 4.7.07 PAYMENT: Payment for CURB BOXES will be not be made directly but shall be a part of the Unit Price Offer for the item of which the CURB BOX is a part.

4.8 JOINT FILLER:

- 4.8.01 GENERAL: The Contractor shall furnish joint filler as shown on the plans and specified herein.
- 4.8.02 SUBMITTALS: The Contractor shall submit the material safety data sheet
- 4.8.03 MATERIALS: Joint filler shall be self-leveling, flexible polyurethane.
- 4.8.04 MANUFACTURER: Joint filler shall be Sikaflex Self Leveling Sealant or approved equal.

- 4.8.05 INSTALLATION: Joint filler shall be applied per manufacturer's instructions.
- 4.8.06 PAYMENT: Payment for JOINT FILLER shall not be made separately; the compensation shall be a part of the Unit Price Offer or Lump Sum Offer for which it is a part.

SECTION SP-5 – REMOVAL AND DISPOSAL OF HAZARDOUS MATERIALS

5.1. DESCRIPTION:

The work covered by this section includes the handling of non-friable asbestos containing materials. The Contractor shall be responsible for the incidental procedures and equipment required to protect workers and occupants of the area from contact with airborne asbestos fibers.

The work also includes the disposal of removed asbestos-containing materials and debris. The Contractor shall perform the asbestos-related work in accordance with 29 CFR 1926.1101, 29 CFR 1910.134, 29 CFR 1910.1020, 29 CFR 1926.59, 40 CFR 61 Subparts A and M, 40 CFR Part 763, Hawaii Occupational Safety and Health Standards; Part 3, Construction Standards; Chapter 145.1 (HIOSH 12-145.1), Department of Transportation (DOT) Rules and Regulations, Department of Health (DOH) Administrative Rules Title 11, Chapter 501-1 through 501-4, and the requirements specified herein. Where conflict of any inconsistency among requirements or with these specifications exists, the more stringent requirements shall apply.

The Contractor agrees to indemnify and hold harmless the Department of Water (DOW) and its design consultant team against all damages, liabilities, or costs; including legal fees; to the extent caused by the Contractor's non-compliance with applicable laws and regulations.

5.2. ASBESTOS SURVEY:

A Hazardous Materials Survey was not performed for the existing water lines. Materials listed below should be assumed to be regulated asbestos-containing materials.

Asbestos-Containing Materials to be removed and disposed of include:

Existing waterlines within Pu'uwai, Pu'ulima, Po'ohiwi, and Kikala Roads.

5.3. QUALIFIED CONSULTANT:

5.3.01 The Contractor shall retain the services of an independent Qualified Consultant to perform required testing and laboratory analysis (not including Contractor's personnel monitoring and analysis); to ensure Contractor's compliance with regulations and this section; and to recommend appropriate engineering controls that the Contractor must comply with.

5.3.02 The Contractor shall hire and pay for a Qualified Consultant for the approval of all pre-work, during work and completion of work submittals. Copies of these submittals shall be submitted to DOW.

5.3.03 The Contractor's Qualified Consultant may delegate the ongoing implementation and enforcement of the specifications, including the air-monitoring program and final visual inspections of removal areas, to an Industrial Hygiene Technician. The Contractor's Qualified Consultant shall conduct on-site supervision as necessary and continued evaluation of the effectiveness of the Contractor's asbestos removal plan and the Industrial Hygiene Technician's implementation of the asbestos removal plan.

5.4. SUBMITTALS:

5.4.01. PRE-WORK SUBMITTALS: The following must be approved by the Contractor's Qualified Consultant and submitted to the Officer-In-Charge for their information, a minimum of ten (10) working days prior to start of work. Any delays to the project due to inadequate submittals by the Contractor are not a cause for additional payment:

- A. Asbestos Removal Work Plan
- B. Name and qualifications of Contractor's Qualified Consultant who by education and/or experience is competent to perform and certify any required testing and laboratory analysis.
- C. Testing laboratory qualifications and accreditations
- D. List of employees who will be working at the job site
- E. Current and valid training certificates and medical monitoring documentation for all employees who will perform work at the job site.
- F. Proposed schedule of work (Submit in writing five (5) working days prior to the start of work).

5.4.02. DURING WORK AND COMPLETION OF WORK SUBMITTALS:

- A. The following are required submittals for applicable work sequences:
 - 1. Revised schedule of work: if changing proposed schedule, submit revised schedule for approval two (2) working days prior to beginning revised schedule.
 - 2. All personnel air monitoring field data sheets, laboratory reports, and results on a weekly basis during the project and at the completion of the project.
 - 3. All completed and signed disposal manifests within two (2) working days of receipt.
 - 4. Revised Asbestos Removal Work Plan: if proposing changes to original plan during the course of the project, the Revised Asbestos Removal Work Plan must be submitted to DOW prior to performing revised work technique. Any delay to the project or additional cost to the DOW to review shall be paid for by the Contractor and be deducted from his contract as liquidated damages.
 - 5. List of any changes of personnel for the project and include additional required training certificates and medical documentation (must be certified in writing by Contractor's Qualified Consultant prior to new personnel being allowed on site).

6. Weekly job progress report.

5.5. PERMITS, STATE LICENSES, AND NOTIFICATIONS:

5.5.01 The Contractor shall obtain necessary permits and state license in conjunction with asbestos removal, hauling, and disposal, and furnish timely notification of such actions required by federal, state, regional, and local authorities. Notify DOW in writing ten (10) working days prior to the commencement of work in accordance with 40 CFR 61, Subpart M. Furnish a copy of permits, state licenses, and applicable notifications to DOW.

5.5.02 Submit a work schedule to DOW in writing five (5) working days prior to the start of work on site.

5.6. MEDICAL EXAMINATION:

Before exposure to airborne asbestos fibers, the Contractor shall provide workers with a comprehensive medical examination as required by 29 CFR 1926.1101 and HIOSH 12-145.1. This examination will not be required if adequate records show the employees have been examined for asbestos as required by 29 CFR 1926.1101 and HIOSH 12-145.1 within the last year.

5.7. TRAINING:

As required by 40 CFR, Part 763, Subpart E, and Asbestos Hazard Emergency Response Act (AHERA), within the one year prior to assignment to asbestos-related work, each employee shall be instructed by an EPA approved training provider, or equivalent safety specialist with regards to the hazards of asbestos; safety and health precautions; the use and requirements for protective clothing, equipment and respirators, and the additional requirements of 29 CFR 1926.1101 and HIOSH 12-145.1. The more stringent EPA training requirements shall prevail if they exist. Submit training certificates signed and dated by an EPA approved training provider, or equivalent safety specialist for each employee showing that the employee has received training in accordance with 40 CFR, Part 763, Subpart E, and AHERA. The Contractor's air sampling personnel shall have current AHERA Project Monitor and AHERA Contractor/Supervisor Training Certificates.

5.8. RESPIRATOR PROGRAM:

Establish and implement a respirator program as required by ANSI Z88.2 and 29 CFR 1910.134.

5.9. ASBESTOS REMOVAL WORK PLAN:

The Contractor shall submit to DOW for their information and to the Contractor's Qualified Consultant for approval a detailed, job-specific work plan of the work procedures to be used in the removal and disposal of materials containing asbestos at least ten (10) working days prior to the start of the work. The Asbestos Removal Work Plan shall then become a part of this contract and shall be strictly adhered to. The work plan shall also include interface of trades involved in the construction, sequencing of asbestos-related work, work area preparation plan, disposal plan, air sampling plan, respirators, protective equipment, decontamination procedures, worker training certification, worker medical monitoring documentation, emergency procedures, and a detailed description of the method to be employed in order to control pollution. The air-sampling portion of

the plan shall include air sampling training and strategy, estimated number of air samples, and air sampling methodology. The plan shall be approved prior to the start of asbestos removal work. Prior to beginning work, the Contractor and Contractor's Qualified Consultant shall meet with DOW to discuss in detail the Asbestos Removal Work Plan, including work procedures and safety precautions. At the conclusion of the project, the Contractor and Contractor's Qualified Consultant shall submit a co-signed Certification stating that the removal of asbestos-containing materials was completed in accordance with the Asbestos Removal Work Plan and subsequent revisions and additions and in accordance with all applicable rules and regulations.

5.10. CONTRACTOR REQUIRED TESTING:

The Contractor shall provide and pay for all required OSHA testing for his workers. The Contractor shall submit the name, address, and telephone number of the independent testing laboratory selected to perform personal monitoring, testing, and reporting of airborne concentrations of asbestos fibers along with certification that the laboratory has been judged proficient in asbestos analysis by successful participation within the last year in the National Institute for Occupational Safety and Health (NIOSH) Proficiency Analytical Testing (PAT) Program for Asbestos. Submit evidence that air samples will be analyzed as required by Appendix A of 29 CFR 1926.1101.

5.11. TESTING:

5.11.01 The Contractor's Qualified Consultant shall perform area monitoring during the entire asbestos removal operation. If the concentration of airborne asbestos fibers at the boundaries is greater than or equal to 0.01 fibers (longer than 5 micrometers) per cubic centimeter of air, or background quantity whichever is greater, or visible dust is observed, the Contractor shall stop work and immediately correct the conditions. Contaminated areas shall be cleaned at Contractor's expense. The Contractor's Qualified Consultant shall certify that the area has been cleaned of all asbestos material contamination.

5.11.02 The Contractor or the Contractor's Qualified Consultant shall conduct personal air monitoring on 25 percent of the work crew or a minimum of two (2) employees, whichever is greater, during each work shift. The Contractor shall be responsible for providing the personal monitoring and necessary records for all of the Contractor's employees on a daily basis and as certified by the Contractor's Qualified Consultant. The Contractor shall procure legally required reports for air monitoring as part of the contract.

5.11.03 Contractor's testing shall be completed and results submitted to DOW within 24 hours.

5.12. EQUIPMENT:

5.12.01 Respirators: Select respirators approved by the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services, for use in atmospheres containing asbestos fibers. The Contractor shall comply with the requirements of 29 CFR 1926.1101 and HIOSH 12-145.1. For this project, respirators shall be worn at all times throughout the removal process or as deemed necessary by the Contractor's Qualified Consultant.

5.12.02 Protective Clothing: Furnish personnel exposed to airborne concentrations of asbestos fibers with fire-retardant, disposable, protective whole body clothing, head covering,

gloves, and foot coverings. Furnish disposable plastic or rubber gloves to protect hands. Use tape to secure sleeves at the wrists and to secure foot coverings at the ankles. For this project, protective clothing shall be worn at all times throughout the removal process or as deemed necessary by the Contractor's Qualified Consultant.

- 5.12.03 **Warning Signs and Labels:** Provide warning signs at approaches to asbestos control areas. Locate signs at such a distance that personnel may read the sign and take the necessary precautions before entering the area. Affix labels to asbestos materials, scrap, waste, debris, sealed impermeable bags, asbestos waste drums, and other asbestos-contaminated products. Signs and labels shall comply with the requirements of 29 CFR 1926.1101 and HIOSH 12-145.1. Warning signs and labels shall be provided throughout the entire project and as deemed necessary by the Contractor's Qualified Consultant.

5.13. **WORK PROCEDURE:**

- 5.13.01 Perform asbestos-related work as specified herein. Personnel shall wear and use protective clothing and equipment as specified herein. Eating, smoking, or drinking shall not be permitted in the asbestos control area. No one shall be permitted in the asbestos control area unless they are provided with appropriate training and protective equipment (respirators and disposable coveralls). The Contractor shall be responsible for providing their personnel with the appropriate training and the necessary protective equipment while performing asbestos-related work. Absolutely no dry scraping, sawing, sanding, drilling, or any other dust producing methods shall be utilized on asbestos-containing materials. The Contractor shall be solely responsible for complying with all regulations concerning his employees' safety and health.
- 5.13.02 **Asbestos Control Area Requirements:** Provide a 20-foot roped-off perimeter around the area where the asbestos handling procedures are to be performed. No one shall be permitted in the asbestos control area unless the person is provided with appropriate training and protective equipment. During the asbestos removal operation, should the asbestos abatement employees need to exit the controlled area, they shall be required to remove their disposable coveralls, place them in an approved impermeable disposal bag, and then exit the area.
- 5.13.03 **Asbestos Handling Procedures:** Asbestos-containing materials shall be removed as whole sections. No cutting of the asbestos-containing cement pipe shall be conducted. Asbestos-containing materials shall be placed in sealed, impermeable bags. Collect asbestos waste, scrap, debris, bags, containers, equipment, and asbestos-contaminated clothing which may produce airborne concentrations of asbestos fibers; place in sealed impermeable bags constructed of at least 6-mil plastic material. This bag shall then be placed in another impermeable bag; the bag shall be twisted, goose-necked, and taped. Asbestos materials that cannot be placed in bags shall be double-wrapped in 6-mil plastic sheeting. Where impermeable bags cannot be used, the Contractor shall submit, in the Asbestos Removal Work Plan, an alternate proposal for removal of asbestos materials and containment of asbestos fibers. All bags and containers containing asbestos materials must be properly labeled in accordance with 29 CFR 1926.1101 and HIOSH 12-145.1.

5.14. **CLEANUP AND DISPOSAL:**

5.14.01 Maintain surfaces of the asbestos control area free of accumulations of asbestos fibers. Restrict the spread of dust and debris; keep waste from being distributed over the general area. Do not dry sweep or blow down the space with compressed air. Remove all visible accumulation of asbestos-containing materials and debris by HEPA vacuums, sponging, and wet wiping. The Contractor's Qualified Consultant shall visually inspect the affected surfaces for residual asbestos materials and accumulated dust before and after the removal of the asbestos control area. The Contractor shall re-clean areas showing dust or residual asbestos materials. If re-cleaning is required, the Contractor's Qualified Consultant shall monitor the asbestos airborne concentration after re-cleaning. Do not remove the roped-off perimeter and caution signs prior to the Officer-In-Charge's receipt of the Contractor's Qualified Consultant's certification. Signage applicable to job site safety and the performance of the remaining portions of the work shall remain as applicable.

5.14.02 Disposal of Asbestos: Dispose of waste asbestos materials at a State-approved sanitary landfill. Procedures for hauling and disposal shall comply with 40 CFR 61, Subpart M, and State, regional, and local standards. Sealed impermeable bags may be removed from drums into the burial site unless bags have been broken or damaged. Damaged bags shall remain in the drum and the entire contaminated drum shall be buried. Uncontaminated drums may be recycled. Workers unloading sealed drums shall wear appropriate respirators and personal protective equipment when handling asbestos materials at the disposal site as directed by the Contractor's Qualified Consultant.

The Contractor shall submit disposal manifest and receipts showing acceptance of the material by the approved waste disposal site to the Officer-In-Charge. The shipping papers shall use chain-of-custody form and include names and addresses of the Facility Owner, the Contractor, and the Landfill Operator and information on the type and number of waste containers.

5.14.03 Double Tape Wrapped: All asbestos materials shall be wrapped in 6-mil minimum thickness polyethylene sheets and taped with minimum 2-inch wide silver cloth duct tape. The asbestos materials shall be rewrapped with a second polyethylene sheet and taped before disposal to the dumpsite. Damaged polyethylene sheeting will not be accepted for disposal at the landfill.

5.15. PAYMENT:

Payment for REMOVAL AND DISPOSAL OF HAZARDOUS MATERIALS will not be made separately; the compensation for such work shall be deemed to be included in the Unit Price Offer for SITE EXCAVATION.

SECTION SP-6 - ENVIRONMENTAL POLLUTION CONTROL

6.1 GENERAL: This section covers the requirements of environmental pollution control during construction activities. The Contractor shall be responsible for conformance to Title 11, Chapter 60 of the Public Health Regulations, Department of Health, State of Hawai'i.

6.2 GUIDELINES AND CRITERIA:

6.2.01 EROSION AND SEDIMENT CONTROL:

- A. Soil Protection and drainage facilities shall be completed as early as practicable. Sections of bare earth and the length of their exposure to erosion shall be minimized by proper scheduling and limiting the work areas.
- B. Surface drainage from cuts and fills within the construction limits and from borrow and waste disposal areas shall, if turbidity producing materials are present, be held in suitable sedimentation ponds or shall be graded to control erosion within acceptable limits.

6.2.02 LANDSCAPE PRESERVATION AND PROTECTION:

- A. Construction activities shall be confined to the work areas defined by the plans and specifications. Care shall be exercised to preserve the natural landscape.
- B. All scars made on trees by equipment, construction operations, or by removal of limbs larger than one inch in diameter shall be examined by a certified arborist retained by the Contractor. The Contractor shall implement all remediation actions recommended by the arborist.
- C. All items having any apparent historical or archaeological interest which are discovered in the course of any construction activities shall be carefully preserved.

6.2.03 DUST CONTROL: Dust which could damage crops or dwellings or cause nuisance to persons shall be abated and control measures shall be utilized. The Contractor shall be held liable for any damage resulting from dust originating from his operations.

- A. The Contractor shall erect and maintain a construction fence in the general alignment shown on the plans. Fence shall be installed at the start of construction and shall remain in place until completion of the Project Package. Integration of construction fence with dust fencing and silt barriers is at the option of the Contractor. Minimum height of fence shall be 12 feet. The Contractor shall design the fence with adequate screening from the public. The fence shall be designed to withstand wind loads and other site conditions. Submit shop drawing of proposed fence identifying material of construction and finish of fencing exposed to off-site areas and public view.

6.2.04 WASTE DISPOSAL:

- A. Care shall be exercised to ensure that disposal of wastes from construction operations do not create pollution problems.

- B. Disposal of any materials, wastes, effluent, trash, garbage, oil, grease, chemicals, etc., shall meet all regulatory requirements and be subject to the approval of the Manager.
- C. Waste Waters: Construction operations shall be conducted so as to prevent discharge or accidental spillage of pollutants, solid waste, debris, and other objectionable wastes in surface waters and underground water sources.
- D. Disposal of waste materials including drill cuttings, well cleaning, development and pump testing waste waters, etc. shall meet all regulatory requirements and be subject to the approval of the Manager.

6.2.05 NOISE CONTROL: The operating schedule of large horsepower heavy equipment shall be planned to have the least impact upon nearby residents. Night operations shall only be conducted with the prior approval of the Manager and shall be curtailed or stopped when a disturbance is created.

6.3 PAYMENT: Payment for ENVIRONMENTAL POLLUTION CONTROL will not be made separately; the compensation shall be considered incidental to the Total Sum Offer of which it is a part.

SECTION SP-7 – DOOR HARDWARE

- 7.1 GENERAL: This section includes Door hardware.
- 7.2 REFERENCES: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only. Where a referenced document contains references to other standards, those documents are included as references under this section as if referenced directly. In case of conflict between the requirements of this specification and those of the listed documents, the requirements of this specification shall prevail.

Unless otherwise specified, references to documents shall mean the documents in effect at the time of Advertisement for Invitation for Bids (IFB). If referenced documents have been discontinued by the issuing organization, references to those documents shall mean the replacement documents issued or otherwise identified by that organization or, if there are no replacement documents, the last version of the document before it was discontinued. Where document dates are given in the following listing, references to those documents shall mean the specific document version associated with that date, regardless of whether the document has been superseded by a version with a later date, discontinued, or replaced.

- A. American National Standards Institute – ANSI 156.18 – Materials and Finishes.
 - a. ICC/ANSI A117.1 - 1998 – Specifications for making buildings and facilities usable by physically handicapped people.
 - b. ANSI A156.18 Materials and Finishes
- B. ADA/ABA Guidelines – Americans with Disabilities Act Accessibility Guide- lines.
- C. BHMA – Builders Hardware Manufacturers Association
- D. DHI – Door and Hardware Institute
- E. NFPA – National Fire Protection Association
 - a. NFPA 80 – Fire Doors and Windows
 - b. NFPA 105 – Smoke and Draft Control Door Assemblies
 - c. NFPA 252 – Fire Tests of Door Assemblies
- F. UL – Underwriters Laboratories
 - a. UL10C – Positive Pressure Fire Tests of Door Assemblies.
- G. WHI – Warnock Hersey Incorporated
- H. Local applicable codes

- I. SDI – Steel Door Institute
- J. NAAMM – National Association of Architectural Metal Manufacturers

7.3 ABBREVIATIONS:

- 7.3.01 Manufacturers: see table at 7.9 of this section
- 7.3.02 Finishes: see 7.14 of this section.

7.4 SUBMITTALS & SUBSTITUTIONS:

- 7.4.01 SUBMITTALS: Submit six copies of schedule. Only submittals printed one sided will be accepted and reviewed. Organize vertically formatted schedule into “Hardware Sets” with index of doors and headings, indicating complete designations of every item required for each door or opening. Minimum 10pt font size. Include following information:
 - A. Type, style, function, size, quantity and finish of hardware items.
 - B. Use BHMA Finish codes per ANSI A156.18.
 - C. Name, part number and manufacturer of each item.
 - D. Fastenings and other pertinent information.
 - E. Location of hardware set coordinated with floor plans and door schedule.
 - F. Explanation of abbreviations, symbols, and codes contained in schedule.
 - G. Mounting locations for hardware.
 - H. Door and frame sizes, materials and degrees of swing.
 - I. List of manufacturers used and their nearest representative with address and phone number.
 - J. Catalog cuts.
 - K. Date of jobsite visit.
- 7.4.02 SUBSTITUTIONS: Propose and submit manufacturer’s updated or improved item if scheduled item is discontinued. Propose and submit manufacturer’s information for items listed with no substitute manufacturers to the Department of Water for approval.
- 7.4.03 DEVIATIONS: Highlight, encircle or otherwise identify deviations from “Schedule of Finish Hardware” on submittal with notations clearly designating those portions as deviating from this section.

7.4.04 DISCREPANCIES: If discrepancies between drawings and scheduled material in this section are discovered, propose the more expensive of the two choices, note the discrepancy in the submittal and request direction from the Department of Water for resolution.

7.4.05 PRODUCT DATA: Include product data and indicate benefit to the Project. Furnish operating samples on request.

7.4.06 AS-BUILT/AS-INSTALLED SCHEDULE: Furnish as-built/as-installed schedule with closeout documents, including keying schedule, manufacturers' installation, adjustment and maintenance information, and supplier's final inspection report.

7.5 QUALITY ASSURANCE:

7.5.01 QUALIFICATIONS:

A. Hardware supplier: direct factory contract supplier who employs a certified architectural hardware consultant (AHC), available at reasonable times during the course of work for project hardware consultation with the Owner and Contractor.

(1) Responsible for detailing, scheduling and ordering of finish hardware. Detailing implies that the submitted schedule of hardware is correct and complete for the intended function and performance of the openings.

B. Hardware: Free of defects, blemishes and excessive play. Obtain each kind of hardware (latch and locksets, hinges and closers) from one manufacturer.

C. Fire-Rated Openings: NFPA 80 compliant. Hardware UL10C / IBC 2003 Section 715.4.1 (positive pressure) compliant for given type/size opening and degree of label. Provide proper latching hardware, non-flaming door closers, approved-bearing hinges, and resilient seals. Furnish openings complete.

7.5.02 Furnish hardware items required to complete the work in accordance with specified performance level and design intent, complying with manufacturers' instructions and code requirements.

7.6 DELIVERY, STORAGE, AND HANDLING:

7.6.01 Delivery: coordinate delivery to appropriate locations.

A. Permanent keys and cores: secured delivery direct to Owner's representative.

7.6.02 Acceptance at Site: Items individually packaged in manufacturers' original containers, complete with proper fasteners and related pieces. Clearly mark packages to indicate contents, locations in hardware schedule and door numbers.

7.6.03 Storage: Provide securely locked storage area for hardware, protect from moisture, sunlight, paint, chemicals, dust, excessive heat and cold, etc.

7.7 PROJECT CONDITIONS AND COORDINATION:

7.7.01 Where exact types of hardware specified are not adaptable to finished shape or size of members requiring hardware, provide suitable types having as nearly as practical the same operation and quality as type specified.

7.7.02 COORDINATION: Coordinate hardware with other work. Furnish hardware items of proper design for use on doors and frames of the thickness, profile, swing, security and similar requirements indicated, as necessary for proper installation and function, regardless of omissions or conflicts in the information on the Contract Documents. Furnish related trades with the following information:

- A. Location of embedded and attached items to concrete.
- B. Location of wall-mounted hardware, including wall stops.
- C. Location of finish floor materials and floor-mounted hardware.
- D. At masonry construction, coordinate with the anchoring and hollow metal supplier prior to frame installation by placing a strip of insulation, wood, or foam, on the back of the hollow metal frame behind the rabbet section for continuous hinges, as well as at rim panic hardware strike locations, silencers, coordinators, and door closer arm locations. When the frame is grouted in place, the backing will allow drilling and tapping without dulling or breaking the installer's bits.
- E. Coordinate: flush top rails of doors at out-swinging exteriors, and throughout where adhesive-mounted seals occur.
- F. Manufacturers' templates to door and frame fabricators.

7.7.03 Coordinate door hardware components and wiring with Electrical Drawings.

7.7.04 Check Shop Drawings for doors and entrances to confirm that adequate provisions will be made for proper hardware installation.

7.7.05 Prior to submittal, carefully inspect existing conditions to verify finish hardware required to complete Work, including sizes and quantities.

7.8 WARRANTY:

7.8.01 Warranties shall be part of respective manufacturers' regular terms of sale. Provide manufacturers' written warranties for the following items for the duration specified:

- 1. Locksets: Three years
- 2. Extra Heavy Duty Cylindrical Lock: Seven Years
- 3. Closers: Ten years mechanical
Two years electrical

- | | |
|-------------------|-----------|
| 4. Hinges: | One year |
| 5. Other Hardware | Two years |

7.9 COMMISSIONING:

Conduct these tests prior to request for certificate of substantial completion:

1. With installer present, test door hardware operation.

7.10 MANUFACTURERS:

Manufacturers and their abbreviations used in this schedule:

IVE	H. B. Ives
ADA	Adams Rite
PEM	Pemko
SCH	Schlage Lock Company
SCE	Schlage Electronics
VON	Von Duprin

7.11 HINGING METHODS:

7.11.01 Drawings typically depict door swing of 90 degrees. Doors will actually swing to maximum allowable. Use wide-throw conventional or continuous hinges as needed up to 8 inches in width to allow door to stand parallel to wall for true 180-degree opening.

7.11.02 Conform to manufacturer’s published hinge selection standard for door dimensions, weight and frequency, and to hinge selection as scheduled. Where manufacturer’s standard exceeds the scheduled product, furnish the heavier of the two choices.

7.11.03 Conventional Hinges: Steel or stainless-steel pins and concealed bearings. Hinge open widths minimum, but of sufficient throw to permit maximum door swing.

- A. Out-swinging exterior doors: non-ferrous with non-removable (NRP) pins and security studs.
- B. Non-ferrous material exteriors and at doors subject to corrosive atmospheric conditions.

7.11.04 Pivots: high-strength forged bronze or stainless steel, tilt-on precision bearing, and bearing pin.

- A. Bottom and intermediate pivots: adjustability of minus 0.063 inch, plus 0.125 inch.

7.12 LOCKSETS, LATCH SETS, DEADBOLTS:

7.12.01 Extra Heavy Duty Cylindrical Locks and Latches: as scheduled.

- A. Chassis: cylindrical design, corrosion-resistant plated cold-rolled steel, through bolted.
- B. Locking Spindle: stainless steel, integrated spring and spindle design.
- C. Latch Retractors: forged steel. Balance of inner parts: corrosion-resistant plated steel, or stainless steel.
- D. Latchbolt: solid steel.
- E. Backset: 2.75 inches typically, more or less as needed to accommodate frame, door or other hardware.
- F. Lever Trim: accessible design, independent operation, spring-cage supported, minimum 2.00 inches clearance from lever mid-point to door face.
- G. Strikes: 16 gage curved steel, bronze or brass with 1.00 inch deep box construction, lips of sufficient length to clear trim and protect clothing.
- H. Lock Series and Design: Schlage ND series, "Rhodes" design.
- I. Certifications:
 - (1) ANSI A156.2, 1994, Series 4000, Grade 1.
 - (2) UL listed for A label and lesser class single doors up to 4 feet x 8 feet.
- J. Accepted substitutions: Falcon T Series. Best 9K Series.

7.13 CLOSERS:

7.13.01 Surface Closers:

- A. Full rack-and-pinion type cylinder with removable non-ferrous cover and cast iron body. Double heat-treated pinion shaft, single piece forged piston, chrome- silicon steel spring.
- B. ISO 2000 certified. Units stamped with date-of-manufacture code.
- C. Independent lab-tested 5,000,000 cycles.
- D. Non-sized, non-handed and adjustable. Place closers inside building, stairs and rooms.
- E. Plates, brackets and special templating when needed for interface with particular header, door and wall conditions and neighboring hardware.
- F. Adjustable to open with not more than 8.0-pounds pressure to open at exterior doors and 5.0-pounds at interior doors.
- G. Separate adjusting valves for closing speed, latching speed and backcheck, fourth valve for delayed action where scheduled.

