

DIVISION OF AQUATIC RESOURCES

State of Hawaii
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION
Honolulu, Hawaii

BOARD OF LAND AND NATURAL RESOURCES

Dawn N.S. Chang
Chairperson

CONTRACT SPECIFICATIONS AND PLANS

Job No: C00BO91C
Anuenue Fisheries Research Center
Annex Facility Improvements – Phase 1B (Sewer Improvements)
Sand Island, Oahu, Hawaii


Architect:	Bowers + Kubota
Electrical Engineer:	Bowers + Kubota
Mechanical Engineer:	Okahara and Associates, Inc.
Structural Engineer:	Nagamine Okawa Engineers. Inc.

April 2026

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DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION
Honolulu, Hawaii

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Job No: C00BO91C
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Annex Facility Improvements – Phase 1B (Sewer Improvements)
Sand Island, Oahu, Hawaii

Approved: 

BRIAN J. NEILSON
Administrator
Division of Aquatic Resources

Approved: 

DINA U. LAU
Acting Chief Engineer
Engineering Division

April 2026

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PLANS (Bound Separately)

DEPARTMENT OF LAND AND NATURAL RESOURCES INTERIM GENERAL
CONDITIONS, DATED OCTOBER 1994 (Bound Separately)

NOTICE TO BIDDERS
(Chapter 103D, HRS)

COMPETITIVE BIDS for Job No. C00BO91C, Anuenue Fisheries Research Center Annex Facility Improvements – Phase 1B (Sewer Improvements), Sand Island, Oahu shall be submitted to the Department of Land and Natural Resources, Engineering Division on the specified date and time through the Hawaii State e-Procurement (HIePRO). HIePRO is accessible through the State Procurement Office website at www.spo.hawaii.gov.

The Department of Land and Natural Resources Interim General Condition, dated October 1994, as amended, and the General Conditions –AG008, latest revision shall be made part of the specifications. Electronic copies of the General Conditions are available on the State Procurement Office website.

The project is located at 1001 Sand Island Pkwy, Honolulu, HI 96819.

The work generally consists of closure of the existing cesspool and the construction of a low pressure sewer system inclusive of a grinder pump and all the appurtenances.