- H. Extra-duty arms (EDA) at exterior doors scheduled with parallel arm units.
- I. Exterior door closers: tested to 100 hours of ASTM B117 salt spray test, furnish data on request.
- J. Exterior doors: seasonal adjustments not required for temperatures from 120 degrees F to 0 degrees F, furnish checking fluid data on request.
- K. Non-flaming fluid, will not fuel door or floor covering fires.
- L. Pressure Relief Valves (PRV) not permitted.
- M. Accepted Substitutions: Falcon SC80 Series. Stanley D3550 Series.

7.14 OTHER HARDWARE:

7.14.01 Kick Plates: Four beveled edges, .050 inches minimum thickness, height and width as scheduled. Sheet-metal screws of bronze or stainless steel to match other hardware.

7.14.02 Door Stops: Provide stops to protect walls, casework or other hardware.

- A. Unless otherwise noted in Hardware Sets, provide floor type with appropriate fasteners. Where floor type cannot be used, provide wall type. If neither can be used, provide overhead type.

7.14.03 Seals: Inelastic, rigid back, not subject to stretching. Self-compensating for warp, thermal bow, door settling, and out-of-plumb. Adhesive warranted for life of installation.

7.14.04 Thresholds: As scheduled and per details. Comply with ICC/ANSI A117.1 Section 404.2.4 & 303. Substitute products: certify that the products equal or exceed specified material's thickness. Proposed substitutions: submit for approval.

- A. Saddle thresholds: 0.125 inches minimum thickness.
- B. Exteriors: Seal perimeter to exclude water and vermin. Minimum 0.25 inch diameter fasteners and lead expansion shield anchors, or Red-Head #SFS-1420 (or approved equivalent) Flat Head Sleeve Anchors (SS/FHSL).
- C. Fire-rated openings, 90-minutes or less duration: use thresholds to interrupt floor covering material under the door where that material has a critical radiant flux value less than 0.22 watts per square centimeter, per NFPA 253. Use threshold unit as scheduled. If none scheduled, request direction from Architect.
- D. Plastic plugs with wood or sheet metal screws are not an acceptable substitute for specified fastening methods.
- E. Fasteners: Generally, exposed screws to be Phillips or Robertson drive. Pinned TORX drive at high security areas. Flat head sleeve anchors (FHSL) may be slotted drive. Sheet

metal and wood screws: full-thread. Sleeve nuts: full length to prevent door compression.

7.14.05 Silencers: Interior hollow metal frames, 3 for single doors, 4 for pairs of doors. Leave no unfilled/uncovered pre-punched silencer holes. Intent: door bears against silencers, seals make minimal contact with minimal compression – only enough to effect a seal.

7.15 FINISH:

7.15.01 Generally: BHMA 626 Satin Chromium.

A. Areas using BHMA 626: furnish push-plates, pulls and protection plates of BHMA 630, Satin Stainless Steel, unless otherwise scheduled.

7.15.02 Door closers: factory powder coated to match other hardware, unless otherwise noted.

7.16 KEYING REQUIREMENTS: Key System: Existing Schlage Everest D SFIC key system. Initiate and conduct meeting(s) with Owner to determine system structure, furnish Owner's written approval of the system; do not order keys or cylinders without written confirmation of actual requirements from the Owner. Furnish temporary construction-keyed and permanent cylinders. Contractor to demonstrate to the Owner that temporary keys no longer operate the locking cylinders at the end of the project.

7.17 ACCEPTABLE INSTALLERS: Can read and understand manufacturers' templates, suppliers' hardware schedule and printed installation instructions. Can readily distinguish drywall screws from manufacturers' furnished fasteners. Available to meet with manufacturers' representatives and related trades to discuss installation of hardware.

7.18 PREPARATION:

7.18.01 Ensure that walls and frames are square and plumb before hardware installation. Make corrections before commencing hardware installation. Installation denotes acceptance of wall/frame condition.

7.18.02 Locate hardware per SDI-100 and applicable building, fire, life-safety, accessibility, and security codes.

A. Notify Architect of code conflicts before ordering material.

B. Locate latching hardware between 34 inches to 44 inches above the finished floor.

C. Where new hardware is to be installed near existing doors/hardware scheduled to remain, match locations of existing hardware.

7.18.03 Existing frames and doors to be retrofitted with new hardware:

A. Field-verify conditions and dimensions prior to ordering hardware. Fill existing hardware cut outs not being reused by the new hardware. Remove existing hardware not being reused, return to Owner unless directed otherwise.

- B. Remove existing floor closers not scheduled for reuse, fill cavities with non- shrinking concrete and finish smooth.
- C. Cut and weld existing steel frames currently prepared with 2.25-inch height strikes. Cut an approximate 8-inch section from the strike jamb and weld in a reinforced section to accommodate specified hardware's strike.
- D. Provide wrap-around repair plates at doors where required to cover the original preparation and allow installation of new hardware.

7.19 INSTALLATION:

- 7.19.01 Install hardware per manufacturer's instructions and recommendations. Do not install surface-mounted items until finishes have been completed on substrate. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate for proper installation and operation. Remove and reinstall or replace work deemed defective by Architect.
 - A. Gaskets: install jamb-applied gaskets before closers, overhead stops, rim strikes, etc.; fasten hardware over and through these seals. Install sweeps across bottoms of doors before astragals, cope sweeps around bottom pivots, trim astragals to tops of sweeps.
 - B. When hardware is to be attached to existing metal surface and insufficient reinforcement exists, use RivNuts, NutSerts or similar anchoring device for screws.
 - C. Use manufacturers' fasteners furnished with hardware items.
 - D. Replace fasteners damaged by power-driven tools.
- 7.19.02 Locate floor stops no more than 4 inches from walls and not within paths of travel. See paragraph 2.02 regarding hinge widths, door should be well clear of point of wall reveal. Point of door contact no closer to the hinge edge than half the door width. Where situation is questionable or difficult, contact Architect for direction.
- 7.19.03 Core concrete for exterior door stop anchors. Set anchors in approved non-shrink grout.
- 7.19.04 Lubricate and adjust existing hardware scheduled to remain. Carefully remove and give to Owner items not scheduled for reuse.
- 7.19.05 Field-verify existing conditions and measurements prior to ordering hardware. Fill existing hardware cut outs not being used by the new hardware.
- 7.19.06 Remove existing hardware not being reused. Tag and bag removed hardware, turn over to Owner.
- 7.19.07 Where existing wall conditions will not allow door to swing using the scheduled hinges, provide wide-throw hinges and if needed, extended arms on closers.

7.19.08 Provide manufacturer's recommended brackets to accommodate the mounting of closers on doors with flush transoms.

7.20 ADJUSTING:

7.20.01 Adjust and check for proper operation and function. Replace units, which cannot be adjusted to operate freely and smoothly.

- A. Hardware damaged by improper installation or adjustment methods: repair or replace to Owner's satisfaction.
- B. Adjust doors to fully latch with no more than 1 pound of pressure.
- C. Adjust door closers for proper function.

7.20.02 Fire-rated doors:

- A. Steel doors: adjust to 0.063 inches minimum to 0.188 inches maximum clearance at heads, jambs, and meeting stiles.
- B. Adjust steel doors to 0.75 inches maximum clearance (undercut) above threshold or finish floor material under door.

7.20.03 Final inspection: Installer to provide letter to Owner that upon completion installer has visited the Project and has accomplished the following:

- A. Has re-adjusted hardware.
- B. Has evaluated maintenance procedures and recommend changes or additions, and instructed Owner's personnel.
- C. Has identified items that have deteriorated or failed.
- D. Has submitted written report identifying problems.

7.21 DEMONSTRATION: Demonstrate mechanical hardware and electrical hardware systems, including adjustment and maintenance procedures.

7.22 PROTECTION/CLEANING:

7.22.01 Cover installed hardware, protect from paint, cleaning agents, weathering, carts/barrows, etc. Remove covering materials and clean hardware just prior to substantial completion.

7.22.02 Clean adjacent wall, frame and door surfaces soiled from installation / reinstallation process.

7.23 SCHEDULE OF FINISH HARDWARE:

Qty		Description	Catalog Number	Finish	Mfr
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	OFFICE LOCK	ND50PD RHO	626	SCH
1	EA	SURFACE CLOSER	1461 RW/PA	689	LCN
1	EA	WALL STOP	WS407CCV	630	IVE
1	SET	SEALS	S88D	DKB	PEM

All door hardware shall be Cyberlock compatible.

7.24 PAYMENT: Payment for DOOR HARDWARE will not be made separately; the compensation shall be considered incidental to the Total Sum Offer of which it is a part.

SECTION SP-8 – ALUMINUM HORIZONTAL ACCESS DOORS

- 8.1 GENERAL: Work includes furnishing and installing factory-fabricated vault access doors.
- 8.2 REFERENCES: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only. Where a referenced document contains references to other standards, those documents are included as references under this section as if referenced directly. In case of conflict between the requirements of this specification and those of the listed documents, the requirements of this specification shall prevail.

Unless otherwise specified, references to documents shall mean the documents in effect at the time of Advertisement for Invitation for Bids (IFB). If referenced documents have been discontinued by the issuing organization, references to those documents shall mean the replacement documents issued or otherwise identified by that organization or, if there are no replacement documents, the last version of the document before it was discontinued. Where document dates are given in the following listing, references to those documents shall mean the specific document version associated with that date, regardless of whether the document has been superseded by a version with a later date, discontinued, or replaced.

ASTM A 36-93a: Standard Specification for Structural Steel.

- 8.3 SUBMITTALS: The Contractor shall submit manufacturer's product data for all materials in this specification. Shop drawings must show profiles, accessories, location and dimensions. Manufacturer to provide samples upon request; sized to represent material adequately. Vault access door manufacturer shall provide Manufacturer's Warranty.
- 8.4 PRODUCT HANDLING: All materials shall be delivered in manufacturer's original packaging. Materials must be stored in a dry, protected, well-vented area. The Contractor shall thoroughly inspect product upon receipt and report damaged material immediately to the delivery carrier and note such damage on the carrier's freight bill of lading.
- 8.5 JOB CONDITIONS: The Contractor shall verify that other trades with related work are complete before installing vault access door(s). Mounting surfaces shall be straight and secure; substrates shall be of proper width. Refer to construction documents, shop drawings, and manufacturer's installation instructions. Contractor shall observe all appropriate OSHA safety guidelines for this work.
- 8.6 WARRANTY / GUARANTEE: Manufacturer's standard warranty: Materials shall be free of defects in material and workmanship for a period of twenty-five (25) years from the date of purchase. Should a part fail to function in normal use within this period, manufacturer shall furnish a new part at no charge. Electric motors, special finishes, and other special equipment shall be warranted separately by the manufacturers of those products.
- 8.7 MANUFACTURER: Aluminum horizontal access doors shall be as manufactured by The Bilco Company or approved equal.

8.8 ACCESS DOOR:

8.8.01 GENERAL: The Contractor shall furnish and install where indicated on the plans vault access doors. Type, size, and hinge side shall be as indicated on the plans.

8.8.02 PERFORMANCE CHARACTERISTICS:

A. Covers: Shall be reinforced to support AASHTO H-20 wheel load with a maximum deflection of 1/150th of the span. Manufacturer to provide structural calculations stamped by a registered professional engineer licensed in the State of Hawai'i.

B. Operation of the covers shall be smooth and easy with controlled operation throughout the entire arc of opening and closing.

C. Operation of the covers shall not be affected by temperature.

D. Entire door, including all hardware components, shall be highly corrosion resistant.

8.8.03 COVERS: Shall be ¼" (6.3 mm) aluminum diamond pattern.

8.8.04 FRAME: Channel frame shall be ¼" (6.3 mm) extruded aluminum with bend down anchor tabs around the perimeter. A continuous EPDM gasket shall be mechanically attached to the aluminum frame to create a barrier around the entire perimeter of the cover and significantly reduce the amount of dirt and debris that may enter the channel frame.

8.8.05 HINGES: Shall be specifically designed for horizontal installation and shall be through bolted to the cover with tamperproof Type 316 stainless steel lock bolts and shall be through bolted to the frame with Type 316 stainless steel bolts and locknuts.

8.8.06 DRAIN COUPLING: Provide a 1-1/2" (38 mm) drain coupling located in the right front corner of the channel frame, unless otherwise indicated on the plans.

8.8.07 LIFTING MECHANISMS: Manufacturer shall provide the required number and size of compression spring operators enclosed in telescopic tubes to provide, smooth, easy, and controlled cover operation throughout the entire arc of opening and to act as a check in retarding downward motion of the cover when closing. The upper tube shall be the outer tube to prevent accumulation of moisture, grit, and debris inside the lower tube assembly. The lower tube shall interlock with a flanged support shoe fastened to a formed ¼" gusset support plate.

8.8.08 TURN/LIFT HANDLE: A removable exterior turn/lift handle with a spring-loaded ball detent shall be provided to open the covers and the latch release shall be protected by a flush, gasketed, removable screw plug.

8.8.09 HARDWARE:

A. Hinges: Heavy forged aluminum hinges, each having a minimum ¼" (6.3 mm) diameter Type 316 stainless steel pin, shall be provided and shall pivot so the cover does not protrude into the channel frame.

- B. Covers shall be equipped with a hold open arm that automatically locks the covers in the open position.
 - C. Covers shall be fitted with a required number and size of compression spring operators. Springs shall have an electrocoated acrylic finish. Spring tubes shall be constructed of a reinforced nylon 6/6-based engineered composite material.
 - D. A Type 316 stainless steel snap lock with fixed handle shall be mounted on the underside of the cover.
 - E. Hardware: Shall be Type 316 stainless steel.
- 8.8.10 FINISHES: Factory finish shall be mill finish aluminum with bituminous coating applied to the exterior of the frame.
- 8.8.11 SPARE KEYS: Contractor shall furnish three (3) door keys for each door to the Department of Water at the completion of the project.
- 8.9 INSPECTION: Verify that the vault access door installation will not disrupt other trades. Verify that the substrate is dry, clean, and free of foreign matter. Report and correct defects prior to any installation.
- 8.10 INSTALLATION:
- 8.10.01 SHOP DRAWINGS: Submit shop drawing for review and approval before fabrication.
 - 8.10.02 CONTRACTOR CHECK: The Contractor shall check as-built conditions and verify the manufacturer's vault access door details for accuracy to fit the application prior to fabrication. The Contractor shall comply with the vault access door manufacturer's installation instructions.
 - 8.10.03 MECHANICAL FASTENERS: The Contractor shall furnish mechanical fasteners consistent with the vault access door manufacturer's instructions.
- 8.11 PAYMENT: Payment for ALUMINUM HORIZONTAL ACCESS DOORS shall not be made separately; the compensation shall be considered incidental to the Total Sum Offer of which it is a part.

SECTION SP-9– PROTECTIVE COATINGS

- 9.1 GENERAL: Work includes the furnishing of all labor, tools, materials, and equipment required for surface preparation, waste disposal, pretreatment, coating application, touch-up, protection of uncoated surfaces, inspection, clean-up and all appurtenant work for protective coating on the interior concrete surfaces and internal piping of the reservoir. The specified coating systems shall be applied only to the surfaces and miscellaneous surfaces as noted in these specifications or shown on the Drawings. This specification modifies and supplements the painting of the interior concrete surfaces and internal piping of the reservoir as specified in “Water System Standards,” State of Hawai‘i, dated 2002, as amended.

The work shall be as follows:

1. Submit Worker Health and Safety Plan.
2. Submit scaffolding plan.
3. Pre-construction meeting.
4. Install scaffolding.
5. Abrasive blast surfaces to be coated per manufacturer’s specifications to provide an anchor pattern suitable for coating system components.
6. Test for chlorides and pH to confirm levels are within manufacturer’s acceptable levels.
7. If chlorides and pH testing results require additional cleaning, the Contractor shall steam clean the area(s) in question using steam at 275 degrees F.
8. Feather all broken edges of concrete to form a smooth transition, by grinding or other mechanical methods.
9. Vacuum concrete surface to remove dust and all loose debris
10. Apply protective coatings as required per these specifications, and in accordance with manufacturer’s recommendations.
11. Provide full time, NACE inspection for dry film thickness, holiday detection, and adhesion testing. Contractor shall furnish all inspection equipment at the request of the Inspector as needed.
12. Remove scaffolding.
13. Restore the site to its original condition, or better.

The following surfaces shall not be coated hereunder unless indicated elsewhere in the Offer documents:

1. Interior stainless steel ladder
2. Stainless steel items
3. Machined surfaces
4. Nameplates
5. Valve assemblies

- 9.2 RELATED WORK SPECIFIED ELSEWHERE: Section 303 – Structures of the “Water System Standards,” State of Hawai‘i, dated 2002, as amended.

9.3 REFERENCES: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only. Where a referenced document contains references to other standards, those documents are included as references under this section as if referenced directly. In case of conflict between the requirements of this specification and those of the listed documents, the requirements of this specification shall prevail.

Unless otherwise specified, references to documents shall mean the documents in effect at the time of Advertisement for Invitation for Bids (IFB). If referenced documents have been discontinued by the issuing organization, references to those documents shall mean the replacement documents issued or otherwise identified by that organization or, if there are no replacement documents, the last version of the document before it was discontinued. Where document dates are given in the following listing, references to those documents shall mean the specific document version associated with that date, regardless of whether the document has been superseded by a version with a later date, discontinued, or replaced.

- A. 29 CFR – Code of Federal Regulations Title 29, Occupational Safety and Health Administration (OSHA), U.S. Department of Labor
- B. 29 CFR 1910 – Occupational Safety and Health Standards
- C. 29 CFR 1910.146 – Permit Required Confined Space
- D. 29 CFR 1910.502 – Fall Protection Systems Criteria and Practices
- E. 40 CFR – Code of Federal Regulations Title 40, Environmental Protection Agency
- F. 40 CFR 50 – National Primary and Secondary Ambient Air Quality Standards
- G. 40 CFR 50.12 – National Primary and Secondary Ambient Air Quality Standards for Lead
- H. 40 CFR 60 – Standards of Performance for New Stationary Sources
- I. 40 CFR 60.372 – Standards for Lead
- J. 40 CFR 302 – Designation, Reportable Quantities, and Notification
- K. ASTM – American Society for Testing and Materials International
- L. ASTM D4258 – Standard Practice for Surface Cleaning Concrete for Coating
- M. ASTM D4259 – Standard Practice for Abrading Concrete
- N. ASTM D4262 – Standard Test Method for pH of Chemically Cleaned or Etched Concrete Surfaces
- O. ASTM D4263 – Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method

- P. ASTM D4414 – Standard Practice for Measurement of Wet Film Thickness by Notched Gages
- Q. ASTM D4417 – Standard Test Methods for Field Measurement of Surface Profile of Blast Cleaned Steel
- R. EPA – Environmental Protection Agency
- S. EPA Method 1311 – Toxicity Characteristic Leaching Procedure (TCLP)
- T. EPA Method 3050 – Acid Digestion of Sediments, Sludges and Soils
- U. EPA SW 846 - Test Method for Evaluating Solid Waste Physical/Chemical Methods
- V. ICRI Technical Guideline No. 310.2 – Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays (formerly No. 03732)
- W. NACE – National Association of Corrosion Engineers, the Corrosion Society
- X. NACE No. 2 – Near-White Metal Blast Cleaning
- Y. NACE No. 3/SSPC-SP6 – Joint Surface Preparation Standard: Commercial Blast Cleaning
- Z. NACE No. 5/SSPC-SP12 – Joint Surface Preparation Standard: Surface Preparation and Cleaning of Metals by Waterjetting Prior to Recoating
- AA. NACE No. 6/SSPC-SP13 – Joint Surface Preparation Standard: Surface Preparation of Concrete
- BB. NACE RPO-287 – Field Measurements of Surface Profile of Abrasive Blast Cleaned Steel Surfaces Using Replica Tape
- CC. NIOSH – National Institute for Occupational Safety and Health
- DD. NSF – National Sanitation Foundation
- EE. NSF 61 – Drinking Water System Components
- FF. SSPC – Steel Structures Painting Council, the Society for Protective Coatings
- GG. SSPC Guide 6 – Guide for Containing Surface Preparation Debris Generated During Paint Removal Operations
- HH. SSPC Guide 15 – Field Methods for Retrieval and Analysis of Soluble Salts on Steel and Other Nonporous Substrates
- II. SSPC-SP1 – Solvent Cleaning
- JJ. SSPC-SP2 – Hand Tool Cleaning

- KK. SSPC-SP3 – Power Tool Cleaning
- LL. SSPC-SP5 – White Metal Blast Cleaning
- MM. SSPC-SP6 – Commercial Blast Cleaning
- NN. SSPC-SP10 – Near-White Metal Blast Cleaning
- OO. SSPC-SP11 – Power Tool Cleaning to Bare Metal
- PP. SSPC-SP13 – Surface Preparation of Concrete
- QQ. SSPC PA 1 – Shop, Field, and Maintenance Painting of Steel
- RR. SSPC PA 2 – Measurement of Dry Film Thickness with Magnetic Gauges
- SS. SSPC VIS 1 – Guide and Reference Photographs for Steel Surfaces Prepared by Dry Adhesive Blast Cleaning
- TT. SSPC VIS 3 – Guide and Reference Photographs for Steel Surfaces Prepared by Hand and Power Tool Cleaning

Whenever the Drawings or these Specifications require a higher degree of workmanship or better quality of material indicated by the above standards, then these Drawings and Specifications shall prevail.

9.4 SUBMITTALS: The Contractor shall submit the following items:

- 9.4.01 TECHNICAL DATA SHEET: on each product used, including ASTM test results indicating the product conforms to and is suitable for its intended use per these specifications.
- 9.4.02 STANDARD COLOR OPTIONS. The tank lining shall be white or off-white, unless otherwise directed by the Department of Water.
- 9.4.03 MATERIAL SAFETY DATA SHEETS: (MSDS) for each product used.
- 9.4.04 GUIDELINES AND RECOMMENDATIONS: for each product used including surface preparation, mixing, application, handling, storage, and cleanup. This shall include minimum time requirements for coating, recoating, and surface patches.
- 9.4.05 INDEPENDENT TESTING: Copies of independent testing performed on the protective coating materials indicating that the protective coating materials meet the requirements as specified herein. Material test results and measurements.
- 9.4.06 SHOP DRAWINGS: Forced heating, dehumidification, shading, and ventilation equipment specifications as required.
- 9.4.07 SAMPLES:

- A. Samples of each coating system shall be submitted on a 3-inch by 3-inch by 1-inch thick concrete or mortar block. Each block shall be completely coated at the specified thickness over one 3-inch by 3-inch surface with the applicable coating system. Samples shall be labeled with the coating type, application method, and dry film thickness.
- B. Samples shall be provided for each batch of material to be used on the project, and shall be accompanied with certification from the manufacturer that the batches provided as samples match the batches supplied to the job site. Failure to comply may result in rejection of the finished work by the Department of Water.
- C. The manufacturer's standard details for coating over joints/cracks, pipe penetrations, edge terminations, plate overlaps, and welds shall be provided.

9.4.08 APPLICATION CONTRACTOR'S QUALIFICATIONS:

- A. Manufacturer certification that Applicator has been trained and approved in the handling, mixing, and application of the products to be used.
- B. Certification that the equipment to be used for applying the products has been approved by the protective coating manufacturer and Applicator personnel have been trained and certified for proper use of the equipment.
- C. Three references which verify that the coating contractor has demonstrated successful application of the specified coating systems in the past three years. Provide the site (area of coating), date of completion, the project owner's name, address and telephone number for each installation referenced.
- D. Applicator must provide written documentation of having installed a minimum of 50,000 square feet (sf) of plural component spray applied protective coating the same or similar to that specified herein within the last five (5) years.
- E. Proof of any necessary federal, state, or local permits or licenses necessary for the project.
- F. The Contractor shall provide SSPC QP 1 Certification for application equipment.

9.5 QUALITY ASSURANCE:

9.5.01 QUALITY CONTROL PROCEDURES: The Applicator shall initiate and enforce quality control procedures consistent with applicable ASTM, NACE, and SSPC standards and the protective coating manufacturer's recommendations.

9.5.02 PRODUCTS: Protective coating products shall be standard products by recognized manufacturers who are regularly engaged in production of such materials for essentially identical service conditions and have proven reliability of at least five (5) years. If requested, the Contractor shall provide the Department of Water with the names of not less than five (5) successful applications of the proposed manufacturer's products demonstrating compliance with this requirement.

9.5.03 MATERIALS: Materials have been specified from catalogues of manufacturers in most of the cases, to show the type and quality coatings required. Materials by other manufacturers are acceptable provided they are established as being compatible with and of equivalent quality to the coatings of the companies referenced. The Contractor shall provide satisfactory documentation from the manufacturer of the proposed substitute material that said material meets the requirements and is equivalent to or better than the listed materials in the following properties:

1. Quality
2. Durability
3. Resistance to abrasion and physical damage
4. Life expectancy
5. Ability to recoat in future
6. Solids content by volume
7. Dry film thickness per coat
8. Compatibility with other coatings
9. Suitability for the intended service
10. Resistance to chemical attack
11. Temperature limitations in service and during application
12. Type and quality of recommended undercoats and top coats
13. Ease of application
14. Ease of repairing damaged areas
15. Stability of colors
16. Adhesion strength

Three references which verify that the submitted coating system has been used in similar environments and on similar surfaces in the past five (5) years. Provide the name, the owner's address and telephone number for each installation referenced.

The cost of all testing and analysis of the proposed substitute materials that may be required by the Inspector, shall be paid by the Contractor. If the proposed substitution requires changes in the contract work, the Contractor shall bear all costs involved and the costs of allied trades affected by the substitution.

9.5.04 PRE-CONSTRUCTION MEETING: A pre-construction meeting shall be convened three (3) weeks prior to start of coating system application. Meeting attendance is required of all parties directly affecting work of this Section, including Department of Water, General Contractor, application Contractor, Inspector and manufacturer's representative. In the meeting the following shall be discussed/reviewed:

1. Safety
2. Shutdown plan and schedule
3. Environmental requirements
4. Protection of surfaces not scheduled to be coated
5. Field quality control
6. Cleaning
7. Surface preparation
8. Application

9. Repair of coating
10. Inspection
11. Coordination with other work
12. Required reports
13. Contractor/Inspector/Owner relationship

9.5.05 NACE CERTIFIED COATING INSPECTOR: A NACE Certified Coating Inspector shall be provided by the Contractor. The Inspector will observe daily operations, procedures, and final product to ensure adherence to the specifications by Applicator.

9.5.06 QUALIFICATIONS: The Contractor shall provide a list of three (3) potential NACE inspectors in their offer with qualifications for DOW to select one (1) to provide quality assurance on the project. All costs associated with the inspector chosen shall be borne by the Contractor.

9.5.07 ON-SITE OBSERVATION: The protective coating manufacturer shall provide at least two (2) days of on-site observation and site-specific recommendations relative to surface preparation, handling, application, and curing of the manufacturer's products.

9.6 HEALTH AND SAFETY:

9.6.01 CONFINED SPACE: In confined space environments, as defined in 29 CFR 1910.146, work shall comply with the requirements set forth by OSHA applicable to the construction industry. The Contractor shall provide the require use of safety and personnel life-saving equipment for persons working in Confined Space areas, including but not limited to the following:

- A. Adequate forced ventilation, harnesses, and gas detection meter(s) that continually monitors for oxygen, hydrogen sulfide, carbon monoxide, and low explosive limit (LEL) gas levels.
- B. Fall protection shall be in accordance with 29 CFR 1926.502. All temporary ladders and scaffolding shall conform to applicable safety requirements.
- C. Contractor shall provide all head and face protection equipment and respiratory devices required to safely perform this work. Equipment shall include any applicable masks recommended by the manufacturer while performing blasting or application of the coating materials.
- D. Use of ear protection devices shall be provided and required by the Contractor whenever the occupational noise exposure exceeds OSHA limits.

9.6.02 Failure to comply with health and safety laws, regulations, codes, permits, and Standard Operation Procedures will be grounds for shutting down the Work. All costs resulting from a shutdown of the Work that are due to Contractor's negligence or failure to comply with applicable safety requirements shall be borne by the Contractor. After a shutdown of the Work, the Work will not be permitted to begin again until the Inspector is satisfied that all necessary health and safety precautions are provided and implemented.

9.6.03 Flammable or volatile solvents in coating system components constitute a hazard with regard to fire and explosions wherever flame or spark exposure is possible. All flames, smoking, and welding, etc., are strictly prohibited in work or storage areas. Fire abatement devices shall be readily available and in operating condition. Necessary precautions shall be taken to keep fire hazard to a minimum; all oily rags, waste, and other combustibles not in covered containers shall be removed from the area daily. All flammable products shall be stored in conformance with applicable State, Owner and local fire codes pertaining to flammable materials.

A. The coating products shall never exceed the current VOC limits set by EPA and the State of Hawai'i Clean Air Branch. The Contractor shall be responsible for all fines or legal costs resulting from any VOC limit violations.

9.7 INSPECTION AND TESTING:

9.7.01 ADVANCE NOTICE: The Contractor shall give the Department of Water and Inspector 3 days' advance notice of the start of any field surface preparation work or coating application work.

9.7.02 NACE CERTIFIED COATING INSPECTOR: The Contractor shall provide a full time NACE Certified Coating Inspector (hereinafter "Inspector") at the work site anytime work is being done on this section of the project. The Inspector shall have the authority to coordinate work and make decisions pertaining to the fulfillment of this phase of the contract. The Inspector shall have a minimum of 5 years of experience in the application of the specified coatings. The contractor shall provide a list of three (3) potential NACE inspectors for DOW to select one (1) for the project.

9.7.03 INSPECTOR'S SERVICES: All work relative to preparation for the application of coatings shall be conducted under the Inspector. The Inspector's services shall be provided and paid for by the Contractor. The Inspector shall have the authority to act on behalf of the Department of Water to reject any coating work that does not comply with these specifications or the manufacturer's written specifications.

9.7.04 SCHEDULES AND NOTIFICATION PROCEDURES: Prior to the start of any work, the Contractor shall establish with the Inspector, schedules and notification procedures to ensure all surface preparation work has been inspected prior to the application of any coating. These procedures shall remain in effect for the duration of the coating project. Under no circumstances shall any surfaces be coated without prior approval of the inspector. Coatings applied without the Inspector's authorization shall be removed and reapplied at the sole expense of the Contractor.

9.7.05 EQUIPMENT: The Contractor shall make the following equipment available to the Inspector upon request:

1. Holiday testers
2. Film thickness testers
3. Surface preparation concrete comparators
4. Adhesion testers

9.8 APPLICATION RECORDS: The Contractor shall maintain an accurate, written record of the quantity of coating material applied and the corresponding surface area covered, a description of the area coated, the batch number, surface temperature, ambient temperature, relative humidity, dew point, and applicator on a daily basis. The Contractor shall furnish a signed copy of said record to the Inspector at the beginning of the next working day. These quantities shall be independently verified by the Inspector and reported on the Inspector's log. The Inspector shall immediately investigate and resolve any discrepancies between these reported quantities.

9.9 SERVICES OF MANUFACTURER:

The Contractor shall require the coating manufacturers to furnish the following services:

9.9.01 The manufacturer's representative shall furnish at least 6 hours of on-site instruction in the proper surface preparation, use, mixing, application, and curing of the coating systems.

9.9.02 The manufacturer's representative shall personally observe the start of surface preparation, mixing, and application of coating systems.

9.9.03 The manufacturer's representative shall provide technical support to resolve field problems associated with the manufacturer's products furnished under this Contract or the application thereof throughout the duration of the work.

9.9.04 The coating manufacturer shall provide written certification that the coating contractor's Supervisor and each applicator performing work on the project has been trained and approved to apply the selected coating system.

9.10 WARRANTY:

9.10.01 The Contractor and manufacturers shall warrant the coating system applications for a period of 3 years after final acceptance of the work. The contractor shall submit to the Department of Water a 3-year warranty bond for the total value of the complete coating system which shall cover any defects and workmanship repairs completed during the warranty period. The Contractor, at no cost to the Department of Water, shall perform all work and supply all equipment and materials associated with the repair of failures identified in the warranty inspection.

9.10.02 The material manufacturer shall warrant, for a period of 5 years, that its products meet published physical properties and that they are free of manufacturing defects. The manufacturer shall replace any defective product.

9.10.03 The Contractor shall, within a reasonable time after receipt of written notice thereof, repair defects in materials or workmanship which may develop during the warranty period, and any damage to other work caused by such defects or the repairing of same, at his own expense and without cost to the Department of Water.

9.10.04 In the event of fault disagreement, warranty issues will be resolved through mediation involving the services of a NACE Certified Coating Inspector. Mediation and Inspection costs shall be borne by the party found to be responsible for the coating failure.

9.11 COATING SYSTEM PRODUCTS:

- 9.11.01 DEFINITIONS: The terms "paint," "coatings," and "finishes," as used herein, shall mean surface treatments, emulsions, enamels, paints, epoxy resins, and all other protective coatings, except galvanizing or anodizing, whether used as a pretreatment, primer, intermediate coat, or finish coat.
- 9.11.02 COMPATIBILITY: In any coating system only compatible materials from a single manufacturer shall be used in the Work. Particular attention shall be directed to compatibility of primers and finish coats. If necessary, subject to the approval of the Inspector, a barrier coat shall be applied between existing prime coat and subsequent top coats to ensure compatibility.
- 9.11.03 COLORS: All colors of all paint coatings shall be as indicated by the Department of Water. If colors are not indicated, then colors other than the final coat shall be selected by the Contractor. Finish colors shall be selected by the Department of Water from the manufacturer's standard color samples.

9.12 PRODUCT DELIVERY AND STORAGE:

- 9.12.01 Coating materials shall be delivered to the job site in sealed containers with weather resistant labels that clearly show the designated name, formula or specification number, batch number, color, date of manufacture, manufacturer's directions, and name of manufacturer, all of which shall be plainly legible at the time of use. Any products exceeding the manufacturer's recommended shelf life shall not be used.
- 9.12.02 The Contractor shall be responsible for providing temporary storage facilities to protect materials and equipment stored on-site from the elements and unauthorized personnel. The storage facility shall be capable of 24-hour climate control to maintain products within the storage temperature and humidity limits recommended by the manufacturer. The location of the storage container shall be approved in advance by the Inspector. If materials delivered to the site are used within 24 hours, the Contractor does not need to provide a storage facility as stated above.
 - A. The storage facility shall be capable of containing a spill or rupture of the coating system containers within the storage facility.

- 9.13 ABRASIVES: The type and size of abrasive shall be selected to produce a surface profile that meets the coating manufacturer's recommendations. All abrasives shall be new, clean, and delivered to the project site in unopened, weather resistant containers. Abrasive materials shall not be recycled for further use on this project unless approved by the Inspector.

All abrasives shall meet the requirements of the EPA. At no time will silica sand be allowed or used on the job site.

All abrasives shall be disposed of in accordance with all federal, state, and local laws at the Contractor's expense with no cost to the Department of Water. Abrasives shall not be disposed of on-site.

9.14 EXISTING PRODUCTS: Standard Portland cement or new concrete (not quick setting high strength cement) must be well cured (minimum 28 days) prior to application of the protective coating system components.

Cementitious patching and repair materials must be approved prior to use as compatible with the protective coating. The manufacturer of the cementitious material shall provide information as to its suitability as a top coating with the specified protective coating. Project-specific submittals and procedures shall be provided, including application, cure time, and surface preparation procedures which permit optimum bond strength with the protective coating.

Remove existing coatings prior to application of the new protective coating. The Applicator shall maintain strict adherence to applicable NACE and SSPC recommendations with regard to proper surface preparation and compatibility with existing coatings.

9.15 COATING SYSTEMS:

9.15.01 COATING: One of the following 100 percent solids coating systems, NSF 61 certified, or an approved equal, shall be used to coat the interior surfaces of the tank:

Product:	AquataPoxy A-6	Novaguard 810
Type:	100% solids, amine cured epoxy	Two-component, solvent-free, amine rapid-cured novolac phenolic epoxy coating
Manufacturer:	Raven Lining Systems (800) 324-2810	PPG Protective & Marine Coatings (888) 9PP-GPMC
Surface Filler:	Per Manufacturer's recommendation	Per Manufacturer's recommendation
Primer:	Per Manufacturer's recommendation	Per Manufacturer's recommendation
Topcoat:	AquataPoxy A-6, @ 40 mils DFT	Novaguard 810 50-60 mils DFT
Joint Sealant:	Per Manufacturer's recommendation	Per Manufacturer's recommendation
Total Systems DFT:	90 mils DFT	50-60 mils DFT

9.15.02 SURFACE PREPARATION PRODUCTS FOR CONCRETE: Biodegradable water-based surface cleaner shall be "Devprep 88" by Devoe or equivalent.

9.16 WORKMANSHIP: Skilled craftsman and experienced supervision shall be used on all work.

All coatings shall be applied under dry and dust-free conditions. Coating shall be applied in a workmanlike manner to produce an even film of uniform thickness. Edges, corners, crevices, and joints shall receive special attention to ensure that these areas are thoroughly cleaned and an adequate thickness of coating material is applied. The finished surfaces shall be free from runs, drops, ridges, waves, laps, brush marks, and variations in color, texture, and finish. The hiding shall be so complete

that the addition of another coat would not increase the hiding.

- 9.17 PROTECTION OF SURFACES NOT TO BE COATED: Remove, mask, or otherwise protect all surfaces not intended to be coated. Provide drop cloths to prevent coating materials from falling on, marring, or over spraying adjacent surfaces.

Surfaces not to receive protective coatings shall be protected during surface preparation, cleaning, and coating operations.

9.18 ENVIRONMENTAL CONSIDERATIONS:

- 9.18.01 COATING LIMITATIONS: No coating work shall be performed under the following conditions:

- A. Temperatures exceed the manufacturer's recommended maximum or minimum allowable.
- B. Dust or smoke laden atmosphere.
- C. Damp or humid conditions, where the relative humidity is above the manufacturer's maximum allowable limit.
- D. Substrate or ambient temperatures are less than 5°F above the dew point. Dew point shall be measured by use of an instrument such as a Sling Psychrometer in conjunction with U.S. Department of Commerce, Weather Bureau psychrometric tables.
- E. Ambient temperature that is expected to drop below 50°F or less than 5°F above the dew point within 8 hours after application of coating.
- F. Concrete surfaces contain a moisture content above that specified by the coating manufacturer.

- 9.18.02 HUMIDITY CONTROL: Desiccant or Direct Expansion Refrigeration dehumidification will be required to control the environment in the space 24 hours a day during blast cleaning, coating application and coating cure. Equipment will conform to the following requirements:

- A. Equipment – Desiccant dehumidifiers will be a solid desiccant design having a single rotary desiccant wheel capable of fully automatic continuous operation. No liquid, granular, or loose lithium chloride drying systems will be accepted. The use of direct expansion (DX) refrigeration type dehumidifiers with reheat may be considered if the expected ambient temperature will remain above 60°F. Heating the space changes relative humidity only and does not change the dew point temperature. Heat alone, therefore, is not a substitute for dehumidification, unless substrate temperature is high enough to meet the dew point differential. The dehumidification system may consist of a combination of desiccant and refrigerant equipment.
- B. Air Changes – the air change rate for maintaining the required spread of 17°F between inside surface temperature and inside space dew point temperature with a maximum

relative humidity of 45% in the space will depend upon the type of equipment to be used and the time of year during the application. There shall be a minimum of 2 air changes to hold the desired degree of cleanliness of the blast.

9.18.03 TEMPERATURE CONTROL:

A. Auxiliary cooling or insulation maybe necessary to maintain the surface temperature at an acceptable level for the coating manufacturer's application parameters. This auxiliary equipment must be approved for use by the supplier of the dehumidification equipment and will meet the following requirements.

- (1) Refrigerant type systems must be installed in the process air supply duct and/or blended with the dehumidifier as close to the work space as possible.
- (2) Only electric, indirect fired combustion, or steam coil auxiliary heaters will be used. No direct – fired space heaters will be allowed during the blasting, coating, or curing phases.
- (3) The space to be controlled will be sealed off as well as possible, allowing air to escape the work space away from the point where the dehumidified air is being introduced. If it is necessary to filter the air escaping the space, the filtration system must be designed so that it does not interfere with the dehumidification equipment's ability to control the dew point and relative humidity of the work space.

9.18.04 ATMOSPHERIC CONDITIONS: The work and structure are located in an area that may be subject to extended periods of high humidity. The Contractor shall be expected to maintain the established production schedule despite these potentially adverse conditions by providing all labor, equipment and materials necessary to maintain a controlled environment in the area where work is to be performed. The substrate and atmospheric conditions within the controlled environment, with respect to temperature, relative humidity and dew point, shall be maintained within the limits established by the manufacturer of the selected coating system to ensure proper application and cure of the coating.

9.18.05 DEWATERING: The Contractor shall dewater and stop any active water flow into areas to be coated.

9.19 SURFACE PREPARATION (CONCRETE SURFACES):

9.19.01 All surfaces to be coated and protected shall be inspected as indicated below by the Contractor prior to starting surface preparation. Contractor shall notify the Inspector in writing of any defects or discrepancies that will not allow the coating to be properly installed. Commencement of work shall be construed as acceptance of the surfaces and it shall be the responsibility of the Contractor to correct any defect appearing in the surfaces once the coating preparation work has begun.

- 9.19.02 Concrete repair materials shall be compatible with the specified coating system and shall be thoroughly cured per the coating manufacturer's recommendations prior to the start of installation.
- 9.19.03 The Contractor shall comply with the applicable EPA and State of Hawai'i Clean Air Branch regulations for blast cleaning.
- 9.19.04 Abrasive blasting shall be performed only by skilled personnel utilizing appropriate equipment. A pattern shall be followed by the blaster to ensure a uniform surface, free of contaminants and having an open pore structure is produced.
- 9.19.05 Abrasive blasting, water jetting and coating application hoses shall be grounded to prevent accumulation of static electricity.
- 9.19.06 Compressed air for air blast cleaning shall be supplied at adequate pressure from compressors equipped with oil/moisture separators that remove at least 95% of the contaminants. The performance of the oil/moisture separators will be subject to blotter tests for conformance.
- 9.19.07 SURFACE PREPARATION SHALL BE AS FOLLOWS:
- A. All degraded concrete and loose mortar shall be removed in accordance with SSPC SP2 and SP3.
 - B. The Contractor shall test the surfaces for soluble salts with the use of Chlor*Test as manufactured by Chlor*Rid International or approved equivalent. The interior surfaces of the tank shall have a maximum concentration of 5 micrograms per square centimeter ($\mu\text{g}/\text{cm}^2$). A test shall be conducted for every 500 square feet (ft^2) of surface area to be coated at locations determined by the Inspector.
 - C. If the soluble salt test indicates chloride concentrations greater than the limit outlined in these Specifications, the Contractor shall use Chlor*Rid, as manufactured by Chlor*Rid International, in the water source during water cleaning to remove the salts from the substrate. A substrate's surface preparation will be accepted once the soluble salt concentration is below the limit listed in these Specifications.
 - D. If there are no soluble salts on the surfaces after removal of the existing coating and damaged concrete, the surfaces shall be cleaned with a detergent in accordance with ASTM D4258. Detergent residue shall be thoroughly removed from the concrete surface with clean water.
 - E. Abrasive blast cleaning shall be performed using dry abrasive blasting procedures in accordance with ASTM D4259 and SSPC SP 13/NACE No. 6. Abrasive particle size and type shall be sufficient to produce a surface profile conforming to the manufacturer's recommendations for each coating product. Abrasive material in the blast cleaning operation shall be free of contaminants that would interfere with adhesion of the coatings and shall not be reused.
 - F. The blast pattern shall be by systematic removal from a defined rectangular area.

Evidence of random blast patterns or contaminants will result in rejection of the surface and the blasting will be repeated until a suitable surface is obtained. The texture of the concrete surface after blasting shall be similar to that of coarse sandpaper. Any sharp, protruding edges shall be rounded or trimmed by chipping, peening, brushing or other approved methods.

- G. During abrasive blast cleaning, prevent damage to adjacent coatings or structures. Blast cleaning and coating shall be scheduled such that dust, dirt, blast, particles, old coatings, or other contaminants, will not damage or fall upon uncured coatings.
 - H. After abrasive blasting, surfaces shall be cleaned by vacuum, or washed with clean water to remove dust, salts and detergent residue.
 - I. The finished surface shall consist of sound concrete with exposed aggregate. The Contractor shall not remove more material than necessary from the concrete surface in order to meet these requirements.
 - J. Concrete surfaces to be coated shall have an even color, gray or gray-white. The surface shall not have pockets, holes, or sharp changes of surface elevation. Scrubbing with a stiff bristle-fiber brush shall produce no dusting or dislodging of cement or sand. Sprinkling water on the surface shall produce no water beads or standing droplets.
 - K. In accordance with ASTM D4262, test to determine the pH of the concrete surface after the surface has been thoroughly cleaned and washed. If the pH is outside the range recommended by the coating manufacturer, then the surface must be neutralized by removing concrete until the surface pH of 7 or greater is obtained prior to any coating application. One pH test shall be performed every 500 square feet, or less, and at locations determined by the Inspector.
 - L. The Contractor shall test for capillary moisture in accordance with ASTM D4263. Moisture tests shall be taken every 500 square feet or less and at locations determined by the Inspector. If capillary moisture is present, the coating manufacturer shall be consulted to determine primer requirements and special coating application criteria.
 - M. All abrasive blasting material and debris generated by the cleaning procedure shall be removed from the site to an appropriate disposal facility at the Contractor's expense.
 - N. In the event that questions arise concerning the quality of the blast cleaning, the Inspector shall be the sole judge as to whether the level of cleanliness conforms to the standard and specifications.
- 9.19.08 The Contractor shall keep the work area in a clean condition and shall not permit materials to accumulate as to constitute a nuisance or hazard to the work performance or the operation of the existing facilities.

9.19.09 Concrete surfaces requiring spot repair shall be rehabilitated following surface cleaning and abrasive blasting. After the applied concrete repair materials have cured per the manufacturer's recommendations, they shall be swept blasted to remove surface residuals and establish an anchor profile equivalent to coarse sandpaper prior to coating application.

9.19.10 All prepared surfaces shall be observed and approved by the Inspector prior to subsequent work.

9.20 SURFACE PREPARATION (STEEL SURFACES):

9.20.01 HAND TOOLS: All hand tools used for grinding and sanding on or near lead containing paint shall be equipped with High Efficiency Particulate Air (HEPA) filters designed to contain paint chips.

9.20.02 SURFACE PREPARATION SHALL BE AS FOLLOWS:

- A. Remove all existing debris, dirt, and deteriorated coating by Low Pressure Water Cleaning per SSPC SP 12/NACE No. 5. The minimum pressure of the Water Cleaning shall be 5,000 psi.
- B. The Contractor shall test the surfaces for soluble salts with the use of Chlor*Test as manufactured by Chlor*Rid International or approved equivalent. The steel surfaces within the tank shall have a concentration of 0 micrograms per square centimeter ($\mu\text{g}/\text{cm}^2$). A test shall be conducted for every 500 square feet (ft^2) of steel surface area to be coated at locations determined by the Inspector.
- C. If the soluble salt test indicates chloride concentrations greater than those outlined in these Specifications, the Contractor shall use Chlor*Rid, as manufactured by Chlor*Rid International, in the water source during water cleaning to remove the salts from the steel surfaces. A substrate's surface preparation will be accepted once the soluble salt concentration is as outlined in these Specifications.
- D. All oil, grease, welding fluxes and other surface contaminants shall be removed by solvent cleaning per SSPC SP1 prior to abrasive blasting.
- E. The Contractor shall abrasive blast the surfaces to be coated according to SSPC SP10 and these Specifications.

9.20.03 ABRASIVE BLAST CLEANING: For abrasive blast cleaning, the type and size of abrasive shall be selected to produce a surface profile that meets the coating manufacturer's recommendation for the particular coating and service conditions. Abrasives for submerged and severe service coating systems shall be clean, hard, sharp cutting crushed slag.

- A. The abrasive shall not be reused unless otherwise approved by the Inspector. For automated shop blasting systems, clean oil-free abrasives shall be maintained.
- B. The Contractor shall comply with the applicable federal, state, and regional air pollution control regulations for abrasive blast cleaning.

- C. Compressed air for air blast cleaning shall be supplied at adequate pressure from well-maintained compressors equipped with oil/moisture separators which remove at least 95% of the contaminants.
- D. Abrasive blasted cleaned surfaces shall match the standard samples shown in SSPC VIS 1 or VIS 3 for each product's recommended profile.

9.21 MIXING AND THINNING OF MATERIALS: Unless otherwise specified herein, the coating manufacturer's printed recommendations and instructions for thinning, mixing, and handling coating materials shall be strictly observed. Prepare multiple component coatings using all of the contents of the container for each component packaged by the manufacturer. Do not use partial batches. Do not use multiple component products that have exceeded their shelf life. Provide 4 touch-up kits for small area work. Mix only the components specified and furnished by the manufacturer. Do not add additional components for color.

9.22 APPLICATION (CONCRETE AND STEEL):

9.22.01 COATING APPLICATIONS: All coating applications shall conform to applicable standards of the OSHA, SSPC, NACE, ASTM, and the manufacturer's printed instructions. Material applied prior to approval of the surface preparation by the Inspector shall be removed and reapplied to the satisfaction of the Inspector at the expense of the Contractor.

9.22.02 COATING EQUIPMENT: The Contractor's coating equipment shall be designated for application of the materials specified and shall be maintained in first class working condition. Compressors shall have suitable traps and filters to remove water and oils from the air. The Contractor's equipment shall be subject to approval of the Inspector. All gasoline or diesel-powered equipment shall be parked over a lined containment area to minimize environmental impacts due to leaks or spills.

9.22.03 APPLICATION:

- A. Remove dust, blast particles, and other debris from blast cleaned or previously coated surfaces by dusting, sweeping, washing, or vacuuming. Allow ventilator fans to clean airborne dust to provide good visibility of working area prior to coating applications.
- B. Apply the first coating application within 24 hours after blast cleaning and before any water, dirt, or foreign matter has accumulated on the surface.
- C. Keep coating materials at a uniform consistency during application (stir and drain as necessary). Apply each coating evenly, at the specified film thickness, to achieve a finish free of pinholes, drops, brush marks, ridges, waves, sags, runs, and other evidence of poor workmanship. Edges, corners, crevices, and joints shall receive special attention to ensure thorough surface preparation and adequate thickness of coating material are provided.
- D. Stripe coat all steel edges, corners, joints and other protrusions. Finished surfaces shall be free from defects, pinholes, holidays or blemishes. Care shall be exercised to prevent coatings from being spattered onto surfaces that are not to be coated.

- E. The coating thickness shall be measured at the time of application using a wet film thickness gauge approved and in accordance with ASTM D4414.
- F. If minimum/maximum recoat times are not stated in the coating manufacturer's standard product literature, then the Contractor must supply such information to the Inspector for approval, prior to the start of the coating application; or supply a written statement from the coating manufacturer that limitations for recoat times do not apply to the coating specified on the project.
- G. When overlapping transitions between sections of coating applied on different days, abrasive blast or mechanically abrade an 18-inch-wide strip of the previously applied coating, measured from the leading edge, to remove all gloss. Vacuum prior to application of fresh topcoat material feathered at least 12 inches into the abraded area. Avoid application onto glossy or untreated areas of the previously installed coating.
- H. The finished coating application shall be protected from damage during curing and shall be cured as recommended by the manufacturer, prior to returning the reservoir to service.
- I. All concrete coating edges, adjacent to pipe penetrations, vents, access hatches and other coating termination locations shall be terminated by keying into the concrete with a 1/8-inch-wide by 3/8-inch deep saw cut. Prior to coating application, the saw cut shall be dried and vacuumed to remove all dust and residue. During coating application, a liberal amount of material shall be applied to the saw cut area, then pressed with a trowel or putty knife into the saw cut cavity and smoothed level to the adjacent surfaces.

9.22.04 The coating manufacturer's standard details, submitted by the Contractor to the Department of Water, shall be used for coating applications over construction and expansion joints.

9.23 CURING OF COATING: The Contractor shall provide curing conditions in accordance with the conditions recommended by the coating material manufacturer or by this Section, whichever is the highest requirement, prior to placing the completed coating system into service.

Dehumidification and temperature control in enclosed areas may be required during abrasive blasting and curing of coatings.

9.24 TESTING AND INSPECTION:

9.24.01 SURFACES: Surfaces prepared as described in this Specification and per the manufacturer's recommendations shall be observed by the Inspector prior to applications of coatings to verify compliance.

9.24.02 SCAFFOLDING OR LADDERS: Scaffolding or ladders to facilitate inspection shall be erected and moved to locations where requested by the Inspector.

- 9.24.03 ADDITIONAL ILLUMINATION AND VENTILATION: Whenever required by the Inspector, the Contractor shall provide additional illumination and ventilation required for inspections. Adequate illumination shall consist of explosion-proof lights and electrical equipment required to meet safety standards. The Inspector shall determine the level of illumination for inspection purposes.
- 9.24.04 INSPECTION DEVICES: The inspection devices listed below, or approved equivalents, shall be provided by the Contractor to the Inspector as required in good working condition and with calibration data prior to beginning any Work. These items shall remain available until final acceptance of the coating applications per the parameters listed below:
- A. Film Thickness Testing: The dry film coating thickness shall be measured in accordance with the SSPC "Paint Application Specification No. 2".
 - (1) Wet film gauge: approved by ASTM D4414 (concrete)
 - (2) Dry film gauge: PosiTector 100C or other approved by ASTM D6132 (steel)
 - B. Psychrometer: Sling, mechanized or digital.
 - C. Surface Temperature: Infrared surface temperature gauge.
 - D. Coating Adhesion Testing: Adhesion tests shall be performed according to ASTM D4541 for Type II instruments. The Department of Water believes the following manufacturers are capable of producing equipment and/or products that will satisfy the requirements of this Section. This statement, however, shall not be construed as an endorsement of a particular manufacturer's products, nor shall it be construed that named manufacturers' standard equipment or products will comply with the requirements of this section. Candidate manufacturers include Elcometer Model 106, or equal.
 - E. Coating Thickness Testing: During installation, all coating applications shall be inspected prior to each succeeding application. The procedure for collecting representative thickness data shall be as follows:
 - (1) No measurements shall be made until at least 8 hours after application of the coating or as otherwise approved by the Inspector.
 - (2) On concrete, the coating thicknesses shall be measured at the time of application using a wet film gauge.
 - (3) Inspector shall determine where and how often to test for film thicknesses, and as a minimum, the requirements of SSPC PA 2 will be followed.
 - (4) Discard any unusually high or low gauge reading that cannot be repeated consistently. Take the average (mean) of the three gauge readings as the spot measurement. The average spot measurement shall meet or exceed the specified dry film thickness for each application.

F. Adhesion Testing on Concrete:

- (1) Adhesion tests shall be performed according to ASTM D4541 for Type II instruments for every 500 sf of coating material applied.
- (2) A minimum of three 20mm diameter dollies shall be affixed to the coated surface. Each testing location shall be identified and recorded by the Inspector. The adhesive used to attach the dollies to the liner shall be rapid setting with a tensile strength in excess of the liner material and permitted to cure in accordance with the manufacturer recommendations.
- (3) The lining material and dollies shall be adequately prepared to receive the adhesive. Failure of the dolly adhesive shall require retesting.
- (4) Two of the three adhesion pulls shall exceed 200 psi or concrete failure with more than 50% of the subsurface adhered to the coating, unless otherwise specified in the RFP.
- (5) If one of the three dollies fail, an additional location shall be tested in the same structure. If two of the four dollies tested fail, the liner shall be removed and replaced at the Contractor's expense.
- (6) The Inspector shall record the type of adhesive used, the length of time allowed to cure, and the type of failure observed on the dolly.

G. Final Inspection:

- (1) At the completion of all coating work, a final inspection shall be conducted. The Contractor, a coating manufacturer representative, the Inspector, and the Department of Water shall jointly conduct a final inspection to establish that all work is complete per the Contract Documents.
- (2) Any deficiencies found shall be documented and corrected before granting final work acceptance.
- (3) The Contractor shall use video and still photography to thoroughly document each work area condition during the final inspection. A copy of all photographs and video shall be provided to the Department of Water, and the Contractor shall keep the originals on file. The photographs and video shall be the basis for condition evaluation of the coating systems at the warranty inspection.
- (4) Inspection costs in excess of one re-inspection or cancellation of the coating work shall be borne by the Contractor.

9.25 WARRANTY INSPECTION: Warranty inspections shall be conducted within the last warranty year following work acceptance. All coating applications found deficient or defective during the warranty period shall be repaired or replaced by the Contractor, to the satisfaction of the Department of Water. These repairs or replacements shall be in accordance with this Specification and the material manufacturer's recommendations at no cost to the Department of Water.

Deficient or defective areas in the coatings include blisters, peeling, disbondment or cracking. The final inspection shall be used to assist in determining deficient or defective areas in the coating systems.

The Department of Water shall establish a date for the inspection and provide 30 days' advance notification to the Contractor, so the Contractor and a coating manufacturer representative can be present during the inspection.

The cost of the warranty inspection shall be borne by each party. The Contractor shall arrange for the presence of the coating manufacturer and bear all associated costs. Inspection costs in excess of one re-inspection or cancellation not attributed to the Department of Water shall be borne by the Contractor. The Contractor shall arrange for the cover all costs for repair work under the warranty.

If the warranty inspection is not held during, or before, 1 month prior to the end of the warranty period, the Contractor is not relieved of its warranty responsibilities under the contract documents. If the contractor fails to conduct the last-warranty-year inspection for reasons not attributed to the Department of Water, the warranty period shall be extended until the inspection is conducted and defective work is repaired.

9.26 REPAIRS: Coating damage due to adhesion testing or if areas found to have an improper finish, insufficient film thickness or other deficiencies; then the Contractor shall clean, prepare and topcoat the coating surface per the manufacturer's recommendations to obtain the specified finish and coverage. Work shall be free of runs, bridges, shiners, laps, or other imperfections.

Damaged or defective coating shall be removed by the Contractor and the surface prepared in accordance with these Specifications before recoating.

9.27 CLEANUP: Upon completion of the work, all staging, scaffolding, containers and work-related material or debris shall be removed from the site to the satisfaction of the Inspector and Department of Water.

Coating overspray and oil spots or stains on all surrounding surfaces shall be removed and the job site cleaned.

All Damage to surfaces resulting from the Contractor's work shall be cleaned, repaired or refinished, to the satisfaction of the Inspector at no cost to the Department of Water.

Disposal of spent solvents, thinners, coating components and other related materials shall be the Contractor's responsibility and shall meet all federal, state, and regional regulations for safe disposal.

9.28 PAYMENT: Payment for PROTECTIVE COATINGS shall not be made separately; the compensation shall be considered incidental to the Total Sum Offer of which it is a part.

SECTION SP-10 – EXTERIOR COATINGS

10.1 GENERAL:

- 10.1.01 GENERAL: This section covers furnishing of labor, tools, equipment, materials and applying paint to the exterior reservoir wall, roof slab vertical edge and other elements of the reservoir specified to have a paint finish in place complete, as shown on the plans and as specified in DIVISION 300 - CONSTRUCTION, Section 303.27 PAINTING of the “Water System Standards,” dated 2002, and as amended hereinafter as they apply to this project.
- 10.1.02 PROTECTION OF MATERIALS: All material shall be delivered to the jobsite in their original unopened containers bearing the manufacturer's name, brand and batch number. All coatings and paints shall be stored in enclosed structures to protect them from weather and excessive heat and cold. Flammable coatings or paints must be stored in conformance with city, county and state safety codes for flammable coating or paint materials.
- 10.1.03 SUBSTITUTIONS: Requests for material substitutions must be made and approved in writing by Department of Water.

10.2 SUBMITTALS:

- 10.2.01 PRODUCT DATA: Submit product data in accordance with these Specifications. Unless otherwise specified here-in, submit manufacturer's data sheets showing the following information:
1. Percent solids by volume.
 2. Minimum recommended dry-film thickness per coat for prime, intermediate and finish coats.
 3. Recommended surface preparation.
 4. Recommended thinners.
 5. Statement verifying that the specified prime coat is recommended by the manufacturer for use with the specified intermediate and finish coats.
 6. Application instructions including recommended equipment and temperature limitations.
 7. Verification from the manufacturer that the product meets current California VOC requirements.
 8. Color chips for alkyd enamel and exterior tank coatings.
- 10.2.02 PAINTING CONTRACTOR: Painting Contractor experience documentation as described in Section 10.3 below.

10.3 PAINTING CONTRACTOR QUALIFICATIONS: The Painting Contractor must be capable of performing the various items of work as specified. If required by the Manager, the Painting Contractor shall furnish a statement covering experience on similar work, a list of machinery and other equipment available for the proposed work, and a financial statement, including a complete statement of the Paint Contractor's financial ability and experience in performing similar painting and coating work.

The Painting Contractor shall have a minimum of five (5) years practical experience and a successful history in the application of the specified products to concrete surfaces.

Upon request, the Painting Contractor shall substantiate this requirement by furnishing a list of references, which shall include jobs of similar nature, listing name of project, year completed, owner, name and contact telephone number for reference for each project listed.

10.4 MATERIALS:

10.4.01 ABOVEGROUND EXTERIOR WALL AND ROOF EDGE AREAS:

- A. Prime Coat - (1) coat, ICI Devoe Coatings 4030 TRU-GLAZE-WB Waterborne Epoxy Primer at 4.0 - 8.0 mils wet; 2.0 - 4.0 mils DFT. (200-270 sf/gal.) or approved equal.
- B. Finish Coat- (2) coats, Glidden Fortis 350 (formerly ICI Devoe Coatings 2406 Dulux Professional) Waterborne Acrylic Latex Semi-Gloss at 4.0–4.6 mils wet; 1.4-1.6 mils DFT. (350-400 sf/gal) or approved equal.
- C. The finish coat color shall be “Kauai Green.”

10.4.02 BELOW GRADE WATERPROOFING: Two-component liquid-applied urethane coating that forms an elastomeric waterproof membrane after curing, such as “CIM 1000” by C.I.M. Industries, Inc. (www.cimindustries.com) or approved equal.

10.5 EXECUTION:

10.5.01 EQUIPMENT: The Contractor’s coating and painting equipment shall be designed for application of materials specified and shall be maintained in first class working condition. Compressors shall have suitable traps and filters to remove water and oils from the air. Contractor's equipment shall be subject to approval of the Engineer.

10.5.02 SURFACE PREPARATION:

- A. All concrete surfaces shall be prepared in accordance with the recommendations of the coating manufacturer.
- B. The surfaces shall be thoroughly cleaned, if they are not free of grease, curing compounds or other deleterious matter, as recommended by the coating manufacturer.

10.5.03 APPLICATION:

- A. Contractor shall comply with manufacturer’s recommended application rates, methods,

and instructions.

- B. Each coat shall be free of runs, skips or "holidays".
- C. All work shall be done in accordance with the manufacturer's safety recommendations, adequate ventilation shall be provided within the tank by the contractor during the course of interior painting work.

10.5.04 SURFACES NOT TO BE COATED:

The following surfaces shall not be painted and shall be protected during the surface preparation and painting of adjacent areas:

- 1. Mortar-coated pipe and fittings.
- 2. Stainless-steel, aluminum, brass or copper.
- 3. Metal letters.
- 4. Nameplates.
- 5. Grease fittings.
- 6. Buried pipe, unless specifically required in the piping specifications.

- 10.6 PROTECTION OF SURFACES NOT TO BE PAINTED: Remove, mask, or otherwise protect hardware, lighting fixtures, switchplates, aluminum surfaces, machined surfaces, couplings, shafts, bearings, nameplates on machinery, and other surfaces not intended to be painted.

Provide drop cloths to prevent paint materials from falling on or marring adjacent surfaces.

Protect working parts of mechanical and electrical equipment from damage during surface preparation and painting process.

Mask openings in motors to prevent paint and other materials from entering the motors.

- 10.7 THINNING: The Contractor shall not add thinner to any paint product without prior approval of the Engineer and the paint manufacturer. Only thinner manufactured by the paint manufacturer will be allowed if thinning is approved.

- 10.8 WEATHER CONDITIONS: No painting shall be done under unfavorable weather conditions unless the work is well-protected from such conditions, and then only with the specific approval of the Engineer.

No painting shall be done when the air temperature is less than 50 degrees Fahrenheit (F), when the relative humidity is greater than 70 percent, or when the surface temperature is less than 5 degrees F above the dew-point, unless otherwise approved by the Engineer. If dew or moisture condensation should be anticipated and if such conditions are prevalent, painting should be delayed until surfaces are dry. Further, the day's painting should be completed in advance of the problem time when condensation will occur, in order to permit the film sufficient drying time prior to the formation of moisture.

No painting shall be applied on any surface whose temperature is less than 50 degrees F or more than 120 degrees F or in conflict with the manufacturer's recommendations, unless otherwise

approved by the Engineer.

10.9 SAFETY:

- 10.9.01 PERSONAL PROTECTIVE LIFE-SAVING EQUIPMENT: In accordance with requirements of the latest revision of the OSHA Regulations for Construction, the Contractor shall provide and require use of personal protective life-saving equipment for persons working in or about the project site.
- 10.9.02 HEAD AND FACE PROTECTION AND RESPIRATORY DEVICES: Equipment shall include protective helmets conforming to the requirements of ANSI Standard Z89.2 and shall be worn by all persons while in the vicinity of the work. In addition, workers engaged in or near the work during sandblasting shall wear eye and face protection devices meeting the requirements of ANSI Standard Z87.1 and OSHA Regulations for Sandblasting Operations, and air-purifying half-mask or mouthpiece respirator with appropriate filter.
- 10.9.03 VENTILATION: Where ventilation is used to control potential exposure as set forth in section 1910.924 of the OSHA Regulations for Construction, ventilation shall reduce the concentration of air contaminant to the degree a hazard does not exist.
- 10.9.04 SOUND LEVELS: Whenever the occupational noise exposure exceeds the maximum allowable sound levels as set forth in Table D-2 of Subpart C, Section 1926.52 of the OSHA Regulations for Construction, the Contractor shall provide and require the use of approved ear protection devices.
- 10.9.05 ILLUMINATION: Adequate illumination shall be provided while work is in progress. Whenever required by the Engineer, the Contractor shall provide additional illumination and necessary supports to cover all areas to be inspected. The level of illumination for inspection purposes shall be determined by the Engineer.
- 10.9.06 TEMPORARY LADDERS AND SCAFFOLDING: All temporary ladders and scaffolding shall conform to the applicable requirements of Subpart L, Sections 1926.45 and 1926.451 of the OSHA Regulations for Construction. They shall be erected where requested by the Engineer to facilitate inspection and be removed by the Contractor to locations requested by the Engineer.

- 10.10 INSPECTION AND TESTING: The Contractor shall give the Department of Water and Inspector 3 days' advance notice of the start of any field surface preparation work or coating application work.

The Contractor shall provide a full time NACE Certified Coating Inspector at the work site anytime work is being done on this section of the project. The Inspector shall have the authority to coordinate work and make decisions pertaining to the fulfillment of this phase of the contract. The Inspector shall have a minimum of 5 years of experience in the application of the specified coatings. The contractor shall provide a list of three (3) potential NACE inspectors for DOW to select one (1) for the project.

All work relative to preparation for the application of coatings shall be conducted under the full time Inspector. The Inspector's services shall be provided and paid for by the Contractor. The Inspector shall have the authority to act on behalf of the Department of Water to reject any coating work that

does not comply with these specifications or the manufacturer's written specifications.

Prior to the start of any work, the Contractor shall establish with the Inspector, schedules and notification procedures to ensure all surface preparation work has been inspected prior to the application of any coating. These procedures shall remain in effect for the duration of the coating project. Under no circumstances shall any surfaces be coated without prior approval of the inspector. Coatings applied without the Inspector's authorization shall be removed and reapplied at the sole expense of the Contractor.

The Contractor shall make the following equipment available to the Inspector upon request:

1. Holiday testers
2. Film thickness testers
3. Surface preparation concrete comparators
4. Adhesion testers

10.11 PAYMENT: Payment for EXTERIOR COATINGS shall not be made separately; the compensation shall be considered incidental to the Total Sum Offer of which it is a part.

Such payment shall represent full compensation for furnishing all materials, labor, tools, equipment and incidentals to complete the work.

SECTION SP-11 – ROOF SLAB WATERPROOFING

This section covers furnishing of labor, tools, equipment, materials to install the roof slab waterproofing, include surface preparation, flashing in place complete, as shown on the plans. The reservoir roofing defined in “Water System Standards,” dated 2002, Section 303.06 REINFORCED CONCRETE RESERVOIR shall be deleted and replaced with the following:

- 11.1 PACKAGES AND LABELS: Deliver materials in original containers, manufacturer’s labels thereon. Do not open container or remove labels until Engineer has approved material.
- 11.2 STORAGE: Store coating materials out of direct sunlight and as recommended by the manufacturer. Do not store containers exposed to weather. Storage place shall be a location agreed upon by the Contractor and Manager.
- 11.3 FIRE PROTECTION: Contractor shall exercise extraordinary care to prevent fire.
- 11.4 PROTECTION AND CLEANING: Protect adjacent work with drop cloths. Clean material splatters and stains from completed surfaces.

Begin waterproof coating process only after coating manufacturer’s representative has approved the substrate surface for coating. The work shall be performed in strict conformance with the manufacturer’s direction.

11.5 SUBMITTALS:

- 1. MATERIALS: Submit complete and detailed list of materials proposed for use, their MSDS sheets and certification that the proposed products meet the project requirements.
 - 2. INSTALLATION INSTRUCTIONS: Submit installation instructions from coating manufacturer, including recommended coverage for all system components.
 - 3. LETTER FROM COATING MANUFACTURER: Stating that proposed materials are the best of their respective kinds and suitable for the intended purpose and project conditions.
 - 4. INSTALLER CERTIFICATES: Installer certificates signed by roof waterproofing system manufacturer certifying that contractor is authorized to install the waterproofing system.
 - 5. SAMPLES: Submit sample of proposed color and texture of the coating system assembly for approval by DOW before ordering materials. Submit as many samples as required to secure approval from the Department of Water. The finish color shall be selected from the standard color choices offered by the manufacturer.
 - 6. SAMPLE WARRANTY: Copy of special waterproofing manufacturer’s warranty stating obligations, remedies, limitations, and exclusions before starting installation.
- 11.6 QUALITY ASSURANCE: The Applicator proposing on this Work must submit to DOW a currently dated applicator’s license certificate issued by the manufacturer for the specific coating system to be installed as part of this project.

The waterproof coating contractor shall coordinate the presence of the manufacturer's representative and shall provide the manufacturer's representative with a schedule of his work. The schedule shall be designed in such a way as to meet project requirements.

Waterproofing coating manufacturer's representative is required to be on-site as often as the representative deems necessary to assure the coated surfaces and the coating are in accordance with the manufacturer's directions and does not negate the manufacturer's warranty.

Coating shall not contain any materials determined hazardous, such as lead.

All coating components shall be from the same manufacturer or the primary coating components manufacturer shall provide a written statement indicating the proposed materials are compatible and acceptable for the system to be guaranteed.

All materials shall be delivered to the job site in the original factory containers. Containers shall be clearly labeled with the coating type and batch number. Damaged containers shall be rejected or noted by receiver at the time of delivery.

The coating manufacturer shall have 5 years minimum experience in the manufacture of fluid-applied waterproof coatings.

All work shall be done in a manner that produces a good workmanlike finish. The applicator shall adhere to the manufacturer's instructions for use, handling, storage, application and clean-up.

Non-compliance with any portion of this RFP without prior written approval of DOW and, if necessary, confirmation by the coating manufacturer, may cause for rejection of the entire job or portion thereof.

11.7 PROJECT CONDITIONS:

- 11.7.01 EXAMINATION OF SURFACES: The Contractor and manufacturer's representative shall examine the surfaces before commencement of work. The roof areas shall be in proper condition to receive the coating system. If the contractor considers any surface unsuitable for the proper finish of the work, he shall not apply any material until the unsuitable surface(s) has been adequately addressed.
- 11.7.02 WEATHER CONDITIONS: Do not apply waterproof coating materials in rain, fog or mist, or when such weather conditions are predicted in the next 8 hours. Take adequate precautions to ensure that materials, applied coating are protected from possible moisture damage or contamination.
- 11.7.03 PROTECTION: Before applying waterproof coating, system remove or provide ample protection for hardware, plates, light fixtures, and similar items. Replace upon completion. Employ skilled craftsmen for removing and reinstalling above items. Protect surfaces not to be coated and remove any unintended primer or coating immediately from the surface.
- 11.7.04 SIGNS: Post "No Smoking" signs in area during and for a minimum of 8 hours after the application.

11.8 PROTECTION REQUIREMENTS:

11.8.01 Membrane Protection: Provide protection against staining and mechanical damage for newly applied waterproof coating and adjacent surfaces throughout this project.

11.8.02 Debris Removal: Remove all debris daily from the project site and take to a legal dumping area authorized to receive such materials.

11.9 CONTRACTOR'S ACCEPTANCE: Application of the primer constitutes the Contractor's acceptance of the surfaces and the responsibility for it, including the removal of hazardous materials.

11.10 GUARANTEE: Contractor shall furnish a five (5) year guarantee as described in Water System Standards, Section 303.16.C.

The guarantee shall be without deductibles or limitations on coverage amount, and shall be issued at no cost to the Department of Water. The guarantee shall not exclude random areas of ponding from coverage.

11.11 MATERIALS:

11.11.01 SYSTEM DESCRIPTION: A fluid-applied, single component, moisture-cured, polyurethane deck elastomeric waterproof coating in compliance with ASTM C957, such as Elasto-deck 5000X2 by Pacific Polymers International, Sikalastic 710/715 Traffic System by Sika, or approved equal.

11.11.02 COMPONENTS: Components shall be products of a single manufacturer, or shall be certified by the manufacturer as compatible with components produced by manufacturer.

11.11.03 PRIMER: Primer shall be a fast-drying, two component, water based epoxy primer with low odor and non-flammable. Primer is designed to be used with polyurethane based coatings and joint sealants, such as Elasto-poxy Primer W.B. by Pacific Polymers International; Sikafloor FTP by Sika or approved equal.

11.11.04 BASE COAT: Base coat shall be a liquid-applied, single component, aromatic moisture-cured polyurethane waterproof membrane that is non-gassing, non-blistering, such as Elasto-Deck 5001 Non-Gassing by Pacific Polymers International; Sikalastic 710 by Sika or approved equal.

A. Properties:

- | | |
|---|-----------|
| (1) Ultimate Tensile Strength (ASTM D412) | 800 psi |
| (2) Adhesive Peel Strength on Primed Concrete (ASTM D903) | 90 pli |
| (3) Moisture Vapor Transmission (ASTM E96) | 3.7 perms |
| (4) Tear Resistance (ASTM D1004) | 170 pli |
| (5) Ultimate Elongation (ASTM D412) | 500% min. |

11.11.05 TOP COAT: Top coat shall be liquid-applied, moisture cured polyurethane based on aliphatic Isocyanates in combination with additives and pigments to produce a wear-resistant, protective coating, such as Elasto-Glaze 6001 AL by Pacific Polymers International; Sikalastic 715 by Sika or approved equal.

A. Properties:

- | | |
|---|------------|
| (1) Percent Solids | 70% Min. |
| (2) Adhesive Peel Strength on Primed Concrete (ASTM D903) | 200 pli |
| (3) Moisture Vapor Transmission (ASTM E96) | 1.0 perms |
| (4) Tear Resistance (ASTM D1004) | 185 pli |
| (5) Ultimate Elongation (ASTM D412) | 180% min. |
| (6) Tensile Strength (ASTM D412) | 2,500 psi. |

11.11.06 FINISH AGGREGATE: 20 mesh sand as provided by coating system manufacturer as part of the roofing system materials.

11.11.07 ROOFING ACCESSORIES:

A. Discontinuity Cant Joint Material: Two-part, gun grade polyurethane joint sealant product that cures to a firm, flexible tear-resistant rubber with excellent recovery characteristics, such as Elasto-Thane 227/227R by Pacific Polymers, Garden Grove, CA (714-898-0025)(www.pacpoly.com) or Sikaflex 2c NS Sealant by Sika, Lyndhurst, NJ (800-933-7452) (www.usa.sika.com) or approved equal.

B. Sealant: Single-component, gun-grade/non-sag, polyurethane joint sealant which cures at ambient temperature to a firm, flexible, tear-resistant rubber, such as, Elasto-Thane 230, Elasto-Thane 920 by Pacific Polymers or Sikaflex 1a Sealant by Sika or approved equal.

C. Backing Rod: Expanded polyethylene rod equal to “Ethafoam” by DOW Chemical.

D. Flashing Tape: Fiberglass tape, commercial grade.

- 11.12 SURFACE PREPARATION: All surfaces must conform to manufacturer's recommendations and to the satisfaction of the Manager. All surfaces of different material are to be considered separately and are to be treated as recommended by the manufacturer.

Properly cure surfacing material and concrete repairs shall be cleaned by water pressure washing with 5,000 psi pressure. All surfaces must be free of dirt, debris, organic growth, chalk, loose laitance, and other loose materials and be clean and dry.

Caulk all substrate seams, vertical/horizontal surface intersections and protrusions with continuous bead of sealant. Caulk all expansion, control and construction joints in concrete substrate to be over coated with base coating with sealant.

Sawcut all cracks exceeding 1/16-inch wide and fill with sealant. Install a strip of base coating material, 25 mils thick over all caulked saw cut cracks.

Protect adjacent surfaces not to be coated with drop clothes or masking as required.

- 11.13 APPLICATION:

11.13.01 WORKMANSHIP: Highest quality, by skilled workers, in accordance with best trade practices. Apply materials evenly, without runs or sags. Cut sharp lines against other materials. Allow ample time between coats for thorough drying. Rate of application shall be in strict conformance with manufacturer's direction.

11.13.02 DEFECTIVE WORK: Contractor responsible whatever the cause; refinishing work will be at Contractor's expense. Repair work that is damaged during construction. Leave coated surfaces in first class condition at time of final acceptance.

11.13.03 PRIMER: Apply primer in accordance with roofing system manufacturer's instructions. Primer shall be applied in a solid coat at the rate recommended by the manufacturer.

11.13.04 BASE COATING: After primer has been allowed to cure as recommended by manufacturer, apply two coats of base coating at the rate and dry film thickness recommended by the coating manufacturer. Application must be made uniformly to avoid thin spots, care must be taken to avoid pinholes and repair them as they occur. Allow time between coats as recommended by manufacturer.

11.13.05 TOP COAT: Apply the top coat at the recommended rate to achieve the recommended dry film thickness. Broadcast aggregate into the wet top coat until refusal.

11.13.06 ADDITIONAL TOP COAT: After a minimum of 16 hours, sweep or blow off all loose aggregate and apply another coating of top coat over the aggregate at the recommended rate.

11.13.07 ALLOWANCE FOR FOOT TRAFFIC: Allow at least 96 hours (4 full days) before allowing foot traffic on installed coating system.

11.14 FIELD QUALITY CONTROL:

11.14.01 FINAL INSPECTION: Contractor to notify coating system manufacturer in writing of the completion of installation in order to schedule a final inspection by manufacturer's representative.

11.14.02 VISUAL CHECK: All surfaces coated shall be visually checked to insure areas have not been missed and all holidays in the coating are repaired.

11.14.03 FIELD INSPECTION: The Contractor and the manufacturer's representative shall compile a punch list of items required for completion.

11.14.04 ISSUANCE OF GUARANTEE: Contractor will be responsible for completing post-installation procedure and meet the manufacturer's final endorsement for issuance of the specified guarantee.

11.15 CLEAN-UP: Clean off all misplaced primer and coating and remove all excess materials and equipment from the job site upon completion.

Leave premises neat and clean in a manner acceptable to the Manager. Remove all temporary protection and barriers from the work.

11.16 PAYMENT: Payment for ROOF SLAB WATERPROOFING shall not be made separately; the compensation shall be considered incidental to the Total Sum Offer of which it is a part.

SECTION SP-12 – CELLULAR CONFINEMENT SYSTEM FOR CONSTRUCTION ACCESS

- 12.1 GENERAL: The Contractor shall furnish and install the cellular confinement system for construction access as shown on the plans and specified herein.
- 12.2 SUBMITTALS: The Contractor shall submit shop drawings and manufacturer's data on cellular confinement system, clips, and geotextile fabric certifying that the product provided meets the specified item.
- 12.3 MATERIAL: Cellular confinement system shall be made of polyethylene with a density of 58.4 – 60.2 lb/ft³ in accordance with ASTM D1505 and shall have a 1.5% - 2.0% carbon black content, by weight, for ultra-violet light stabilization. The carbon black shall be homogeneously distributed throughout the material.
- 12.4 MANUFACTURER: Manufacturer of the cellular confinement system shall be Presto Geosystems or approved equal. A qualified manufacturer's field representative shall be on-site during construction to observe that the installation of the cellular confinement system is in accordance with the contract documents and manufacturer's recommendations.
- 12.5 INSTALLATION: The Contractor shall install and infill units in accordance with the cellular confinement system manufacturer's instructions and as specified in the contract documents.
- 12.5.01 The Contractor shall prepare subgrade as specified in the contract documents and in accordance with the manufacturer's recommendations. Provide adequate drainage from the subgrade if the area has potential to collect water when working with in-place soils that have poor permeability. Ensure in-place soil is relatively dry and free from standing water. Uniformly grade the base and level and clear base of large objects, such as rocks and pieces of wood.
- 12.5.02 Prevent the units from shifting during installation with placement of temporary wooden stakes or permanent metal stakes. Anchor the units after installation of all units within the defined area. Drive the anchors through the holes in the flexible unit along the perimeter as required.
- 12.5.03 Infill units with ¾-inch minus rock or suitable topsoil immediately after units are installed to minimize potential of joint separation. Spread the infill uniformly over units to a level even with the top of cell wall. Use spreading methods to prevent over-compaction of cell infill.
- 12.6 PAYMENT: Payment for furnishing and installing the CELLULAR CONFINEMENT SYSTEM shall be made at the Unit Price Offer for which it is a part.

The Unit Price Offer for furnishing and installing CELLULAR CONFINEMENT SYSTEM shall be full compensation for all labor, materials, tools, and equipment for all handling, hauling, unloading, placing, jointing, testing, and all other incidentals necessary to complete the work in place complete.

No separate payment for the trench and backfill, drainage, geofabric, clips, stakes, rock, topsoil, and all incidentals and appurtenances will be made; the compensation for such work shall be deemed to be included in the Unit Price Offer for CELLULAR CONFINEMENT SYSTEM.

SECTION SP-13 - STEEL DOORS AND FRAMES

- 13.1 SECTION INCLUDES: Steel doors and frames; non-rated and fire rated.
- 13.2 SUBMITTALS:
- 13.1.01 SHOP DRAWINGS: Indicate door and frame elevations, internal reinforcement, cut-outs for glazing, and finish.
- 13.1.02 PRODUCT DATA: Indicate door and frame configurations, location of cut-outs for hardware reinforcement.
- 13.1.03 WARRANTIES: Provide manufacturer's warranties against corrosion and deformities, minimum 10 years.
- 13.3 QUALITY ASSURANCE: Conform to the following:
- 13.3.01 SDI-100 - Standard Steel Doors and Frames.
- 13.3.02 DHI - Door Hardware Institute - The Installation of Commercial Steel Doors and Steel Frames, Insulated Steel Doors in Wood Frames and Builder's Hardware.
- 13.3.03 Fire Rated Door and Frame Construction: UL 10B and NFPA 80.
- 13.3.04 Handicapped: ANSI A117.1.
- 13.3.05 Handicapped: ADA - Americans with Disabilities Act.
- 13.4 PRODUCTS:
- 13.4.01 DOORS AND FRAMES:
- A. Manufacturers:
1. Steelcraft.
 2. Ceco.
 3. Curries.
 4. Substitutions: Submit Per Section SP 1-1.7
- B. Exterior Doors: SDI-100 Grade I, as required by Drawings.
- C. Exterior Frames: 16 gage thick material, core thickness.
- 13.4.02 ACCESSORIES:
- A. Silencers: Resilient rubber.
- B. Removable Stops: Rolled steel channel shape.

- C. Bituminous Coating: Fibered asphalt emulsion.

13.4.03 FABRICATION – DOORS:

- A. Astragals for Double Doors: Steel, T shaped, specifically for double doors.
- B. Fabricate doors with hardware reinforcement welded in place.
- C. Attach fire rated label to each fire-rated door unit.
- D. Close top and bottom edge of exterior doors with inverted steel channel closure. Seal joints watertight.
- E. All door hardware shall be Cyberlock compatible.

13.4.04 FABRICATION – FRAMES:

- A. Fabricate frames for knock down field assembly.
- B. Mullions for Double Doors: Fixed type, of same profiles as jambs.
- C. Fabricate frames with hardware reinforcement plates welded in place. Provide mortar guard boxes.
- D. Reinforce frames wider than 48 inches with roll formed steel channels fitted tightly into frame head, flush with top.
- E. Prepare frame for silencers and install.
- F. Fabricate frames to suit masonry wall coursing with 2-inch head member.

13.4.05 FINISH:

- A. Steel Sheet: Galvanized to ASTM A525 - A60.
- B. Primer: Baked on manufacturer primer.
- C. Coat inside of frame profile with bituminous coating.
- D. Finish: Baked on manufacturers finish to match existing and as selected by architect.

13.5 EXECUTION:

13.5.01 INSTALLATION:

- A. Install doors and frames in accordance with ANSI/SDI-100.
- B. Coordinate installation of doors and frames with installation of hardware.

- C. Coordinate with masonry and wallboard wall construction for frame anchor placement.
- D. Install roll-formed steel reinforcement channels between two abutting frames. Anchor to structure and floor.
- E. Install door louvers plumb and level.

13.5.02 TOLERANCES:

- A. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

13.6 PAYMENT: Payment for STEEL DOORS AND FRAMES shall not be made separately; the compensation shall be considered incidental to the Total Sum Offer of which it is a part.

SECTION SP-14 - ALUMINUM FIXED LOUVER

14.1 DESCRIPTION: This item of work shall include the furnishing of all labor, materials, tools, and equipment necessary for providing and installing aluminum fixed weather louvers designed to protect air intake and exhaust openings in building exterior walls with anchors, brackets and attachments into existing masonry wall openings work covered in this special provision and project drawings.

14.2 PERFORMANCE REQUIREMENTS: The beginning point of water penetration, based on AMCA Water Penetration Test criteria, shall be a minimum of 1000 fpm free area velocity.

Individual louver panels shall be designed to withstand the wind loading per the Building Code of Kaua'i County, the International Building Code, amended 2006 edition, or 25 pounds per square foot, whichever is greatest.

14.3 SUBMITTALS:

14.3.01 PRODUCT DATA: Include manufacturer's product specifications, technical support data, installation and maintenance recommendations and standard details for each type of louver required, including flashing methods, hardware and accessories.

14.3.02 CERTIFICATION: Provide certification by a recognized, independent testing laboratory certifying that each required type of louver complies with performance requirements indicated.

14.4 DELIVERY, STORAGE, AND HANDLING:

14.4.01 DELIVERY: Deliver materials to Project site in manufacturer's original, sealed and labeled packaging with manufacturer's name, product brand name and type, date of manufacture, and directions for storing.

14.4.02 STORAGE: Store materials in a dry area indoors, protected from damage, and in accordance with manufacturer's instructions for protection of units.

14.4.03 HANDLING: Handle all materials in such a manner as to preclude damage to finish or unit.

14.5 PROJECT CONDITIONS:

14.5.01 ENVIRONMENTAL CONDITIONS: Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by the manufacturer.

14.5.02 FIELD MEASUREMENTS: Verify actual dimensions of openings by field measurements before fabrication. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.

- 14.6 WARRANTY: Manufacturer shall provide a warranty for louver systems for a period of 1 year from date of installation, within 18 months of shipment from manufacturing plant. The louver coating system shall have a 5-year minimum warranty for defects or premature wear. When notified in writing from the Department of Water of a manufacturing defect, manufacturer shall promptly correct deficiencies without cost to the Department of Water.

Warranty includes coverage of materials and labor in full by the manufacturer.

14.7 FABRICATED FIXED ALUMINUM LOUVER:

14.7.01 Description and Features: The 6-inch wide, aluminum fixed weather louvers shall be designed to protect air intake and exhaust openings in building exterior walls with drain gutters in the head member and horizontal blades, channeling water to the jambs where water travels down a vertical downspout and out at the sloped sill. The louver construction shall utilize mechanical fasteners.

14.7.02 Extrusion Frame Members and Louver Frame: Extrusion frame members are to be 0.081-inch nominal thickness 6063-T6 aluminum. The louver frame shall be fitted with a manufacturer-provided 1 1/2-inch wide aluminum (6063-T6) perimeter flange at the exterior wall face.

14.7.03 Louver Blades: Louver blades are to be 0.081-inch nominal thickness 6063-T6 aluminum positioned at 37 or 37.5 degrees on approximately 6-inch centers.

A. Manufacturers: Examples of manufacturers meeting the above requirements:

3. Greenheck – Model “ESD-603” (www.greenheck.com), Schofield, WI (808) 678-3911
4. NCA Manufacturing, Inc. – Model “XAD-6-GL” (www.ncamfg.com), Clearwater, FL (727) 441-2651

14.7.04 Bird Screen: Provide factory-provided bird screens for each louver opening, 3/4-inch by 0.051 inches flattened, expanded aluminum in a removable frame, inside mounted. Locate screens on inside of window louvers.

14.7.05 Insect Screen: Provide aluminum mesh or fiberglass mesh insect screens for each louvered opening. Locate bug screens on interior-side of required bird screens. Design louver and hardware to accommodate screens in a tight-fitting, removable arrangement with a minimum of exposed fasteners and latches.

14.7.06 Fasteners: Provide aluminum, non-magnetic steel, epoxy adhesive, or other materials warranted by the manufacturer to be non-corrosive and compatible with window members, trim, hardware, anchors and other components of louver unit. Where fasteners screw-anchor into aluminum frame members less than 0.125 inches thick, reinforce the interior with aluminum to received screw threads, or provide standard, non-corrosive, pressed-in, splined grommet nuts.

14.7.07 Anchors, Clips, and Louver Accessories: Fabricate anchors, clips, and louver accessories out of aluminum or non-magnetic stainless steel. Anchors, clips and louver

accessories fabricated of hot-dipped zinc-coated steel or iron may be used for concealed work.

- 14.8 FABRICATION REQUIREMENTS: Fabricate to minimize field adjustments, splicing, mechanical joints, and field assembly nuts.

Preassemble units to greatest extent possible and disassemble as necessary for shipping and handling.

Clearly mark units for reassembly and coordinated installation.

Join frame-to-frame connections by welding in shop and frame and lade members to one another by riveting, except where field bolted/screwed connections between frame members are necessary due to size of louver.

Maintain equal blade spacing to produce uniform appearance.

- 14.9 FINISHES:

14.9.01 FINISHES IN FACTORY: Apply finishes in factory in compliance with NAAMM “Metal Finishes Manual” for finish designations and application recommendations.

14.9.02 CLEAR ANODIZE: Coating shall conform to AA-M10C21A41 (>0.7 mil). All aluminum shall be thoroughly cleaned, etched, and given a chromatic conversion pretreatment before application of coating. The manufacturer shall provide a minimum of 5-year warranty for the coating system.

- 14.10 LOUVER INSTALLATION: Verify opening preparation is within installation tolerances and proceed only after unsatisfactory conditions have been corrected.

Install louver in accordance with manufacturer’s instructions, resulting in a plumb, level, in-plane of wall, and aligned with adjacent work installation.

Install continuous exterior-grade elastomeric joint sealant at louver-wall opening joint on full perimeter.

Clean louver surface in accordance with manufacturer’s instructions.

- 14.11 PAYMENT: Payment for ALUMINUM FIXED LOUVERS shall not be made separately; the compensation shall be considered incidental to the Total Sum Offer of which it is a part.

SECTION SP-15 - HYDROPNEUMATIC BOOSTER PUMP PACKAGE

- 15.1 GENERAL: Hydropneumatic booster pumps and tank shall be furnished and installed with pressure sensor/transmitter as indicated on the drawings.
- 15.2 EQUIPMENT:
- 15.2.01 Booster Pumps: Booster pumps shall be Sta-Rite Booster Pumps Model HPS30F with 1-1/2 HP, single phase, 115/230 Volt motor or approved equal.
- 15.2.02 Tank: Tank shall be Sta-Rite Tank Model PSP-119-TR50 or approved equal.
- 15.2.03 Pressure Transmitter: Rosemount 3051T Pressure Transmitter Model #3051TG2A2A21JB4Q4-T1 or approved equal.
- 15.3 PAYMENT: Payment for the furnishing and installing the HYDROPNEUMATIC BOOSTER PUMP PACKAGE will be made at the Lump Sum Offer. The Lump Sum Offer for the furnishing and installation of the HYDROPNEUMATIC BOOSTER PUMP PACKAGE, including valves, check valves, pressure gauges, relief valves, and sensors, shall be full compensation for all labor, materials, tools, and equipment and all other incidentals necessary to complete the work.

SECTION SP-16 – GEOTECHNICAL REQUIREMENTS AND MONITORING

- 16.1 GENERAL: This section covers requirements for geotechnical monitoring work to be performed during construction of any earthwork required to construct the Project. This item of work consists of furnishing of labor, tools, equipment, and materials necessary to complete the geotechnical monitoring. Contractor shall be responsible for coordinating all phases of the project with the DOW Engineer.
- 16.2 GEOTECHNICAL ENGINEERING: Foundation design is based on the geotechnical engineering report prepared by Geolabs, Inc., titled “Geotechnical Engineering Exploration, Kalāheo Water System Improvements, Kalāheo, Kaua‘i, Hawai‘i” dated February 29, 2012. A copy of the report is included in Appendix P. The Contractor shall retain the services of a licensed geotechnical engineer to certify that the ground soil conditions, including the compaction of the subgrade material, are acceptable and have met the requirements of the geotechnical report. A written confirmation of the above shall be submitted by the geotechnical engineer retained by the Contractor prior to any installation of reinforcement steel. A representative of the Geotechnical Engineer shall be present at the site to observe and inspect the reservoir grading, retaining walls, pipelines along roadway, probing work, and foundation preparation and to take density tests.
- 16.3 OBSERVATION AND TESTING: The earthwork shall be observed by a licensed geotechnical engineer in the State of Hawai‘i during construction to determine whether anticipated materials are encountered. Field density tests in backfills shall be taken and analyzed by the Geotechnical Engineer to determine whether the specified levels of compaction are consistently obtained.
- The foundation excavation for the walls shall be observed by the Geotechnical Engineer during construction to determine whether anticipated materials are encountered.
- The Geotechnical Engineer’s representative shall be on-site at **ALL** times where and when backfill occurs within the project site to assure quality of backfill, proper compaction, and appurtenances as required by the various sections of the associated Invitation for Bids documents.
- 16.4 PAYMENT: Payment for GEOTECHNICAL REQUIREMENTS AND MONITORING shall not be made directly; the compensation shall be considered incidental to the Total Sum Offer of which it is a part.

SECTION SP-17 – HYDROMULCH

- 17.1 GENERAL: Hydromulch shall be applied at all exposed soil surfaces following the completion of grading operations. See Section 307 – Landscaping and Irrigation of the Water System Standards.
- 17.2 MATERIALS: Hydromulch grassing shall contain the following:
- 17.2.01 Wood Cellulose Fiber Mulch – 23 pounds per 1,000 square feet
 - 17.2.01 Rye Grass Seed – 10 pounds per 1,000 square feet
 - 17.2.01 Common Bermuda (cynodon dactylon) Grass Seed – 10 pounds per 1,000 square feet
 - 17.2.01 Fertilizer – granular controlled release
- 17.3 MAINTENANCE: Hydromulch shall be maintained a minimum of 90 days after seeding.
- 17.4 FINAL INSPECTION AND ACCEPTANCE: Grass coverage shall exceed 90% to be considered acceptable.
- 17.5 PAYMENT: Payment for HYDROMULCH will not be made separately; the compensation shall be considered incidental to the Total Sum Offer of which it is a part.

SECTION SP-18 – ROOT BARRIER

18.1 GENERAL: This specification covers root control barrier in trenches; alongside hardscape structures such as sidewalks, curbing, pavements, and concrete; and building foundations to prevent structural damage due to root penetration. The product shall provide both a physical and chemical barrier zone to restrict vegetative root encroachment.

18.2 REFERENCED DOCUMENTS:

ASTM Standards

D-5261	Test Method for Measuring Mass per Unit Area of Geotextiles
D-4632	Test Method for Grab Breaking Load and Elongation of Geotextiles
D-4833	Test Method for Index Puncture Resistance of Geotextiles, Geomembranes and Related Products
D-4533	Test Method for Trapezoid Tear Strength of Geotextiles
D-4491	Test Method for Water Permeability of Geotextiles by Permittivity
D-4751	Test Method for Determining the Apparent Opening Size of a Geotextile
D-4355	Test Method for Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus)

18.3 SHIPMENT AND STORAGE: Product labels shall clearly show the manufacturer or supplier name, style number, and roll number and shall include a compliance statement certifying that all ingredients and inspection standards for this product have been met.

Each root control product roll shall be wrapped with a protective ethylene-vinyl alcohol copolymer (EVOH) bag and placed in a box that will protect the product from damage due to shipment, water, sunlight, and contaminants and to prevent premature release of herbicide. The protective wrapping shall be maintained during periods of shipment and storage.

During storage, root control product shall be elevated off the ground and out of direct sunlight. It shall remain sealed in EVOH protective bag inside shipping box at a temperature of not more than 110°F.

18.4 MANUFACTURER: Root barrier shall be Typar BioBarrier as manufactured by Polymer Group, Inc. or approved equal.

- 18.5 PHYSICAL AND CHEMICAL REQUIREMENTS: Fibers used in the manufacture of root control barrier substrate fabric shall consist of long-chain synthetic polyolefins (at least 95% by weight) and a UV stabilizer. Fibers shall be formed into a stable network such that the filaments or yarns retain their dimensional stability relative to each other. Herbicide nodules shall be permanently attached to the substrate fabric.

All substrate property values, with the exception of apparent opening size (AOS), in these specifications represent minimum average roll values (MARV) in the weakest principal direction (i.e., average test results of any roll in a lot sampled for conformance or quality assurance testing shall meet or exceed the minimum values provided herein). Values for AOS represent maximum average roll values.

Property values for the trifluralin are average run values.

- 18.6 CERTIFICATION: Submit a manufacturer's certificate stating the name, product name, style number, chemical composition and other pertinent information to fully describe the product. Submit documentation describing the manufacturer's quality control program to assure compliance with this specification.

The certificate shall state that the root control product meets requirements of the specification as evaluated under the manufacturer's quality control program. The certificate shall be attested to by a person having legal authority to bind the manufacturer.

Mislabeling or misrepresentation of materials shall be reason for rejection.

- 18.7 SAMPLING AND TESTING: Root barrier substrate product shall be sampled and tested to verify conformance with this specification. Test results shall be submitted with the manufacturer's certificate.

Testing shall be performed in accordance with the methods referenced in this specification for the indicated application. The number of specimens to test per sample shall be as specified by each test method.

- 18.8 PRODUCT DESCRIPTION:

		Average
Active Chemical*:	Trifluralin (a,a,a-Trifluoro 2,6 - dinitro - N,N, - Dipropyl - p - toluidine)	17.5%
Inert Ingredients	100% Spunbonded Polypropylene, Polyethylene and Carbon	82.5%

*17.5% Average trifluralin in total composite, Minimum of 20% trifluralin in nodules

Trifluralin Characteristics	Minimum Values	Test Method
Unit Weight	3.9 ounces per square yard	ASTM D-5261
Grab Tensile Strength	130 pounds	ASTM D-4632
Elongation at Break	60%	ASTM D-4632
Puncture Strength	40 pounds	ASTM D-4833

Trap Tear	60 pounds	ASTM D-4533
Permittivity	0.7 sec	ASTM D-4491
AOS (Max Value)	0.21 millimeters	ASTM D-4751
Ultraviolet Stability	70% @ 500 hours	ASTM D-4355

18.9 INSTALLATION: Install root barrier per manufacturer's instructions.

18.10 PAYMENT: Payment for the furnishing and installation of ROOT BARRIER will be made at the Unit Price Offer per linear foot based on the actual linear feet of ROOT BARRIER installed.

The Unit Price Offer for furnishing and installation of ROOT BARRIER shall be full compensation for all labor, materials, tools and equipment for all handling, hauling, unloading, placing, cutting, and all other incidentals required to complete the work.

SECTION SP-19 – FIELD OFFICE

- 19.1 GENERAL: A field office is required for this project. It shall be furnished per Section 6.3 of the General Provisions for Construction Contracts with the Department of Water. Contractor shall be responsible for all associated costs for the field office.
- 19.2 PAYMENT: Payment for FIELD OFFICE shall not be made directly; the compensation shall be considered incidental to the Total Sum Offer of which it is a part.

SECTION SP-20 – ELECTRICAL WORK FOR PACKAGE A – 0.5 MG YAMADA RESERVOIR

The following shall modify and supplement Section 304.03 – “Electrical Work”, in the “Water System Standards,” dated 2002 and amendments.

20.1 SCOPE OF WORK. The following shall be ADDED to and be made a part of this subsection.

20.1.01 Provide all articles, materials, equipment, operations, and services herein or on drawings, including all labor, materials, taxes, fees, insurance, and incidentals required to insure completion.

20.1.02 TEST COMPLETE INSTALLATION. Installation shall be complete in every detail as specified and ready for use. Any item supplied by Contractor that develops defects within one (1) year of final acceptance by the Department of Water shall be replaced by such materials, apparatus, or parts to make such defective portion of complete system conform to true intent and meaning of these drawings and specifications, at no cost to the Department of Water. Exceptions are fluorescent ballasts and fluorescent and incandescent lamps which will be guaranteed for 100 operating hours after date of final certificate of payment.

20.1.03 WORK SHALL INCLUDE:

- A. Complete instrumentation conduit, wiring and connection system at new tank, including all appurtenances for a complete system.
- B. Complete new gate and hatch security alarm switch system, including underground ducts, conduits and cables.
- C. Complete instrumentation and controls conduit, wiring and connection system at new control valve assemblies, including all appurtenances for a complete system.
- D. Conduit and pullbox system for future SCADA antenna system at the Yamada Reservoir site.
- E. Final adjustment and testing of various instruments and controls.

20.1.04 During proposing and construction, Contractor shall coordinate his work with utilities and other trades to avoid omissions and overlapping responsibilities. Electrical Contractor shall notify other trades and suppliers of project voltages and of existing equipment when new work must be compatible with existing conditions.

20.2 WORK BY OTHERS. The following shall be ADDED to and be made a part of this subsection.

20.2.01 Concrete, forming, excavation, backfilling and painting provided by respective sections of this contract.

20.2.02 Equipment utilizing electricity shall be provided by respective sections of this contract. Installation of equipment complete with power wiring and electric controls and interlock wiring shall be part of Electrical Work.

20.2.03 During proposing and construction, Contractor shall coordinate his work with utilities and other trades to avoid omissions and overlapping responsibilities. Electrical Contractor shall notify other trades and suppliers of project voltages and of existing equipment when new work must be compatible with existing conditions.

20.3 MATERIALS AND WORKMANSHIP. The following shall be ADDED to and be made a part of this subsection.

20.3.01 DRAWINGS:

- A. These specifications are accompanied by architectural plans of buildings, site plans and diagrammatic electrical plans showing locations of outlets, switches, service runs, feeder runs, devices, and other electrical equipment. Locations are approximate. Before installing, Contractor shall study adjacent construction details and make installation in most logical manner.
- B. Any device may be relocated within 10 feet before installation at direction of the Department of Water without additional cost to the Department of Water.
- C. Before installing, verify all dimensions and sizes of equipment at job site. Circuit and conduit routing is typical and may be altered in any logical manner; however, all changes shall be approved by the Department of Water and shown on “as-built” drawings.

20.3.02 DEPARTURES FROM DRAWINGS AND SPECIFICATIONS:

- A. Departures resulting from substitution of materials or system shall be accompanied by appropriate changes in all affected work of every trade. Such changes shall be at no increase in the contract amount and shall be the responsibility of the subcontractor or supplier responsible for the departures. Changes proposed by the Contractor shall be based on a system approach and shall be allowed if implemented without decrease in quality in performance or operations, increase in utility space to install the equipment. Such departures shall be submitted and noted in shop drawings for approval by the Department of Water. Departures initiated by other trades, requiring changes in the electrical system as well as other systems, shall be accompanied by appropriate changes to all affected work of every trade, at no increase in contract amount, by the trade responsible for the departures.
- B. The General Contractor shall be responsible to coordinate, approve, and select systems that do not impose unaccounted for impact on the electrical work. It shall be understood that after the award of contract, all departures having electrical impact, shall make appropriate changes to the electrical system required to accommodate the departures and shall be at no additional cost to the Department of Water.

20.3.03 CONSTRUCTION METHODS:

- A. Construction shall conform to construction practices as recommended by the American Electricians Handbook by Croft (latest edition), Edison Electrical Institute,

National Electric Safety Code and Applicable Instructions of manufacturers of equipment and material supplied for this project.

B. Grounding:

- (1) All services, motors, metallic enclosures, raceways, and electrical equipment shall be grounded according to requirements of National Electric Code. At buildings, 5/8" x 10' copperweld ground rods, Copperweld Steel Company, shall be driven with top 12" below finished grade and shall be connected together with bare copper wire buried 12" below finished grade to obtain a ground of 25 ohms or less as measured by three-point potential method with an electric ground megger. At each building, connect ground to nearest cold water pipe and to building entrance equipment, raceways, motors, ground type receptacles, and other metallic parts directly exposed to ungrounded electric conductors. Connection shall be made by continuous metal raceways or with conductors.
- (2) All grounding wire runs within buildings shall be copper conductors. Where applicable, all ground wires shall be run together with circuit conductors.

C. Testing:

- (1) All wiring shall be tested to insure proper operation according to functions specified herein on drawings and other sections of these specifications.
- (2) Insulation resistance of wires shall be according to requirements of the National Electric Code. All feeder cables, #4 or larger, shall have insulation resistance of 1.5 megohms or higher. Insulation resistance shall be measured by a 500 volts megger, Biddle Company or equal. Resistance of feeder cables shall be recorded and turned over in 4 copies to Engineer during final inspection. Proper operation of all electrical devices shall be demonstrated at request of the Department of Water during final inspection.

D. Conduits:

- (1) All conduits within building line shall be hot dipped galvanized, rigid steel. Conduits below floor slab encased in concrete jacket, minimum 2" thick. Conduits in or under floor slabs shall be painted with asphaltic corrosion resistance base paint or compound after installation in place. Provide galvanized steel pull-wire in all empty conduits as noted on the drawings.
- (2) Conduits cut square and inner edges reamed. Butt together evenly in couplings.
- (3) Bends and offsets made with hickey or conduit-bending machine. Do not use vice or pipe tee. Bends made so that interior cross-sectional area will not be reduced. Radius of curve of inner edge of field bend shall not be less than ten times the internal diameter of conduit.
- (4) Use of running threads not permitted. Where conduits cannot be jointed by standard threaded couplings, approved watertight conduit unions shall be used.

- (5) Cap conduits during construction with plastic or metal-capped bushings to prevent entrance of dirt or moisture. All conduits shall be swabbed out and dried before wires or cables are pulled in.
- (6) Conduit shall be free from other piping, valves, or mechanical equipment.
- (7) Fish wires, cords, strings, chains, or the like shall not be placed or inserted in the conduit system during installation.
- (8) Insulating bushings and two locknuts installed on each end of every run of conduit at enclosures and boxes. Provide grounding bushings as required for grounding receptacles and to connect conduits to switchboard with #10 bare copper.
- (9) Securely fastened in place to all outlet boxes and to structure or support. Project adequate number of conduit threads through box for bushings. Anchorage for 1-1/2 inches and smaller conduit shall be made with one-hole galvanized conduit straps or clamps; 2 inches or larger conduit shall be anchored with galvanized wrought iron "U" clamps or equal fittings.
- (10) Exposed conduit parallel with or at right angles to structural or architectural elements. Securely fastened in place with one-hole galvanized pipe strands with screws or bolts and spaced not more than 5 feet apart; or with approved beam clamps or approved single or gang pipe hangers spaced not more than 5 feet apart as the conditions require. Vertical runs supported at intervals not exceeding 5 feet by approved clamp hangers.
- (11) Conduit runs with one 90° bend or equivalent, 150 feet maximum without pull box.
- (12) Conduit runs with two 90° bends or equivalent, 100 feet maximum without pull box.

E. Boxes and Enclosures:

- (1) Provide outlet boxes in hollow tiles or concealed in other spaces with extensions or raised rings of such depth that metal will be flush with surrounding surfaces of opening.
- (2) Use gang boxes wherever 3 or more switches are installed at one location. Concealed boxes installed with edges flush with surrounding wall surface.
- (3) Boxes plumb and exactly flush.

F. Conductors:

- (1) Mechanical means for pulling shall be torque-limiting type and not used for #2 AWG and smaller wires.

- (2) Pulling tensions shall not exceed wire manufacturer's recommendation.
- (3) Where necessary, powdered soapstone used as lubricant for drawing wires through conduit. No other means of lubricating allowed. Conduit fittings shall not be used with conductors larger than #2 AWG.

G. Splicing:

- (1) Wires shall be formed neatly in enclosures and boxes.
- (2) Splices made according to NEC. Conductors #10 and smaller twisted and secured with twist on wire connectors. Conductors #8 through #4/0 spliced with solderless clamp or compression (indent) connectors.
- (3) Splices reinsulated according to wire manufacturer's instructions. Splice insulation shall be 150% in thickness of original wire insulation and of the same electrical and mechanical characteristics. Insulating type (600V use) shall be neoprene, Okoprene by Okonite Company or approved equal. Jacketing and insulating tape shall be high density cold setting polyethylene adhesive tape, Scotch No. 33 by Minnesota Mining and Manufacturing Company or approved equal.

H. Finishing:

- (1) Structural and architectural elements cut or drilled for installation of electrical system then patched, repaired, and restored. Drilling, cutting, patching, repairing, and restoring subject to approval of the Department of Water.
- (2) Attachment of electrical equipment to wood by wood screws. Attachment to concrete by embedded or expansion inserts and bolts. Powder charge driven with approval only. Close unused knockouts on boxes or expansion with metal cap.
- (3) Wipe clean all exposed raceways and enclosures with rag and solvent. Unfinished raceways and enclosures prime painted and finished by "Water System Standards" Section 303.27 – Painting. Factory finished enclosures shall be painted. Panelboards identified by stenciling with paint on back of doors the voltage and designation. Voltage ratings stenciled on the front of disconnect switches and junction boxes where wires are terminated for connection to equipment that are not part of this contract.

20.3.04 EXTERIOR WORK: Materials, equipment, and construction methods specified in other paragraphs of the specifications for Electrical Work shall apply to the exterior work.

- A. Exterior underground cables and wires shall be NEC type THW or THWN insulated. Insulation and sheath conforming respectively to ASTM 0 1352-60 and ASTM 9 752-60. Splices shall be made with half lapped layers of insulation-jacketing neoprene tape, Minnesota Mining and Manufacturing Scotch No. 23 or equal and jacketed with high density polyethylene plastic tape, Minnesota Mining and Manufacturing Company Scotch No. 33 or equal. Thickness of insulation and jacketing shall be equal

to 200% of original cable. Splicing of conductors shall be made with sleeve compression type fittings. Entire splice, after reinsulating, shall be painted with black tape compound. Minnesota Mining and Manufacturing Company "Scotchcast" may be used.

B. Ductlines and Handholes:

- (1) Ductlines shall consist of polyvinyl chloride (PVC) Schedule 40 duct in concrete jacket unless noted otherwise.
- (2) Ducts and fittings shall be round bore, for use with tapered fittings and manufactured from polyvinyl chloride (PVC). Kraloy/Chemtrol Co. PVC, Johns-Manville and Orangeburg Manufacturing Co., Schedule 40.
- (3) Concrete for ductlines shall be according to the "Concrete Section". Concrete for ductline jackets shall be 2500 psi compressive strength in 28 days with aggregates of #3 fine size.

C. Trenching and backfilling for ductlines and handholes shall be according to "Water System Standards" Section 302.02 – Trench Excavation and Section 302.03 – Trench Backfill. Depths of trenches on slope shall be measured from finished grade of lower edge.

- (1) Backfill Material, Type A: Backfill material shall consist of earth and gravel mix with gravel content consisting of 1 inch diameter maximum and not exceeding fifty percent (50%) by volume of the mix.
- (2) Backfill Material, Type B: Backfill material shall consist of earth and gravel mix with gravel content consisting of 1/2-inch diameter maximum and not exceeding twenty percent (20%) by volume of the mix.
- (3) Any existing underground piping or conduit that is encountered shall be properly shored and protected from damage. Any damage to existing utilities resulting from the Contractor's operations shall be repaired by him at his own expense.

D. Identification Tags: Each set of cables in handholes shall be identified by a noncorrosive metal tag. Letters shall be minimum 1/4-inch high identifying the cable as to use and/or voltage. Tags shall be wrapped around the cables and taped. Power tags shall be red.

E. Ductlines:

- (1) Ducts and/or conduits shall be laid in the trenches on plastic treated against termite or concrete spacers. Spacing between ducts shall be as follows:
 - a. Control/Instrumentation and control/instrumentation ducts - 1-1/2 inches of concrete.
 - b. Electric power and electric power ducts - 1-1/2 inches of concrete

c. Electric power and control/instrumentation ducts - 3 inches of concrete

- (2) After all ducts are installed, duct bank shall be securely bound with #12 steel tie wire and anchored to prevent movement during concrete pouring. Tapered ends of ducts or conduits shall be coated with sealing compound before coupling is applied to insure a water-tight joint. Reinforcing steel, shoring and forming, where required, shall be installed according to "Water System Standards" Section 303.03 – Concrete Work. Concrete shall be poured on ducts without the use of mechanical vibrators. Concrete shall be tampered manually with wooden rods.
- (3) Ducts shall be completely encased in concrete. The thickness of the concrete encasement specified within the plans and specifications is the minimum and may be increased to fit the actual shape of the trench. Changes in direction of runs exceeding 5 degrees shall be accomplished by using special couplings or bends manufactured for this purpose. Where conduit lines enter handholes, the conduits shall terminate in end bells. Conduit shall be thoroughly cleaned before laying. When it is necessary to cut a tapered end on a piece of conduit at the site, the cut shall be made with saw and tapered with a lathe designed to match the original taper.
- (4) After the conduit line has been completed, a mandrel not less than 12 inches long having a diameter 1/4 inch less than the inside diameter of the conduit, shall be pulled through each conduit after which a brush with stiff bristles shall be pulled through to make certain that no particles of earth and/or gravel have been left in the line.

F. Cables shall be thoroughly lubricated with soapstone before drawn into ducts.

20.3.05 DEVICES AND EQUIPMENT: All devices, materials, and equipment specified herein shall be manufactured and installed in accordance with the appropriate articles in the NEC except as noted.

A. Wiring Materials:

- (1) Conduits: Hot dip galvanized, rigid steel, round bore electrical conduit and for use with threaded fittings. 3/4" minimum diameter unless otherwise specified on the drawings. Aluminum conduits shall not be used.
- (2) Flexible Conduit: Liquid-tight flexible steel, zinc-coated, jacketed with high density polyethylene and with factory approved fittings. Liquid-tight with factory fittings for wet or moist areas.
- (3) Stainless Steel Materials: All stainless-steel materials shall be Type 316 Stainless Steel.
- (4) Enclosures and Cabinets: Enclosures and cabinets for panelboards, breakers, and switches shall be NEMA type, fabricated from galvanized steel, prime painted and enamel finished according to NEMA specifications.

- (5) Large Junction Boxes: For dry interior location, the box shall be fabricated from NEC gauge galvanized steel with matching screw-on type cover, field punched knockouts. For exterior and wet locations, the box shall be NEMA 4X stainless steel, with matching gasketed cover and threaded Myers type hubs for conduit connection. Screws shall be stainless steel.
- (6) Outlet and Small Junction Boxes: Concealed boxes shall be pressed from NEC code gauge steel, galvanized 4" square x 1-1/2" deep minimum or as specified on drawings.
- a. Exposed boxes and weather exposed recessed boxes shall be galvanized cast iron or NEMA 4X stainless steel, prime painted, enamel finished, threaded Myers type hubs for conduit connection.
 - b. Extension or raised rings for pressed boxes pressed from NEC code gauge steel and galvanized. Use as required at device outlets and make box opening flush with finished surface.
- (7) Wires and Cables: Conductors shall be copper No. 12 AWG minimum. Conductors No. 10 and smaller, solid and round **except for control type conductors which shall be stranded.** Conductors No. 8 and larger, 7 or 19 strands, concentric. All conductors No. 6 and smaller shall be NEC type THW insulated. All conductors No. 4 and larger shall be NEC type THWN insulated. Wiring in lighting fixtures shall be NEC Type AF, TF, and TFF insulated. Manufacture and install according to NEC Articles 310 and 402. Wiring for all controls shall be extra flexible machine tool, color coded, THWN, #12 AWG machine wire.
- a. Provide color coding for all service, feeder, branch, control, and signaling circuit conductors. Color shall be green for grounding conductors, and white for neutrals, except where neutrals of more than one system are installed in same raceway or box, the other neutral shall be white with a colored (not green) stripe. The color of the ungrounded conductors in different voltage systems shall be as follows:
 - 1) 120/208 volt, 3-phase:
 - (a) Phase A – black
 - (b) Phase B – red
 - (c) Phase C – blue
 - 2) 277/480 volt, 3-phase:
 - (a) Phase A – brown
 - (b) Phase B – orange
 - (c) Phase C – yellow
 - 3) 120/240 volt, single phase:

- (a) red and black
 - b. Color coding shall be maintained throughout entire system. Use other colors when more wires than above are contained in one raceway. Engineer shall determine whether deviation from color coding will be permitted.
 - c. Wire Markers: All wires shall be tagged with circuit identifying markers at both ends of termination. Markers shall be cloth with plastic letters covered with mylar film. Markers shall have high strength adhesive bond, be able to withstand abrasion, shall be oil and water resistant, and shall be taped around cable near termination.
- B. Devices:
- (1) Device and Cover Plates:
 - a. Plates for interior flush construction shall be satin finished 302 high nickel stainless steel, 18% chrome, 8% nickel with suitable holes for device.
 - b. Plates for exposed and weather exposed boxes (indicate WP on drawings) shall be cast metal with neoprene gasket for sealing against entry of water or moisture into box. Switch plates shall be provided with neoprene cover over handle or raintight level mechanism. Receptacle plates shall be provided with weatherproof lid as indicated on drawings.
 - (2) Hardware, Supports, Backings, etc.: All hardware, supports, backings, and other equipment shall be provided. Wood materials shall be “wolmanize” treated against termite; iron or steel materials shall be galvanized for corrosion protection; and nonferrous materials shall be brass or bronze.
- C. Protective Equipment:
- (1) Individual circuit breaker shall consist of molded plastic case circuit breaker with toggle operated mechanism and thermal-magnetic overload trips. Interchangeable trip shall be provided when available. Toggle positions “ON” and “OFF”, engraved or embossed on body. Breakers shall have 10,000 ampere minimum interrupting capacity unless indicated otherwise.
 - (2) Equipment disconnect switch: Heavy-duty horsepower rated, lever-operated contacts, spring-loaded.
- D. Security Alarm System:
- (1) Security Alarm Switch: Wide gap magnetic contact type switch consisting of switch component with normally closed contacts when the enclosure door to which it is mounted is closed. Unit shall be completely sealed housing and for application adjacent to metal doors or as shown on the drawings.

- a. Magnetic switch contacts shall have 2” to 3” gap distance and normally open. Switch shall be Sentrol 1045T series, AMSECO AMS-37, or approved equal

20.4 EQUIPMENT SHOP DRAWINGS. The following shall be ADDED to and made a part of this subsection.

- (1) Security Alarm Switches
- (2) Control Equipment
- (3) Equipment Cabinets
- (4) Pullboxes
- (5) Junction boxes

20.4.01 Shop Drawings: Prior to fabrication, the Contractor shall submit for written approval of the Department of Water four (4) copies of complete installation drawings and manufacturer’s wiring diagrams for the control and connection diagrams, connection diagrams, installation details, and any built-to-order equipment.

20.4.02 As-Built Drawings: Upon completion of the final inspection and testing, the Contractor shall provide, for the use of the Department of Water two (2) copies of as-built installation drawings and manufacturer’s wiring diagrams and any built-to-order equipment.

20.4.03 Training for all electrical and electronic equipment SHALL BE CONDUCTED BY ITS RESPECTIVE FACTORY PERSONNEL; A FACTORY CERTIFIED REPRESENTATIVE IS NOT ACCEPTABLE AND WILL NOT BE APPROVED.

20.5 PAYMENT

20.5.01 Payment shall be made for furnishing and installing of equipment (exclusive of nonrecurring utility installation costs) will be made at the Lump Sum Offer of which the item is a part and shall be full compensation for all work in accordance therewith, complete and finished in accordance with the drawings and specifications.

SECTION SP-21 – SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA) SYSTEM FOR PACKAGE A – 0.5 MG YAMADA RESERVOIR

The following subsection shall be ADDED to and be made a part of Section 304 “MECHANICAL AND ELECTRICAL”, in “Water System Standards,” dated 2002 and amendments.

21.1 GENERAL:

21.1.01 General Conditions: This section covers the supervisory control and data acquisition (SCADA) system including equipment, wiring, adjustment and testing as indicated on the plans and specified herein.

A. As specified in Section SP-20 – Electrical Work for Package A – 0.5 MG Yamada Reservoir. The provisions of these related sections apply to this section and work described in this section shall comply with them.

21.1.02 Scope of Work: Provide all articles, materials, equipment, operations, and services herein or on drawings, including all labor, materials, taxes, fees, insurance, and incidentals required to insure completion.

A. Test Complete Installation: Installation shall be complete in every detail as specified and ready for use. Any item supplied by Contractor developing defects within one (1) year of final acceptance by the Department of Water shall be replaced by such materials, apparatus, or parts to make such defective portion of complete system conform to true intent and meaning of these drawings and specifications, at no cost to the Department of Water.

B. System Overview: These specifications are for modifications to the distributed supervisory control and data acquisition (SCADA) system for a water system, including an existing Intelligent Remote Terminal Unit (RTU). This system shall require the furnishing and installation of RTU hardware as specified herein and software modifications at the existing Yamada Reservoir site.

(1) The Contractor shall furnish all hardware and software as required at the Yamada Reservoir site with all appurtenances, whether specifically referenced herein or not, but which may be required for operation.

C. This system shall be an integrated system of hardware and firmware totally engineered, programmed, assembled and tested. System shall be complete with all appurtenances, whether specifically referenced herein or not, but which may be required for operation.

D. During proposing and construction, Contractor shall coordinate his work with other trades to avoid omissions and overlapping responsibilities. Electrical contractor shall notify other trades and suppliers of project voltages, including control voltages.

E. Work by Others: Instrument transmitters shall be provided by respective sections of this contract. Installation of equipment complete with power wiring and electric controls and interlock wiring shall be part of Electrical Work.

21.1.03 Submittals: Submittals shall be made for approval and resubmitted until approval is received for the following:

A. Catalog Cuts: Submit for approval four (4) copies of catalog cuts of following equipment:

- (1) SCADA system components and equipment.
- (2) Conductors and Wiring.
- (3) Wiring and functional or block diagrams.
- (4) Manufacturer's recommendations for installation.
- (5) Logic diagrams and ladder diagrams.
- (6) Manufacturer's recommended list of spare parts for a one-year period of operation.

B. Electrical Installation Drawings: At least 10 days prior to any testing the Contractor shall submit four (4) sets of approved complete electrical installation drawings. The installation drawings shall include the manufacturer's wiring diagrams for the SCADA system and any built-to-order equipment.

C. As-Built Drawings: Upon completion of the final inspection and testing, the Contractor shall provide two (2) copies of as-built installation drawings and manufacturer's wiring diagrams for the SCADA system and any built-to-order equipment.

21.1.04 Local Support: The manufacturer of the SCADA system supplied shall be represented by a company capable of responding to requests for maintenance and repair to the system by having a technician skilled in the repair, maintenance and operation of the system at the job site within 24 hours of being notified. This representative shall carry all spare parts which are recommended by the manufacturer.

21.2 PRODUCTS:

21.2.01 General: Unless otherwise indicated, provide all first quality, new materials, free from any defects, in first class condition, and suitable for the space provided. Provide materials approved by UL wherever standards have been established by that agency. Where two or more units of the same class of material or equipment are required, provide products of a single manufacturer. Component parts of materials or equipment need not be products of the same manufacturer.

21.2.02 Standard Products: Unless otherwise indicated, provide materials and equipment which are the standard products of manufacturers regularly engaged in the production of such materials and equipment. Provide the manufacturer's latest standard design which conforms with these specifications.

21.2.03 Equipment Finish: Electrical equipment may be installed with manufacturer's standard finish and color, except where specific color, finish, or choice is indicated. If the manufacturer has no standard color, equipment shall be painted ANSI G1, Light Gray.

21.2.04 Instrumentation System Transmitter Power Supply: The power supply shall be mounted in the SCADA cabinet and deliver regulated 24-36 volts DC power at a maximum current recommended by the analog transmitter supplier. The unit shall operate on 117 volts AC at 50-70 Hz. Load regulation shall be 150 mV maximum from no-load to full-load current. Line regulation shall be 150 mV from 105 to 135 volts AC.

21.3 EXECUTION:

21.3.01 Construction Methods:

- A. Flush mount gauges, indicators, selector switches, pushbutton switches, and pilot lights in a logical arrangement.
- B. Mount devices listed, shown, or required for a complete and operable system in accordance with device manufacturer's instructions, these specifications, and as recommended in NEMA PB1.1.
- C. Ground control panel to safety ground of power source.

21.3.02 Programming. The RTU supplier and Contractor shall provide the complete programming and documentation for the RTU to comply with the requirements set forth herein.

21.3.03 Commissioning. Instruments are to be commissioned under the direct supervision of a qualified representative of the instrument manufacturer. The Engineer and/or the Engineer's representative shall have the right to witness any test, inspection, or calibration or start-up activity.

- A. Test and exercise each device to demonstrate correct operation, first individually, then collectively as a functional network. Apply continuously variable analog inputs to verify proper operation and setting of analog devices and discrete devices (i.e. switches, etc.). Make provisional settings on relays and pressure switches.
- B. Unless otherwise specified, tests shall be made to cover at least five points: approximately 0 percent, 25 percent, 50 percent, 75 percent, and 100 percent of range. Individual device accuracy requirements shall be as specified by contract requirements or by published manufacturer accuracy specifications whenever contract requirements are not specified.
- C. If test results conflict with calibration, the Contractor shall recalibrate and repeat test until test results prove calibration to be correct.

21.3.04 Additional Start-Up Services: The Contractor shall include an additional two (2) days of programming time and the cost for the RTUs programmer to visit the site for one (1) of the days in the Offer. This time may be used at the discretion of the Engineer for additional programming, changes, and/or training. This time is over and above the work necessary to provide a complete and operable system.

21.3.05 Guarantee: The SCADA system, terminal points, equipment, materials, and associated items shall be guaranteed against defective parts and operation due to faulty material or workmanship during the period of one (1) year following acceptance and final payment by the Engineer. The Contractor shall make all repairs or replacements necessary to accomplish the required performance within the time specified by the Engineer and agreed to by the Contractor.

21.3.06 PAYMENT:

- A. General: No separate payments will be made for the work covered by the separate sections of the SP-21 series of these specifications. All costs in connection with furnishing and installing of the various items in accordance with standard practice, the details shown on the drawings and in accordance with these specifications, shall be included in the Lump Sum Offer of which the item is a part.
- B. Compensation: Payment of the furnishing and installing of equipment will be made at the Lump Sum Offer of which the item is a part and shall be full compensation for all work in accordance therewith, complete and finished in accordance with the drawings and specifications.
- C. Payment to the Contractor will be made in two (2) parts once all work is in place, complete, and the SCADA System is operational.
 - (1) The first part will be fifty percent (50%) of the contract Offer Item No. 33 under SCADA system Lump Sum Offer, when all original manufacturer's software and licenses, all programming software, all operational manuals, written procedures, and all other related documents for the operation of the SCADA system are submitted to the Department of Water.
 - (2) The second part will be fifty percent (50%) of the same Lump Sum Offer when the SCADA System is accepted by the Department of Water at final inspection.

SECTION SP-22 – ELECTRICAL WORK FOR PACKAGE B – 0.1 MG CLEARWELL RESERVOIR

The following shall modify and supplement Section 304.03 "Electrical Work", in the "Water System Standards," dated 2002 and amendments.

22.1 SCOPE OF WORK. The following shall be ADDED to and be made a part of this subsection.

22.1.01 Provide all articles, materials, equipment, operations, and services herein or on Drawings, including all labor, materials, taxes, fees, insurance, and incidentals required to insure completion.

22.1.02 TEST COMPLETE INSTALLATION: Installation shall be complete in every detail as specified and ready for use. Any item supplied by Contractor developing defects within one year of final acceptance by Department of Water Supply shall be replaced by such materials, apparatus, or parts to make such defective portion of complete system conform to true intent and meaning of these Drawings and Specifications, at no cost to Department of Water Supply. Exceptions are fluorescent ballast, fluorescent and incandescent lamps which will be guaranteed for 100 operating hours after date of final certificate of payment.

22.1.03 WORK SHALL INCLUDE:

- A. Complete underground service entrance raceways, including all handholes and pullboxes required for electric utility services at the Clearwell Reservoir site.
- B. Complete electrical service and utility metering equipment at the Clearwell Reservoir site.
- C. Complete grounding system at the Clearwell Reservoir site.
- D. Complete tank level instrumentation circuit connection to the new Supervisory Control and Data Acquisition System (SCADA) system at the Clearwell Reservoir site.
- E. Complete security switch system to the new SCADA system at the Clearwell Reservoir site.
- F. Complete lighting system, general use receptacles and equipment connection systems at the new Control Building at the Clearwell Reservoir site.
- G. Complete conduit and pullbox system for SCADA antenna system at the Clearwell Reservoir site.
- H. Complete metering equipment according to Kauai Island Utility Cooperative (KIUC) requirements.
- I. Final adjustment and testing of various controls, and instrumentation.

22.1.04 The Contractor shall make arrangements with the Kauai Island Utility Cooperative for electrical services to the Clearwell Reservoir site, as indicated on the plans. The Contractor

shall provide service equipment and suitable metering provisions.

- A. The Owner shall pay only non-recurring off-site power service charges incurred in providing this service but the Contractor shall pay for services and all other work pertaining to this contract and shall coordinate the request and installation so service is available when required for testing and completion of the contract.

22.1.05 During proposing and construction, Contractor shall coordinate his work with utilities and other trades to avoid omissions and overlapping responsibilities. Electrical Contractor shall notify other trades and suppliers of project voltages and of existing equipment when new work must be compatible with existing conditions.

22.2 WORK BY OTHERS. The following shall be ADDED to and be made a part of this subsection.

22.2.01 Meters and final connection of service provided by Kauai Island Utility Cooperative.

22.2.02 Concrete, forming, excavation, backfilling and painting provided by respective sections of this contract.

22.2.03 Equipment utilizing electricity shall be provided by respective sections of this contract. Installation of equipment complete with power wiring and electric controls and interlock wiring shall be part of Electrical Work.

22.2.04 During proposing and construction, Contractor shall coordinate his work with utilities and other trades to avoid omissions and overlapping responsibilities. Electrical Contractor shall notify other trades and suppliers of project voltages and of existing equipment when new work must be compatible with existing conditions.

22.3 MATERIALS AND WORKMANSHIP. The following shall be ADDED to and be made a part of this subsection.

22.3.01 DRAWINGS:

- A. These specifications are accompanied by architectural plans of buildings, site plans and diagrammatic electrical plans showing locations of outlets, switches, service runs, feeder runs, devices, and other electrical equipment. Locations are approximate. Before installing, Contractor shall study adjacent construction details and make installation in most logical manner.
- B. Any device may be relocated within 10 feet before installation at direction of the Department of Water Supply without additional cost to Owner.
- C. Before installing, verify all dimensions and sizes of equipment at job site. Circuit and conduit routing is typical and may be altered in any logical manner; however, all changes shall be approved by the Department of Water Supply and shown on "as built" drawings.

22.3.02 DEPARTURES FROM DRAWINGS AND SPECIFICATIONS:

- A. Departures resulting from substitution of materials or system shall be accompanied by appropriate changes in all affected work of every trade. Such changes shall be at no increase in the contract amount and shall be the responsibility of the subcontractor or supplier responsible for the departures. Changes proposed by the Contractor shall be based on a system approach and shall be allowed if implemented without decrease in quality in performance or operations, increase in utility space to install the equipment. Such departures shall be submitted and noted in shop drawings for approval by the Department of Water Supply. Departures initiated by other trades, requiring changes in the electrical system as well as other systems, shall be accompanied by appropriate changes to all affected work of every trade, at no increase in contract amount, by the trade responsible for the departures.
- B. The General Contractor shall be responsible to coordinate, approve, and select systems that do not impose unaccounted for impact on the electrical work. It shall be understood that after the award of contract, all departures having electrical impact, shall make appropriate changes to the electrical system required to accommodate the departures and shall be at no additional cost to the Department of Water Supply.

22.3.03 CONSTRUCTION METHODS:

- A. Construction shall conform to construction practices as recommended by the American Electricians Handbook by Croft (latest edition), Edison Electrical Institute, National Electric Safety Code and Applicable Instructions of manufacturers of equipment and material supplied for this project.
- B. Grounding:
 - (1) All services, motors, metallic enclosures, raceways, and electrical equipment shall be grounded according to requirements of National Electric Code. At buildings, 5/8" x 10' copperweld ground rods, Copperweld Steel Company, shall be driven with top 12" below finished grade and shall be connected together with bare copper wire buried 12" below finished grade to obtain a ground of 25 ohms or less as measured by three-point potential method with an electric ground megger. At each building, connect ground to nearest coldwater pipe and to building entrance equipment, raceways, motors, ground type receptacles, and other metallic parts directly exposed to ungrounded electric conductors. Connection shall be made by continuous metal raceways or with conductors.
 - (2) All grounding wire runs within buildings shall be copper conductors. Where applicable, all ground wires shall be run together with circuit conductors.
- C. Testing:
 - (1) All wiring shall be tested to insure proper operation according to functions specified herein on drawings and other sections of these Specifications.
 - (2) Insulation resistance of wires shall be according to requirements of the National Electric Code. All feeder cables, #4 or larger, shall have insulation resistance of 1.5 megohms or higher. Insulation resistance shall be measured by a 500 volts

megger, Biddle Company or equal. Resistance of feeder cables shall be recorded and turned over in 4 copies to Engineer during final inspection. Proper operation of all electrical devices shall be demonstrated at request of the Department of Water Supply during final inspection.

D. Conduits:

- (1) All conduits within building line shall be hot dipped galvanized, rigid steel. Conduits below floor slab encased in concrete jacket, minimum 2" thick. Conduits in or under floor slabs shall be painted with asphaltic corrosion resistance base paint or compound after installation in place. Provide galvanized steel pull-wire in all empty conduits as noted on the drawings.
- (2) Conduits cut square and inner edges reamed. Butt together evenly in couplings.
- (3) Bends and offsets made with hickey or conduit-bending machine. Do not use vice or pipe tee. Bends made so that interior cross-sectional area will not be reduced. Radius of curve of inner edge of field bend shall not be less than ten times the internal diameter of conduit.
- (4) Use of running threads not permitted. Where conduits cannot be jointed by standard threaded couplings, approved water-tight conduit unions shall be used.
- (5) Cap conduits during construction with plastic or metal-capped bushings to prevent entrance of dirt or moisture. All conduits shall be swabbed out and dried before wires or cables are pulled in.
- (6) Conduit shall be free from other piping, valves, or mechanical equipment.
- (7) Fish wires, cords, strings, chains, or the like shall not be placed or inserted in the conduit system during installation.
- (8) Insulating bushings and two locknuts installed on each end of every run of conduit at enclosures and boxes. Provide grounding bushings as required for grounding receptacles and to connect conduits to switchboard with #10 bare copper.
- (9) Securely fastened in place to all outlet boxes and to structure or support. Project adequate number of conduit threads through box for bushings. Anchorage for 1-1/2 inches and smaller conduit shall be made with one-hole galvanized conduit straps or clamps; 2 inches or larger conduit shall be anchored with galvanized wrought iron "U" clamps or equal fittings.
- (10) Exposed conduit parallel with or at right angles to structural or architectural elements. Securely fastened in place with one-hole galvanized pipe strands with screws or bolts and spaced not more than 5 feet apart; or with approved beam clamps or approved single or gang pipe hangers spaced not more than 5 feet apart as the conditions require. Vertical runs supported at intervals not exceeding 5 feet by approved clamp hangers.

- (11) Conduit runs with one 90° bend or equivalent, 150 feet maximum without pull box.
- (12) Conduit runs with two 90° bends or equivalent, 100 feet maximum without pull box.

E. Boxes and Enclosures:

- (1) Provide outlet boxes in hollow tiles or concealed in other spaces with extensions or raised rings of such depth that metal will be flush with surrounding surfaces of opening.
- (2) Use gang boxes wherever 3 or more switches are installed at one location. Concealed boxes installed with edges flush with surrounding wall surface.
- (3) Boxes plumb and exactly flush.

F. Conductors:

- (1) Mechanical means for pulling shall be torque-limiting type and not used for #2 AWG and smaller wires.
- (2) Pulling tensions shall not exceed wire manufacturer's recommendation.
- (3) Where necessary, powdered soapstone used as lubricant for drawing wires through conduit. No other means of lubricating allowed. Conduit fittings shall not be used with conductors larger than #2 AWG.

G. Splicing:

- (1) Wires shall be formed neatly in enclosures and boxes.
- (2) Splices made according to NEC. Conductors #10 and smaller twisted and secured with twist on wire connectors. Conductors #8 through #4/0 spliced with solderless clamp or compression (indent) connectors.
- (3) Splices reinsulated according to wire manufacturer's instructions. Splice insulation shall be 150% in thickness of original wire insulation and of the same electrical and mechanical characteristics. Insulating type (600V use) shall be neoprene, Okoprene by Okonite Company or approved equal. Jacketing and insulating tape shall be high density cold setting polyethylene adhesive tape, Scotch No. 33 by Minnesota Mining and Manufacturing Company or approved equal.

H. Installation of Lighting Fixtures: Fixtures securely and safely supported by means of fixture studs in the outlet boxes or other approved means. Ceiling fixtures arranged to hang vertically unless noted otherwise. Provide accessories such as straps, mounting plates, nipples, or brackets for proper installation. Provide additional suspension wires and channels for mounting on suspended ceilings as recommended by fixture

manufacturer.

I. Finishing:

- (1) Structural and architectural elements cut or drilled for installation of electrical system then patched, repaired, and restored. Drilling, cutting, patching, repairing, and restoring subject to approval of the Department of Water Supply.
- (2) Attachment of electrical equipment to wood by wood screws. Attachment to concrete by embedded or expansion inserts and bolts. Powder charge driven with approval only. Close unused knockouts on boxes or expansion with metal cap.
- (3) Wipe clean all exposed raceways and enclosures with rag and solvent. Unfinished raceways and enclosures prime painted and finished by "Water System Standards" Section 303.27 – Painting. Factory finished enclosures shall be painted. Panelboards identified by stenciling with paint on back of doors the voltage and designation. Voltage ratings stenciled on the front of disconnect switches and junction boxes where wires are terminated for connection to equipment that are not part of this contract.

22.3.04 EXTERIOR WORK: Materials, equipment, and construction methods specified in other paragraphs of the specifications for Electrical Work shall apply to the exterior work.

- A. Exterior underground cables and wires shall be NEC type THW or THWN insulated. Insulation and sheath conforming respectively to ASTM 0 1352-60 and ASTM 9 752-60. Splices shall be made with half lapped layers of insulation-jacketing neoprene tape, Minnesota Mining and Manufacturing Scotch No. 23 or equal and jacketed with high density polyethylene plastic tape, Minnesota Mining and Manufacturing Company Scotch No. 33 or equal. Thickness of insulation and jacketing shall be equal to 200% of original cable. Splicing of conductors shall be made with sleeve compression type fittings. Entire splice, after reinsulating, shall be painted with black tape compound. Minnesota Mining and Manufacturing Company "Scotchcast" may be used.
- B. Ductlines and Handholes:
 - (1) Ductlines shall consist of polyvinyl chloride (PVC) Schedule 40 duct in concrete jacket unless noted otherwise.
 - (2) Ducts and fittings shall be round bore, for use with tapered fittings and manufactured from polyvinyl chloride (PVC). Kraloy/Chemtrol Co. PVC, Johns-Manville and Orangeburg Manufacturing Co., Schedule 40.
 - (3) Concrete for ductlines shall be according to the "Concrete Section". Concrete for ductline jackets shall be 2500 psi compressive strength in 28 days with aggregates of #3 fine size.
- C. Trenching and backfilling for ductlines and handholes shall be according to "Water System Standards" Section 302.02 – Trench Excavation and Section 302.03 – Trench

Backfill. Depths of trenches on slope shall be measured from finished grade of lower edge.

- (1) Backfill Material, Type A: Backfill material shall consist of earth and gravel mix with gravel content consisting of 1 inch diameter maximum and not exceeding fifty percent (50%) by volume of the mix.
- (2) Backfill Material, Type B: Backfill material shall consist of earth and gravel mix with gravel content consisting of 1/2-inch diameter maximum and not exceeding twenty percent (20%) by volume of the mix.
- (3) Any existing underground piping or conduit that is encountered shall be properly shored and protected from damage. Any damage to existing utilities resulting from the Contractor's operations shall be repaired by him at his own expense.

D. Identification Tags: Each set of cables in handholes shall be identified by a noncorrosive metal tag. Letters shall be minimum 1/4-inch high identifying the cable as to use and/or voltage. Tags shall be wrapped around the cables and taped. Power tags shall be red.

E. Ductlines:

- (1) Ducts and/or conduits shall be laid in the trenches on plastic treated against termite or concrete spacers. Spacing between ducts shall be as follows:
 - a. Control/Instrumentation and control/instrumentation ducts - 1-1/2 inches of concrete.
 - b. Electric power and electric power ducts - 1-1/2 inches of concrete
 - c. Electric power and control/instrumentation ducts - 3 inches of concrete
- (2) After all ducts are installed, duct bank shall be securely bound with #12 steel tie wire and anchored to prevent movement during concrete pouring. Tapered ends of ducts or conduits shall be coated with sealing compound before coupling is applied to insure a water-tight joint. Reinforcing steel, shoring and forming, where required, shall be installed according to "Water System Standards" Section 303.03 – Concrete Work. Concrete shall be poured on ducts without the use of mechanical vibrators. Concrete shall be tampered manually with wooden rods.
- (3) Ducts shall be completely encased in concrete. The thickness of the concrete encasement specified within the plans and specifications is the minimum and may be increased to fit the actual shape of the trench. Changes in direction of runs exceeding 5 degrees shall be accomplished by using special couplings or bends manufactured for this purpose. Where conduit lines enter handholes, the conduits shall terminate in end bells. Conduit shall be thoroughly cleaned before laying. When it is necessary to cut a tapered end on a piece of conduit at the site, the cut shall be made with saw and tapered with a lathe designed to match the original taper.

- (4) After the conduit line has been completed, a mandrel not less than 12 inches long having a diameter 1/4 inch less than the inside diameter of the conduit, shall be pulled through each conduit after which a brush with stiff bristles shall be pulled through to make certain that no particles of earth and/or gravel have been left in the line.

F. Cables shall be thoroughly lubricated with soapstone before drawn into ducts.

22.3.05 DEVICES AND EQUIPMENT: All devices, materials, and equipment specified herein shall be manufactured and installed in accordance with the appropriate articles in the NEC except as noted.

A. Wiring Materials:

- (1) Conduits: Hot dip galvanized, rigid steel, round bore electrical conduit and for use with threaded fittings. 3/4" minimum diameter unless otherwise specified on the drawings. Aluminum conduits shall not be used.
- (2) Flexible Conduit: Liquid-tight flexible steel, zinc-coated, jacketed with high density polyethylene and with factory approved fittings. Liquid-tight with factory fittings for wet or moist areas.
- (3) Stainless Steel Materials: All stainless steel materials shall be Type 316 Stainless Steel.
- (4) Enclosures and Cabinets: Enclosures and cabinets for panelboards, breakers, and switches shall be NEMA type, fabricated from galvanized steel, prime painted and enamel finished according to NEMA specifications.
- (5) Large Junction Boxes: For dry interior location, the box shall be fabricated from NEC gauge galvanized steel with matching screw-on type cover, field punched knockouts. For exterior and wet locations, the box shall be NEMA 4X stainless steel, with matching gasketed cover and threaded Myers type hubs for conduit connection. Screws shall be stainless steel.
- (6) Outlet and Small Junction Boxes: Concealed boxes shall be pressed from NEC code gauge steel, galvanized 4" square x 1-1/2" deep minimum or as specified on drawings.
 - a. Exposed boxes and weather exposed recessed boxes shall be galvanizes cast iron or NEMA 4X stainless steel, prime painted, enamel finished, threaded Myers type hubs for conduit connection.
 - b. Extension or raised rings for pressed boxes pressed from NEC code gauge steel and galvanized. Use as required at device outlets and make box opening flush with finished surface.
- (7) Wires and Cables: Conductors shall be copper No. 12 AWG minimum.

Conductors No. 10 and smaller, solid and round **except for control type conductors which shall be stranded.** Conductors No. 8 and larger, 7 or 19 strands, concentric. All conductors No. 6 and smaller shall be NEC type THW insulated. All conductors No. 4 and larger shall be NEC type THWN insulated. Wiring in lighting fixtures shall be NEC Type AF, TF, and TFF insulated. Manufacture and install according to NEC Articles 310 and 402. Wiring for all controls shall be extra flexible machine tool, color coded, THWN, #12 AWG machine wire.

- a. Provide color coding for all service, feeder, branch, control, and signaling circuit conductors. Color shall be green for grounding conductors, and white for neutrals, except where neutrals of more than one system are installed in same raceway or box, the other neutral shall be white with a colored (not green) stripe. The color of the ungrounded conductors in different voltage systems shall be as follows:
 - 1) 120/208 volt, 3-phase:
 - (a) Phase A – black
 - (b) Phase B – red
 - (c) Phase C – blue
 - 2) 277/480 volt, 3-phase:
 - (a) Phase A – brown
 - (b) Phase B – orange
 - (c) Phase C – yellow
 - 3) 120/240 volt, single phase:
 - (a) red and black
- b. Color coding shall be maintained throughout entire system. Use other colors when more wires than above are contained in one raceway. Engineer shall determine whether deviation from color coding will be permitted.
- c. Wire Markers: All wires shall be tagged with circuit identifying markers at both ends of termination. Markers shall be cloth with plastic letters covered with mylar film. Markers shall have high strength adhesive bond, be able to withstand abrasion, shall be oil and water resistant, and shall be taped around cable near termination.

B. Devices:

(1) Tumbler Switches:

- a. Single and 3-way as required, non-mercury quiet, 20 amperes, 120-277 volts, UL labeled AC type, silvered contacts, tumbler switch with endurance of 10,000 make-breaks. Enclose in outlet box and device plate.

- b. When two or more switches are installed at single location, mount in gang box under single device plate. Interchangeable line of switches may be used only when use of gang box conflicts with other work.
- (2) Duplex Receptacle: Duplex 20 ampere, 125 volts, 3 wires, side and back wired, grounding type in plastic body with parallel and ground U-shaped slots.
 - (3) Device and Cover Plates:
 - a. Plates for interior flush construction shall be satin finished, 302 high nickel stainless steel, 18% chrome, 8% nickel with suitable holes for device.
 - b. Plates for exposed and weather exposed boxes (indicate WP on drawings) shall be cast metal with neoprene gasket for sealing against entry of water or moisture into box. Switch plates provide with neoprene cover over handle or raintight level mechanism. Receptacle plates shall be provided with weatherproof lid as indicated on drawings.
 - (4) Hardware, Supports, Backings, etc.: All hardware, supports, backings, and other equipment shall be provided. Wood materials shall be "wolmanize" treated against termite; iron or steel materials shall be galvanized for corrosion protection and nonferrous materials shall be brass or bronze.

C. Protective Equipment:

- (1) Panelboard: Copper busses with bolted molded plastic case circuit breaker complement. Assembly shall be mounted in a NEMA 1 surface mount enclosure, as indicated. Provide circuit directory in metal frame. Manufacture and install according to NEC Articles 240 and 384.
- (2) Individual circuit breaker shall consist of molded plastic case circuit breaker with toggle operated mechanism and thermal-magnetic overload trips. Interchangeable trip shall be provided when available. Toggle positions "ON" and "OFF", engraved or embossed on body. Breakers shall have 10,000 ampere minimum interrupting capacity unless indicated otherwise.
- (3) Equipment disconnect switch: Heavy-duty horsepower rated, lever-operated contacts, spring-loaded.

D. Security Alarm System:

- (1) Security Alarm Switch: Wide gap magnetic contact type switch consisting of switch component with normally closed contacts when the enclosure door to which it is mounted is closed. Unit shall be completely sealed housing and for application adjacent to metal doors or as shown on the drawings.
 - a. Magnetic switch contacts shall have 2" to 3" gap distance and normally open. Switch shall be Sentrol 1045T series, AMSECO AMS-37, or approved equal

E. Lighting Fixtures:

- (1) Fixtures: Description and manufacturer of each fixture as indicated in Fixture Schedule on drawings.
- (2) Ballasts: High power factor, ETL tested under CBM standards and certification, UL listed, Class P with automatic resetting thermal cutout protection, ANSI sound rating "A", high-efficiency type. Universal "Super-Low Heat", G.E. Co., or equal.
- (3) LED fixtures:
 - a. LEDs shall be IES LM-79 and LM-80 tested.
 - b. LED driver and lamp shall have a life expectancy of 75,000 hours at 50°C ambient.
 - c. LED driver and lamp shall be provided with a 5-year manufacturer warranty.
- (4) Lamps:
 - a. Low pressure sodium lamps shall have wattage as specified on drawings.
 - b. LED lamps shall have wattage as specified on drawings.

F. Miscellaneous Equipment: Utility Company Meter Socket shall be in accordance with NEMA, EUSERC, and Kauai Island Utility Cooperative standards, enclosed in stainless steel enclosure, raintight construction with gray enamel finish.

22.4 EQUIPMENT SHOP DRAWINGS: The following shall be ADDED to and made a part of this subsection.

- (1) Panelboards
- (2) Security Alarm Switches
- (3) Service Equipment
- (4) Disconnect Switches
- (5) Pullboxes
- (6) Equipment Cabinets
- (7) Junction Boxes
- (8) Any Built-to-order Equipment

22.4.02 Shop Drawings: Prior to fabrication, the Contractor shall submit for written approval of the Department of Water Supply four (4) copies of complete installation drawings and manufacturer's wiring diagrams for the voltage surge arrester, main electrical switchgear system, control and connection diagrams, connection diagrams, installation details, and any built-to-order equipment.

22.4.03 As-Built Drawings: Upon completion of the final inspection and testing, the Contractor shall provide, for the use of the Department of Water Supply two (2) copies of as-built installation drawings and manufacturer's wiring diagrams for the main electrical switchgear system and any built-to-order equipment.

22.4.04 Training for all electrical and electronic equipment SHALL BE CONDUCTED BY ITS RESPECTIVE FACTORY PERSONNEL; A FACTORY CERTIFIED REPRESENTATIVE IS NOT ACCEPTABLE AND WILL NOT BE APPROVED.

A. The following subsection shall be ADDED to and be made a part of subsection 304.03.

22.5 PAYMENT:

22.5.01 Payment shall be made for the furnishing and installing of equipment (exclusive of nonrecurring utility installation costs) will be made at the Lump Sum Offer of which the item is a part and shall be full compensation for all work in accordance therewith, complete and finished in accordance with the drawings and specifications.

SECTION SP-23 – SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA) SYSTEM FOR PACKAGE B – 0.1 MG CLEARWELL RESERVOIR

The following subsection shall be ADDED to and be made a part of Section 304 “MECHANICAL AND ELECTRICAL”, in “Water System Standards”, 2002 and amendments.

23.1 GENERAL:

- 23.1.01 General Conditions: This section covers the supervisory control and data acquisition (SCADA) system including equipment, wiring, adjustment and testing as indicated on the plans and specified herein.
- A. As specified in Section SP-22 – Electrical Work for Package B – 0.1 MG Clearwell Reservoir. The provisions of these related sections apply to this section and work described in this section shall comply with them.
- 23.1.02 Scope of Work: Provide all articles, materials, equipment, operations, and services herein or on drawings, including all labor, materials, taxes, fees, insurance, and incidentals required to insure completion.
- A. Test Complete Installation: Installation shall be complete in every detail as specified and ready for use. Any item supplied by Contractor developing defects within one (1) year of final acceptance by the Department of Water shall be replaced by such materials, apparatus, or parts to make such defective portion of complete system conform to true intent and meaning of these drawings and specifications, at no cost to the Department of Water.
- B. System Overview: These specifications are for the new distributed supervisory control and data acquisition (SCADA) system for a water system, including a new Intelligent Remote Terminal Unit (RTU). This system shall require the furnishing and installation of RTU hardware as specified herein at the existing Clearwell Tank site.
- (1) The Contractor shall furnish all hardware and software as required at the Clearwell Tank site with all appurtenances, whether specifically referenced herein or not, but which may be required for operation.
- C. This system shall be an integrated system of hardware and firmware totally engineered, programmed, assembled and tested. System shall be complete with all appurtenances, whether specifically referenced herein or not, but which may be required for operation.
- D. During proposing and construction, Contractor shall coordinate his work with other trades to avoid omissions and overlapping responsibilities. Electrical contractor shall notify other trades and suppliers of project voltages, including control voltages.
- E. Work by Others: Instrument transmitters shall be provided by respective sections of this contract. Installation of equipment complete with power wiring and electric controls and interlock wiring shall be part of Electrical Work.

23.1.03 Submittals: Submittals shall be made for approval and resubmitted until approval is received for the following:

- A. Catalog Cuts: Submit for approval four (4) copies of catalog cuts of following equipment:
 - (1) SCADA system components and equipment.
 - (2) Conductors and Wiring.
 - (3) Wiring and functional or block diagrams.
 - (4) Radio equipment including transmitters, receivers, antennas, antenna cables, etc.
 - (5) Manufacturer's recommendations for installation.
 - (6) Logic diagrams and ladder diagrams.
 - (7) Manufacturer's recommended list of spare parts for a one-year period of operation.
- B. Electrical Installation Drawings: At least 10 days prior to any testing the Contractor shall submit four (4) sets of approved complete electrical installation drawings. The installation drawings shall include the manufacturer's wiring diagrams for the SCADA system and any built-to-order equipment.
- C. As-Built Drawings: Upon completion of the final inspection and testing, the Contractor shall provide two (2) copies of as-built installation drawings and manufacturer's wiring diagrams for the SCADA system and any built-to-order equipment.

23.1.04 Local Support: The manufacturer of the SCADA system supplied shall be represented by a company capable of responding to requests for maintenance and repair to the system by having a technician skilled in the repair, maintenance and operation of the system at the job site within 24 hours of being notified. This representative shall carry all spare parts which are recommended by the manufacturer.

23.2 PRODUCTS:

23.2.01 General: Unless otherwise indicated, provide all first quality, new materials, free from any defects, in first class condition, and suitable for the space provided. Provide materials approved by UL wherever standards have been established by that agency. Where two or more units of the same class of material or equipment are required, provide products of a single manufacturer. Component parts of materials or equipment need not be products of the same manufacturer.

23.2.02 Standard Products: Unless otherwise indicated, provide materials and equipment which are the standard products of manufacturers regularly engaged in the production of such materials and equipment. Provide the manufacturer's latest standard design which conforms with these specifications.

23.2.03 Equipment Finish: Electrical equipment may be installed with manufacturer's standard finish and color, except where specific color, finish, or choice is indicated. If the

manufacturer has no standard color, equipment shall be painted ANSI G1, Light Gray.

23.2.04 Materials and Equipment:

A. The RTU equipment shall be microprocessor based, solid-state construction utilizing second source semiconductors, unless otherwise specified. Derate components to assure dependability and long-term stability. Provide printed or etched circuit boards of glass epoxy, hand or wave soldered, of sufficient thickness to prevent warping. Coat printed circuit boards in field-mounted equipment with 2 mils of solderable conformal coating complying with MIL-I-460-58B. Alignment and adjustments shall be noncritical, stable with temperature changes or aging and accomplished with premium grade potentiometers. Do not insert components of specially selected values into standard electronic assemblies to meet performance requirement. Use parts indicated in instruction manuals, replaceable with standard commercial components of the same description without degrading performance of completed assembly. The RTU equipment shall be capable of communicating with the existing Master Station equipment. The RTU equipment shall be provided with an 800VA UPS system. The RTU shall have the capability to be expandable. Parts shall be off the shelf design and common throughout so as to minimize spare parts requirements. RTU shall be housed in the SCADA cabinet. Unit shall be Motorola ACE3600 Remote Terminal Unit or approved equal.

B. Radio Equipment and Communications:

(1) Communications: The Contractor shall take complete responsibility for the system communication.

a. Communication Path Survey: Based on the coordinates and elevations of the various remote sites, the Contractor shall perform a computerized paper path survey to determine the gain margin for each proposed transmission path. The survey should simulate use of actual frequency and proposed equipment.

1) The survey shall include but not be limited to: a printout graph for each communication path which shall show the path profile, site elevations, site name, frequency, ERP, antenna type, distance between sites and predicted losses versus desired losses. The Contractor shall design the radio and communication system for at least 99.9% reliability.

b. Licensing: The Contractor shall prepare all paperwork required for FCC coordination and FCC licensing in accordance with the FCC Rules and Regulations governing the licensing of the proposed channels.

1) One UHF frequency shall be required to accommodate the RTU reception and transmission to the central computer. The Contractor shall submit all FCC coordination requirements to the FCC for frequency approval. The Contractor shall be responsible for the payment of FCC license fee.

- c. FCC Type Acceptance: All equipment related to the radio communication shall be FCC type accepted, indication authorization by the FCC to allow the equipment to be used by the licensee.
- (2) Radio Equipment: Because the power requirements of each remote site will be determined by the path study, the actual selection of a radio model shall be decided by the Contractor. The Contractor shall be completely responsible for interfacing radio system into the remote station modem.
 - (3) Antenna and Accessories: All antenna hardware shall comply with FCC rules and governing the design characteristics and mounting requirements for licensed frequencies used in the SCADA system. In general, the remote stations shall employ directional gain antennas. The central computer site will use an omni-directional gain antenna. Feedlines between antenna and radio enclosures shall be solid, shielded coax (minimum 1/2" in diameter), low density, foam heliax. Each coax run shall be continuous and shall terminate with factory-installed connectors which are specifically designed for use with the above-described cable. Each enclosure containing a radio shall be equipped with a combination lightning arrestor and bulkhead fitting to allow coax termination through the enclosure. The feedline signal loss shall not exceed 1.55 db (UHF) for each one hundred feet of run. The total connector loss at each site shall not exceed 1.0 db.
 - a. Grounding hardware kits specifically designed for use with the cable selected shall be furnished and installed by the Contractor.
 - b. Antenna Specifications:
 - 1) Frequency Range Match licensed channels
 - 2) Nominal Impedance 50 ohms
 - 3) Forward Gain 6 -10 db
 - 4) Polarization Vertical
 - 5) Power Rating (min) 200 Watts
 - 6) Materials Aluminum/Stainless Steel
 - 7) Mounting Clamps 2" O.D. galvanized pipe
 - 8) Wind Rating 125 mph, 90 mph w/1/2" ice
 - 9) Termination Captive Type N
 - 10) Lightning Protection Direct ground connection
- C. Instrumentation System Transmitter Power Supply: The power supply shall be mounted in the telemetering cabinet and deliver regulated 12 volts DC power at a maximum current recommended by the flow transmitter supplier. The unit shall operate on 117 volts AC at 50-70 Hz. Load regulation shall be 150 mV maximum from no-load to full-load current. Line regulation shall be 150 mV from 105 to 135 volts AC.
 - D. Touch Panel: Quick panel by GE Fanuc, Model IC754VSF12CTD, 12" TFT color panel, or approved equal, shall be installed as an operator interface to the RTU. The quick panel shall be programmed to display pump status, flow data, and also enable the operator to view pertinent data (i.e. alarms, status, analog values).

- E. See Drawings for additional information on the recommended materials and equipment for the SCADA system.

23.3 EXECUTION:

23.3.01 Construction Methods:

- A. Flush mount gauges, indicators, selector switches, pushbutton switches, and pilot lights in a logical arrangement.
- B. Mount devices listed, shown, or required for a complete and operable system in accordance with device manufacturer's instructions, these specifications, and as recommended in NEMA PB1.1.
- C. Ground control panel to safety ground of power source.

23.3.02 Programming. The RTU supplier and Contractor shall provide the complete programming and documentation for the RTU to comply with the requirements set forth herein.

23.3.03 Commissioning. Instruments are to be commissioned under the direct supervision of a qualified representative of the instrument manufacturer. The Engineer and/or the Engineer's representative shall have the right to witness any test, inspection, or calibration or start-up activity.

- A. Test and exercise each device to demonstrate correct operation, first individually, then collectively as a functional network. Apply continuously variable analog inputs to verify proper operation and setting of analog devices and discrete devices (i.e. switches, etc.). Make provisional settings on relays and pressure switches.
- B. Unless otherwise specified, tests shall be made to cover at least five points: approximately 0 percent, 25 percent, 50 percent, 75 percent, and 100 percent of range. Individual device accuracy requirements shall be as specified by contract requirements or by published manufacturer accuracy specifications whenever contract requirements are not specified.
- C. If test results conflict with calibration, the Contractor shall recalibrate and repeat test until test results prove calibration to be correct.

23.3.04 TEST REPORT. Prepare a test report showing actual value, instrument value, 4-20 mA value (at the RTU) for each test, and range of the instrument. Each test shall bear the signature of the contractor's representative who supervised the tests and the manufacturer's representative. Three copies of these reports in bound sets label "CALIBRATION DATA" are to be furnished to the Owner's Representative.

23.3.05 Additional Start-Up Services: The Contractor shall include an additional two (2) days of programming time and the cost for the RTUs programmer to visit the site for one (1) of the days in the Offer. This time may be used at the discretion of the Engineer for additional programming, changes, and/or training. This time is over and above the work

necessary to provide a complete and operable system.

- 23.3.06 Guarantee: The SCADA system, terminal points, equipment, materials, and associated items shall be guaranteed against defective parts and operation due to faulty material or workmanship during the period of one (1) year following acceptance and final payment by the Engineer. The Contractor shall make all repairs or replacements necessary to accomplish the required performance within the time specified by the Engineer and agreed to by the Contractor.

23.4 PAYMENT:

- A. General: No separate payments will be made for the work covered by the separate sections of the SP-23 series of these specifications. All costs in connection with furnishing and installing of the various items in accordance with standard practice, the details shown on the drawings and in accordance with these specifications, shall be included in the Lump Sum Offer of which the item is a part.
- B. Compensation: Payment of the furnishing and installing of equipment will be made at the Lump Sum Offer of which the item is a part and shall be full compensation for all work in accordance therewith, complete and finished in accordance with the drawings and specifications.
- C. Payment to the Contractor will be made in two (2) parts once all work is in place, complete, and the SCADA System is operational.
- (1) The first part will be fifty percent (50%) of the contract Offer Item No. 68 under SCADA System Lump Sum Offer, when all original manufacturer's software and licenses, all programming software, all operational manuals, written procedures, and all other related documents for the operation of the SCADA system are submitted to the Department of Water.
- (2) The second part will be fifty percent (50%) of the same Lump Sum Offer when the SCADA System is accepted by the Department of Water at final inspection.

SECTION SP-24 – NATIONAL PAOLLUTANT DISCHARGE ELIMINATION SYSTEM PERMITS

24.1 HYDROTESTING EFFLUENT DISCHARGE:

24.1.01 GENERAL: This item of work shall include the furnishing of all labor, materials, tools, and equipment necessary for compliance with State of Hawai'i Department of Health regulations for discharges composed of hydrotesting effluent associated with waterline chlorination and pressure testing.

24.1.02 REGULATIONS:

- A. The Contractor shall be familiar with and meet the latest requirements of all applicable National Pollutant Discharge Elimination System (NPDES), State Department of Health (DOH), and County of Kaua'i laws, ordinances, rules, regulations, and permits. Effluent discharge into State receiving waters shall not be made without approved permits. Discharge activities shall include, but shall not be limited to, effluent associated with pipeline hydrotesting/chlorination operations.
- B. The Contractor shall obtain additional permits and licenses as required; pay all charges, fees, and taxes; give all notices; and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as drawn and specified in the contract documents.

24.1.03 PROCEDURES:

- A. The Department of Water has obtained an Individual NPDES permit (NPDES Permit No. HI 0021916) from DOH for discharges of hydrotesting waters from the project to State waters for Package A and Package B. The Contractor shall review the Permit and file all necessary information, including but not limited to: Operator or General Contractor information and Drainage System Owner's Approval to Discharge with the State DOH at least 30 calendar days prior to the start of any construction activities. The Contractor shall submit a copy of the information filed with the State DOH to the Department of Water at least 30 calendar days prior to the start of any construction activities. Should additional NPDES coverage and permits be required, the Contractor shall prepare the required documents and obtain additional approvals, as necessary.
- B. The Contractor shall notify DOH of the construction start date at least 7 calendar days prior to the start of any construction activities.
- C. The Contractor is expected to comply with the conditions set forth in the permit. Any modifications or amendments to the permit by the Contractor shall be done at the Contractor's expense and no time extension will be granted. The Contractor shall submit all modifications or amendments to the Department of Water for review and approval.

- D. The Contractor shall make no claims for compensation due to delays or requirements imposed in obtaining an approved NPDES permit. Notice to Proceed will not be delayed due to Contractor's inability to attain an approved NPDES permit.
- E. As required for the discharge of effluent, the Contractor shall also secure all other applicable State and County discharge and connection permits and pay all applicable fees. The Contractor shall fulfill all conditions of the NPDES permit and all other permits when issued. A copy of all approved permits, when issued, shall be provided to the Department of Water for information only.
- F. The Contractor shall be responsible for monitoring, collecting samples, and having samples analyzed by a qualified laboratory and shall submit a monthly-discharge monitoring report to DOH. All costs shall be borne by the Contractor.
- G. If the DOH is not completely satisfied with the Contractor's BMP plan or the discharge quality, the Contractor shall perform corrective work at his own expense.
- H. Upon completion of the project, the Contractor shall submit the Notice of Cessation (CWB-NOC) form within 14 calendar days to the DOH and a copy of the submitted form to the Department of Water for information only.

24.1.04 COMPLETION OF DISCHARGE ACTIVITIES: At the conclusion of the discharge operations, the Contractor shall furnish the Department of Water with a signed affidavit indicating the date, location, volume, and treatment, if any, of all discharges. The location of storm drains, bodies of water, sewer manholes, and dry gulches shall be shown in relation to the discharge location.

24.1.05 VIOLATIONS: Violation citations for noncompliance shall be the responsibility of the Contractor. The Contractor shall pay all fines and hold harmless the Department of Water.

24.1.06 PAYMENT: Payment for the work described herein shall not be made directly but shall be considered incidental to the various items of the Lump Sum Offer and no additional compensation shall be made.

24.2 STORM WATER DISCHARGE:

24.2.01 GENERAL: This item of work shall include the furnishing of all labor, materials, tools, and equipment necessary for compliance with State of Hawai'i Department of Health regulations for discharges composed of storm water runoff associated with construction activity.

24.2.02 REGULATIONS:

- A. The Contractor shall be familiar with and meet the latest requirements of all applicable National Pollutant Discharge Elimination System (NPDES), State Department of Health (DOH), State Department of Transportation (DOT), and the Kaua'i County Department of Public Works (DPW) laws, ordinances, rules, regulations, and permits.

- B. The Contractor shall obtain additional permits and licenses as required; pay all charges, fees, and taxes; give all notices; and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as drawn and specified in the contract documents.

24.2.03 PROCEDURES:

- A. The Department of Water has obtained an Individual NPDES permit (NPDES Permit No. HI 0021916) from DOH for discharges of storm water associated with construction activities for Package A, B, and C. The Contractor shall review the Permit and file all necessary information, including but not limited to: Operator or General Contractor information, Drainage System Owner's Approval to Discharge, County-Approved Erosion Control Plan and/or Grading Permit, and updated SWPPP with the State DOH at least calendar 30 days prior to the start of any construction activities. The Contractor shall submit a copy of the information filed with the State DOH to the Department of Water at least 30 calendar days prior to the start of any construction activities. Should additional NPDES coverage and permits be required, the Contractor shall prepare the required documents and obtain additional approvals, as necessary.
- B. The Contractor shall notify DOH of the construction start date at least 7 calendar days prior to the start of any construction activities.
- C. The Contractor is expected to comply with the conditions set forth in the permit. Any modifications or amendments to the permit by the Contractor shall be done at the Contractor's expense and no time extension will be granted. The Contractor shall submit all modifications or amendments to the Department of Water for review and approval.
- D. The Contractor shall make no claims for compensation due to delays or requirements imposed in obtaining an approved NPDES permit. Notice to Proceed will not be delayed due to Contractor's inability to attain an approved NPDES permit.
- E. As required for the discharge of effluent, the Contractor shall also secure all other applicable State and County discharge and connection permits and pay all applicable fees. The Contractor shall fulfill all conditions of the NPDES Permit and all other permits when issued. A copy of all approved permits, when issued, shall be provided to the Department of Water for information only.
- F. The Contractor shall be responsible for monitoring, collecting samples, and having samples analyzed by a qualified laboratory and shall submit a monthly discharge monitoring report to DOH. All costs shall be borne by the Contractor.
- G. If the DOH is not completely satisfied with the Contractor's BMP plan or the discharge quality, the Contractor shall perform corrective work at his own expense.

H. Upon completion of the project, the Contractor shall submit the Notice of Cessation (CWB-NOC) form within 14 calendar days to the DOH and a copy of the submitted form to the Department of Water for information only.

24.3 VIOLATIONS: Violation citations for noncompliance shall be the responsibility of the Contractor. The Contractor shall pay all fines and hold harmless the Department of Water.

24.4 PAYMENT: Payment for NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMITS shall not be made directly; the compensation shall be considered incidental to the Total Sum Offer of which it is a part.

SECTION SP-25 – CONTROLLED LOW STRENGTH MATERIAL

- 25.1 GENERAL: The furnishing and placing of controlled low strength material (CLSM) may be used as self-compacted backfill material in utility trenches and other works in lieu of compacted fill, or where indicated in the drawings or as accepted by the Department of Water (DOW). Lean concrete is defined as CLSM.
- 25.2 SUBMITTALS: Submit manufacturer's certification of CLSM and include unconfined 28-day compressive strength test data for each mixture used. Test data shall be current, having been obtained within one (1) year of proposed use.
- 25.3 MATERIALS: CLSM shall include mixture of Portland cement, aggregate, and water. Water shall be potable and from a local government water supply. Provide flowable CLSM with aggregate in suspension. Proportion CLSM to produce the following:
- 25.3.01 Backfill material that is self-compacting and able to be excavated, in the future, with conventional excavation equipment.
- 25.3.01 Uniform, flowable mixture that is self-leveling when placed.
- 25.3.01 28-day compressive strength between 50 psi and 150 psi.
- 25.4 CONSTRUCTION:
- 25.4.01 PLACEMENT: Check trench sides and bottom for cracks, voids, or other defects that may cause CLSM to escape trench. Plug or repair as necessary. Do not place CLSM until the DOW has been notified and has been given an opportunity to inspect the trench.
- Seal conduits as necessary to prevent CLSM from flowing into conduits.
- Backfill trench in accordance with the Water System Standards, Invitation for Bid SP-2 and the drawings. Backfill trench no earlier than eight (8) hours after placing CLSM, unless otherwise accepted by the DOW.
- Place CLSM by chutes or pumps. Place CLSM around manholes and in utility trenches in a manner to prevent floating conditions due to fluid pressure from CLSM.
- Place CLSM to fill indicated in the drawings, without vibration or other means of compaction. Provide sufficient supply to allow CLSM lifts to be placed without interruption.
- In pavement trenches, limit fill such that top of CLSM will not be higher than bottom of aggregate base course or drainage layer. Fill voids completely with CLSM during backfill operation.
- If aggregate base course or drainage layer exists, reconstruct aggregate base course or drainage layer in accordance with the drawings.
- Protect CLSM and backfill material from traffic during period before restoration of pavement section.

Application of curing compounds or curing methods to CLSM will not be required.

- 25.5 PAYMENT: Payment for CONTROLLED LOW STRENGTH MATERIAL shall not be made directly; the compensation shall be considered incidental to the Total Sum Offer of which it is a part.

SECTION SP-26 – MISCELLANEOUS REQUIREMENTS

The following shall also be made part of the project.

- 26.1 MOBILIZATION – DEMOBILIZATION: Mobilization shall consist of the transporting, assembling, constructing, installing, and making ready for use at the site all equipment, machinery, structures, utilities and incidentals necessary to do the work covered by this contract. Demobilization shall consist of the dismantling and removal from the project site all of the above-mentioned equipment, machinery, structures, utilities, and incidentals not incorporated in or a necessary part for the completed work and the cleanup of the site to the satisfaction of the Engineer.

The Contractor shall be completely mobilized at the site and shall begin his operations within thirty (30) calendar days after he has been notified, in writing, to proceed under this contract. Any provisions in the Standard Specifications to the contrary are hereby deleted.

When the project is completed, the Contractor shall clean up the site and shall be responsible for all grading work required leaving the site in a neat and orderly condition to the satisfaction of the Engineer. Payment for cleanup work will not be paid for separately but shall be included in the Lump Sum Offer for Mobilization and Demobilization as listed in the Offer, subject, however, to all provisions specified herein above. Also, demobilization shall include planting grass seed or hydro-mulching all disturbed areas if so ordered by the Engineer.

Payment for Mobilization and Demobilization shall be made at the Lump Sum Offer for Mobilization and Demobilization as listed in the Offer and shall not exceed 6% of the Total Sum Offer, not including the Offer Price for Mobilization and Demobilization.

- 26.2 ARCHAEOLOGICAL INVENTORY SURVEY (AIS) REPORT: Appendix K contains the AIS prepared for the project titled, “Archaeological Inventory Survey Report for the Kaua‘i County Kalāheo Water System Improvements Project, Kalāheo and Wahiawa Ahupua‘a, Kōloa District, Kaua‘i TMKs: [4] 2-4-009:003 por., 2-4-002, 2-4-003, 2-4-004, 2-4-005, and 2-4-006 portions” dated May 2016. The Contractor shall comply with all mitigation recommendations.

Payment for complying with archaeological mitigation recommendations shall not be made directly; the compensation shall be considered incidental to the Total Sum Offer of which it is a part.

SECTION SP-27 – CONSTRUCTION RIGHT-OF-ENTRY

- 27.1 GENERAL: The Department of Water has obtained temporary construction rights-of-entries for the following properties. Contractor shall be responsible to address all the Terms and Conditions of the Right of Entries (ROEs).
- 27.2 REFERENCES: Appendix S contains the following documents:
- 27.2.01 County of Kaua‘i Department of Water concurrence of the Terms and Conditions for “Partial Withdrawal of 3.20 Acres From Governor's Proclamation dated June 5, 1909; Reset Aside 3 .20 Acres to the County of Kauai, Department of Water for Proposed Clearwell Reservoir, Access Road, Water Pipelines, and Related Purposes; Issuance of Management and Construction Right-of-Entry at Kalaheo, Wahiawa, Koloa, Kauai, Tax Map Key: (4) 2-4-009: portion of 003.”, dated June 9, 2017.
 - 27.2.02 State of Hawai‘i Board of Land and Natural Resources approval letter for the “Partial Withdrawal of 3.20 Acres From Governor's Proclamation dated June 5, 1909; Reset Aside 3 .20 Acres to the County of Kauai, Department of Water for Proposed Clearwell Reservoir, Access Road, Water Pipelines, and Related Purposes; Issuance of Management and Construction Right-of-Entry at Kalaheo, Wahiawa, Koloa, Kauai, Tax Map Key: (4) 2-4-009: portion of 003.”, dated June 9, 2017.
 - 27.2.03 Indenture made November 29, 2017 between Valerie J. Camara, Trustee of the Valerie J. Camara Revocable Trust and the Board of Water Supply of the County of Kaua‘i, for right-of-entry at Tax Map Key: (4) 2-4-005: 127.
 - 27.2.04 Indenture made November 17, 2017 between Yvonne A. Carveiro, Trustee of the Edward W. Carveiro and Yvonne A. Carveiro Revocable Living Trust Agreement and Duane E. Careiro and the Board of Water Supply of the County of Kaua‘i, for right-of-entry at Tax Map Key: (4) 2-4-005: 128.
 - 27.2.05 Indenture made March 9, 2018 between Jonathan K. Akita and Audrey C.C. Akita and the Board of Water Supply of the County of Kaua‘i, for right-of-entry at Tax Map Key: (4) 2-4-005: 129.
- 27.3 PAYMENT: All costs related to Construction Rights-of-Entry shall not be measured nor paid for directly but should be considered incidental to the construction work.

SP-28- CEMENT RUBBLE MASONRY

- 28.1 GENERAL: This section describes constructing cement rubble masonry.
- 28.2 MATERIALS: Stones shall be clean, hard, sound, and durable. Except stones for filling voids, stones shall have thickness of not less than 6 inches and width of not less than 1-1/2 times the thickness, but not less than 12 inches. Except headers, stones shall have length of not less than 1-1/2 times its width. Face stones shall have volume of not less than 0.75 cubic foot, and heart stones shall have volume of not less than 0.5 cubic foot.

Mortar shall consist of 1 part cement to 2 parts of fine aggregate or sand by volume. Water shall be added to make mortar easy to handle and spread with trowel. Mortar shall be prepared by mixing fine aggregate and cement in a tight container or mixing machine until mixture assumes uniform color. As mixing continues, water shall be added until proper consistency is attained. Mortar that has not been placed within 30 minutes after water has been added will be rejected. Retempering of mortar will not be allowed.

Mortar for pointing shall consist of 1 part cement to 1 part fine aggregate or sand by volume.

28.3 INSTALLATION:

- 28.3.01 Excavate and backfill in accordance with trench excavation.
- 28.3.02 Prepare foundation bed to be firm and normal to, or in steps normal to, face of wall. Compact foundation bed to minimum 90 percent relative compaction.
- 28.3.03 Clean bearing surface of foundation masonry and adjust moisture to saturated, surface dry condition when mortar bed is spread. Clean and saturate stone with water before setting. Clean and moisten bed to receive mortar.
- 28.3.04 Set face stones in random bond. Uniformly distribute stones by size, weathering, color, or texture. Use large stones at corners. Use large, flat stones for bottom courses. Use selected stones, roughly squared and pitched to lines at angles and ends of walls. Grade stones to decrease in size from bottom to top of work. Bed stones fully in mortar. Overlap stones at joints at least 6 inches and form firm bond.
- 28.3.05 Distribute headers uniformly throughout walls of structures to form at least 1/5 of exposed faces. Extend headers at least 12 inches through face wall into backing.
- 28.3.06 Where wall is less than 24 inches in thickness, extend headers through wall from front face to back face.
- 28.3.07 Build interior of walls so stones are bonded without open spaces. Make horizontal joints in face not more than 1 inch in thickness and vertical joints not more than 2 inches in width. Bed face stones without spalls. Construct weep holes in wall where indicated in the contract documents.
- 28.3.08 After mortar has set, loose stone and surrounding mortar shall be removed and relaid with fresh mortar.
- 28.3.09 Finish wall with 2-inch mortar capping. Mortar capping consists of 1 part cement to 2 parts fine aggregate or sand. Use Class A concrete for copings and back walls. Make copings in sections. Extend at least full width of wall, not less than 8 inches thick, and in sections from 5 feet to 8 feet long. Cast-in-place or mold sections and set in full mortar beds.

28.3.10 After laying stones, clean exposed joints thoroughly of mortar to depth of 1 inch. Wet exposed joints and point with mortar for pointing. Cure pointed masonry and mortar capping for not less than 3 days after completion of wall.

28.4 PAYMENT: Payment for CEMENT RUBBLE MASONRY will not be made separately; the compensation shall be considered incidental to the Total Sum Offer Price of which it is a part.

SP-29 – GROUTED RUBBLE PAVEMENT

- 29.1 GENERAL: This section describes constructing grouted rubble paving.
- 29.2 MATERIALS: Paving stones shall be clean, sound, durable, free from organic material, and shall be at least 1/8 cubic foot in volume with a minimum unit weight of 155 pounds per cubic foot.
- Grout shall consist of 1 part Portland cement to 3 parts fine aggregate by volume.
- 29.3 CONSTRUCTION:
- 29.3.01 Excavate in accordance with trench excavation. Free foundation bed of brush, trees, stumps, roots, debris, and other objectionable materials, and dress to smooth surface.
- 29.3.02 Compact bed until relative compaction is not less than 90 percent and finish to smooth surface.
- 29.3.03 Begin laying stones only after foundation is acceptable to Engineer.
- 29.3.04 Moisten bedding material with water. Wet stones before laying. Lay stones in a full bed of grout having stiff consistency. Use selected stones and shape roughly to make joints between 1/4 inch to 1/2 inch in width.
- 29.3.05 Bed stones in grout and form uniform planar surface with broken joints.
- 29.3.06 Within 24 hours after placing stones, point joints with grout to create 1/4-inch recesses. Keep paving surface wet throughout pointing process. Texture of recessed pointing shall not be smooth, but shall match texture of stone used. Visible grout on exposed rock surface will not be allowed.
- 29.3.07 Finish surface shall not deviate more than 3/8 inch with a 10-foot straightedge.
- 29.4 PAYMENT: Payment for GROUTED RUBBLE PAVEMENT will not be made separately; the compensation shall be considered incidental to the Unit Price Offer or Lump Sum Offer Price of which it is a part.

SP-30 – DRINKING WATER STATE REVOLVING FUND

30.1 DESCRIPTION:

The Department of Water (DOW) has or will apply for federal funding under the Drinking Water State Revolving Fund (DWSRF). To comply with program requirements, the Contractor shall comply with and ensure all tiers of subcontractors comply with all federal regulations listed herein as applicable “Cross-Cutter” regulations, which have been determined as applying to the DWSRF loan program.

The “DWSRF BOILERPLATE” FEDERAL REQUIREMENTS FOR CONSULTANTS AND CONTRACTORS” is located in Appendix I. Consultation request letters and response letters to the U.S. Fish and Wildlife Service and the State of Hawai‘i, Department of Land and Natural Resources, State Historic Preservation Division are located in Appendix I.

30.2 REQUIRED FEDERAL FORMS AND INFORMATION:

The Contractor shall complete and/or assist the DOW in completing the following form when so directed:

- EPA Form 5700-52A (MBE/WBE Utilization Under Federal Grants, Cooperative Agreements, and Other Federal Financial Assistance)

The Contractor and their subcontractors shall furnish all required information in a timely manner to ensure periodic filing deadlines are met.

30.3 AMERICAN IRON AND STEEL REQUIREMENT:

Projects funded with monies from the Drinking Water State Revolving Fund are subject to the American Iron and Steel (AIS) requirement, such that all products made primarily of iron or steel must be produced in the United States. The Contractor shall submit certification that the material was produced in the United States or information necessary to verify an approved waiver of the AIS Requirement. Additionally, Contractor shall comply with, and shall execute and submit any written documentation or certification required by the AIS or other applicable law, rule or regulation. Failure to comply with AIS Requirements by the Contractor shall permit the Department of Water or State of Hawaii to recover as damages against the Contractor any loss, expense, or cost (including, without limitation, attorney’s fees) incurred by the Department of Water or State of Hawaii resulting from any such failure (including, without limitation, any impairment or loss of funding, whether in whole or in part, from the State of Hawaii or any damages owed to the State of Hawaii by the Department of Water).

30.4 DWSRF WATER NOTES:

In addition to the requirements listed in this section, the Contractor shall also comply with the following DWSRF water notes. These notes shall supplement the WATER CONSTRUCTION NOTES on the plans.

CHLORINATION OF WATER SYSTEMS

Job No. **09-01 K-01, K-12 KALĀHEO WATER SYSTEM IMPROVEMENTS, PACKAGE A – 0.5 MG YAMADA RESERVOIR, PACKAGE B – 0.1 MG CLEARWELL RESERVOIR, PACKAGE C – WATER MAIN INSTALLATION, KALĀHEO,**

1. WATER MAINS SHALL BE DISINFECTED IN ACCORDANCE WITH AWWA STANDARD FOR DISINFECTING WATER MAINS, ANSI/AWWA C651-99, SECTION 4.4.3, CONTINUOUS-FEED METHOD.
2. STORAGE TANKS SHALL BE DISINFECTED IN ACCORDANCE WITH AWWA STANDARD FOR DISINFECTING WATER-STORAGE FACILITIES, ANSI/AWWA C652-92, SECTION 4.1, CHLORINATION METHOD 1.
3. LIQUID CHLORINE OR CALCIUM HYPOCHLORITE, THAT HAS BEEN TESTED AND CERTIFIED AS MEETING THE SPECIFICATIONS OF ANSI/NSF STANDARD 60, DRINKING WATER TREATMENT CHEMICALS – HEALTH EFFECTS, SHALL BE USED FOR THE CHLORINATION OF THE WATER MAINS AND/OR STORAGE TANKS.
4. PRIOR TO CHLORINATION, THE WATER MAINS AND/OR STORAGE TANKS SHALL BE THOROUGHLY FLUSHED.
5. THE INTERIOR SURFACES OF THE WATER MAINS AND/OR STORAGE TANKS SHALL BE EXPOSED TO THE CHLORINATING SOLUTION, BY COMPLETELY FILLING THE MAIN TO REMOVE ALL AIR POCKETS, FOR A MINIMUM OF 24 HOURS AND THE FREE CHLORINE RESIDUAL SHALL NOT BE LESS THAN 10 PPM AFTER SUCH TIME.
6. SHOULD CALCIUM HYPOCHLORITE BE USED, NO SOLID AND/OR UNDISSOLVED PORTION OF THE COMPOUND SHALL BE INTRODUCED INTO ANY SECTION OF THE WATER MAINS AND/OR STORAGE TANKS TO BE CHLORINATED.
7. AT THE END OF THE 24 HOUR DISINFECTION PERIOD, REPRESENTATIVE SAMPLES SHALL BE TAKEN AND ANALYZED TO ASSURE A FREE CHLORINE RESIDUAL OF AT LEAST 10 PPM.
8. SHOULD THE FREE CHLORINE RESIDUAL RESULTS INDICATE ADEQUATE CHLORINATION, THE WATER MAINS AND/OR STORAGE TANKS SHALL BE THOROUGHLY FLUSHED AND FILLED WITH WATER FROM THE EXISTING SYSTEM AND AGAIN TESTED FOR FREE CHLORINE RESIDUAL. THE FLUSHING SHALL BE CONSIDERED ADEQUATE IF THE FREE CHLORINE RESIDUAL TEST RESULTS INDICATE THAT THE WATER IN THE WATER MAINS AND/OR STORAGE TANKS HAS A COMPARABLE CHLORINE RESIDUAL AS THE WATER IN THE EXISTING SYSTEM.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER DISPOSAL OF CHLORINATED WATER TO SAFEGUARD PUBLIC HEALTH AND ENVIRONMENT IN ACCORDANCE WITH APPLICABLE STATE DEPARTMENT OF HEALTH REQUIREMENTS. A NEUTRALIZING CHEMICAL SHALL BE APPLIED TO THE WATER TO BE WASTED TO THOROUGHLY NEUTRALIZE THE CHLORINE RESIDUAL REMAINING IN THE WATER IN ACCORDANCE WITH AWWA C651-99, SECTION 4.5.2, AND APPENDIX C.

10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FROM THE DEPARTMENT OF HEALTH, CLEAN WATER BRANCH PRIOR TO THE START OF CONSTRUCTION, FOR THE DISPOSAL OF WATER USED FOR HYDROTESTING AND CHLORINATION.
11. FOLLOWING THE ACCEPTABLE FLUSHING OF THE WATER MAINS AND/OR STORAGE TANKS, TWO CONSECUTIVE SETS OF ACCEPTABLE SAMPLES, TAKEN AT LEAST 24 HOURS APART, FROM REPRESENTATIVE POINTS SHALL BE TAKEN AND SUBJECTED TO MICROBIOLOGICAL TESTS (TOTAL AND FECAL COLIFORM). FOR WATERLINES, AT LEAST ONE SET OF SAMPLES SHALL BE COLLECTED FROM EVERY 1,200 FEET OF THE NEW WATER MAIN, PLUS ONE FROM THE END OF THE LINE AND AT LEAST ONE SET FROM EACH BRANCH. FOR STORAGE TANKS, THE SAMPLE SHALL BE COLLECTED FROM THE TANK'S EFFLUENT LINE SAMPLE TAP. POSITIVE OR INVALID TEST RESULTS WILL NOT BE ACCEPTABLE AND THE PROCESS WILL BE REPEATED.
12. ALL MEASUREMENTS FOR CHLORINE RESIDUAL SHALL BE ANALYZED USING E.P.A. APPROVED METHODS FOR DRINKING WATER.
13. ALL MICROBIOLOGICAL TESTS SHALL BE PERFORMED BY A LABORATORY APPROVED BY THE DEPARTMENT OF HEALTH, STATE OF HAWAII.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH ALL OF THE FOREGOING.
15. SEE ANSI/AWWA C651-99, SEC. 4.3.6 FOR SWABBING CHLORINATION PROCEDURES.

OTHER:

16. ALL MATERIALS (PIPE, PIPE LUBRICANTS, PAINTS, SEALANTS, FORM OIL, CONCRETE ADMIXTURES, ETC.) IN DIRECT CONTACT WITH THE POTABLE WATER SHALL HAVE NATIONAL SANITATION FOUNDATIONS (NSF) APPROVALS. THE CONTRACTOR SHALL SUBMIT THESE APPROVALS TO THE BOARD OF WATER SUPPLY FOR INFORMATION ONLY PRIOR TO ITS APPLICATION

30.5 Build America Buy America Requirement.

Projects funded with monies from the Drinking Water State Revolving Fund are subject to the Build America, Buy America (BABA) provisions, required by the Infrastructure Investment and Jobs Act (IIJA), which requires the use of materials produced in the United States, and increases the requirement for American-made content, and strengthens the waiver process associated with Buy America provisions. The Contractor shall comply with the Build America Buy America requirement. Failure to comply with the Build America Buy America requirement by the Contractor shall permit the Department of Water or State of Hawai'i to recover as damages against the Contractor any loss, expense, or cost (including, without limitation, attorney's fees) incurred by the Department of Water or State of Hawai'i resulting from any such failure (including, without

limitation, any impairment or loss of funding, whether in whole or in part, from the State of Hawai'i or any damages owed to the State of Hawai'i by the Department of Water).

30.6 PAYMENT:

Payment for complying with DWSRF Requirements will not be made separately; the compensation shall be considered incidental to the Total Sum Offer of which it is a part.

SECTION SP-31 – PERMITS

- 31.1 GENERAL: This item of work shall include the furnishing of all labor, materials, tools, and equipment necessary for obtaining and compliance with required permits.

The Contractor shall pay all charges, fees, and taxes; give all notices; and comply with all laws, ordinances, rules and regulations related to the permits. All fees provided in this Section are estimates. Contractor is responsible to pay permit fees.

The Contractor must comply with and fulfill the conditions set forth in the permits. Any modifications or amendments to permits by the Contractor shall be done at the Contractor's expense.

The Contractor shall make no claims for compensation due to delays or requirements imposed in obtaining permits and complying with permits. Notice to Proceed will not be delayed due to Contractor's inability to attain permits.

Violation citations for noncompliance shall be the responsibility of the Contractor. The Contractor shall pay all fines and hold harmless the Department of Water.

31.2 BUILDING PERMIT:

- 31.2.01 GENERAL: The Contractor is responsible to obtain the Building Permits and payment of applicable fees. The Contractor shall develop the project schedule and include the processing of Building Permits.

The Department of Water has obtained approval for the Building Permits listed below. Should any permit lapse or expire, the Contractor is responsible to have the permit re-processed.

31.2.02 PROCEDURES:

- A. Applications for Building Permits require a Review Fee. The Review Fee is based on 15% of the Building Permit Fee. The application will be reviewed by the appropriate departments and agencies. Once the comments have been addressed, the approved permit will be approved.
- B. Once the Building Permit is ready to be issued, the applicant has one year to have the permit issued.
 1. Once permit is issued, the first inspection must occur within 180 days. Otherwise, the permit will lapse. If the permit lapses, the Renewal Fee must be paid, and the drawings will be re-processed for approval.
 2. If permit is not issued, approval for the building permit expires. The Review Fee must be paid again, and the application is re-processed for approval.

3. One Department of Public Works inspector will be assigned to each parcel. The same inspector will conduct the inspections for all the building permits for that parcel. The initial inspection will satisfy the initial inspection requirement for all the building permits applicable to that parcel.

C. Summary of Building Permit procedures:

Building Permit (BP) Requirements			
Fees			
Building Permit Fee	Based on Valuation		
Review Fee	15% of BP Fee		
Renew Permit Fee	50% of BP Fee		
Timeline	Requirement	For Non-compliance	Action Required
During BP Review Process	180 days to respond to comments	BP becomes dormant	Pay Review Fee to reactivate process
BP Approved	One year to issue permit	BP not issued, Approval Expires	Pay Review Fee to reactivate BP review
BP Issued	180 days to request inspection	Permit Expires	Pay Renew Permit Fee

31.2.03 **FEES:** A summary of the Building Permit information and estimated Building Permit Fees and Fire Fees are shown below. Please see 31.3 for discussion of Fire Fees.

Package A		Yamada Reservoir		TMK: 4-2-4-03: 007			
Building Permit (BP) Number	Description	Approved Date	Building Permit			Fire Fees	
			Permit Fee	Review Fee (15% of BP Fee)	Renewal Fee (50% of BP Fee)	Fire Fee	Fire Fee Review/ Renewal Fee
BP18-00001625	Retaining Wall A (Back)	February 10, 2021	\$4,004	\$601	\$2,002	\$481	\$58
BP18-00001626	Retaining Wall B (Front)	December 30, 2020	\$1,154	\$173	\$577	\$139	\$17
BP18-00001627	Concrete Tank	January 11, 2021	\$8,404	\$1,261	\$4,202	\$1,009	\$122
BP18-00002400	Fence	December 30, 2020	\$341	\$51	\$171	\$41	\$5

Package B		Clearwell	Reservoir	TMK: 4-2-4-09: 008			
Building Permit (BP) Number	Description	Approved Date	Building Permit Fee	Review Fee (15% of BP Fee)	Renewal Fee (50% of BP Fee)	Fire Fee	Fire Fee Review/Renewal Fee
BP18-00001611	Demolition of Existing Tank	February 10, 2021	\$69	\$10	\$35	\$9	\$2
BP18-00001621	Retaining Wall	February 10, 2021	\$1,804	\$271	\$902	\$217	\$27
BP18-00001622	Demolition of Existing Building	February 10, 2021	\$69	\$10	\$35	\$9	\$2
BP18-00001623	Control Building	February 10, 2021	\$704	\$106	\$352	\$85	\$1
BP18-00001624	Concrete Tank	February 10, 2021	\$4,704	\$706	\$2,352	\$565	\$68
BP18-00002399	Fence	December 30, 2020	\$173	\$26	\$87	\$21	\$3

31.2.04 PAYMENT: Payment for Building Permits and Fire Fees shall not be made separately; the compensation shall be considered incidental to the Total Sum Offer of which it is a part.

31.3 FIRE FEES

31.3.1 GENERAL: The Contractor is responsible to pay for Fire Fees required for this project. Fire fees are assessed during the building permit process. No additional application is required.

31.3.2 FEES: The estimated Fire Fees are shown in 31.2.3 with the Building Permit fees.

31.3.3 PAYMENT: Payment for Fire Fees shall not be made separately; the compensation shall be considered incidental to the Total Sum Offer of which it is a part.

31.4 GRADING PERMIT

31.4.1 GENERAL: The Contractor is responsible for obtaining Grading Permits, providing surety bonds, and payment of applicable fees for Packages A and B.

31.4.2 REGULATIONS:

- A. The Contractor shall be familiar with and meet the latest requirements of County of Kaua'i Ordinance No. 808.
- B. Grading Permits expire and become void one year after the date of issuance.

- C. Grading Permits expire and become void unless work is started within six months after the date of issuance or if the work is suspended or abandoned at any time after the work is commenced for a period of ninety days.

31.5 PROCEDURES:

- A. The Contractor shall apply for Grading Permits and comply with Grading Permit application requirements.
- B. If the County Engineer is not completely satisfied with the work, the Contractor shall perform corrective measures at his own expense.

31.6 FEES: Estimated fees and bond amounts are as follows:

Project Package	Estimated Grading Permit Fee	Estimated Bond Amount
Package A Yamada Reservoir	\$6,798	\$679,800
Package B Clearwell Reservoir	\$1,170	\$117,000

31.7 PAYMENT: Payment for Grading Permits shall not be made separately; the compensation shall be considered incidental to the Total Sum Offer of which it is a part.

31.8 STOCKPILING PERMITS/GRUBBING PERMITS:

31.8.1 GENERAL: The Contractor is responsible for obtaining Stockpiling Permits and Grubbing Permits for Packages A, B, and C, as necessary.

31.8.2 REGULATIONS:

- A. The Contractor shall be familiar with and meet the latest requirements of County of Kaua‘i Ordinance No. 808.
- B. A Stockpiling Permit is required for storage of material in excess of 500 cubic yards.
- C. Stockpiling Permits expire and become void one year after date of issuance and all stockpiled material temporarily stored on the premises shall be removed from the premises or used on the premises as fill material under a grading permit.
- D. Separate Grubbing Permits are not required when grubbing activities are performed in conjunction with and as part of activities conducted pursuant to a validly issued Grading Permit.
- E. Grubbing Permits expire and become void one year after the date of issuance.
- F. Grubbing Permits expire and become void unless work is started within six

months after the date of issuance or if the work is suspended or abandoned at any time after the work is commenced for a period of ninety days.

31.8.3 PROCEDURES: The Contractor shall apply for Stockpiling Permits, as necessary, and comply with Stockpiling Permit application requirements. The Contractor shall apply for Grubbing Permits, as necessary, and comply with Grubbing Permit application requirements.

31.8.4 FEES: The estimated fees for Stockpiling Permits and Grubbing Permits are one-half of one percent of the estimated construction cost as determined by the County Engineer.

31.8.5 PAYMENT: Payment for Stockpiling Permits and Grubbing Permits shall not be made separately; the compensation shall be considered incidental to the Total Sum Offer of which it is a part.

31.9 ROAD PERMIT:

31.9.1 GENERAL: The Contractor is responsible for obtaining Road Permits for Packages A, B, and C.

31.9.2 PROCEDURES: The Contractor shall apply for Road Permits and comply with Road Permit application requirements. Submit approved drawings with the applications.

31.9.3 FEES: There are no fees for Road Permits.

31.9.4 PAYMENT: Payment for Road Permits shall not be made separately; the compensation shall be considered incidental to the Total Sum Offer of which it is a part.

32 NOISE PERMIT

32.1.1 GENERAL: The Contractor is responsible for obtaining Noise Permit and Variance, as necessary, and payment of applicable fees for Packages A, B, and C.

32.1.2 REGULATIONS: The Contractor shall be familiar with and meet the latest requirements of Title 11, Chapter 46, Community Noise Control, Hawai'i Administrative Rules.

32.1.3 PROCEDURES:

A. If necessary, the Contractor shall apply for Noise Permits and comply with Noise Permit application requirements.

B. If necessary, the Contractor shall apply for Noise Variances and comply with Noise Variance application requirements.

32.1.4 FEES:

- A. Each Noise Permit is subject to a \$50 annual fee. Extensions and Renewals are subject to applicable annual fees.
- B. The fee for a variance or renewal of a variance is \$100 per year and all costs associated with public participation requirements. Public participation may include, but is not limited to, public notices, circulation of public notices, and public hearing. The Director may establish other fees.

32.1.5 PAYMENT: Payment for Noise Permits and Variance shall not be made separately; the compensation shall be considered incidental to the Total Sum Offer of which it is a part.

APPENDIX P: Geotechnical Engineering Exploration Report, February 29, 2012

(Attached separately)

APPENDIX Q: Zoning, Use, and Variance Documents

(Attached separately)

APPENDIX R: Conservation District Use Permit Documents

(Attached separately)

APPENDIX S: Construction Right of Entry Documents

(Attached separately)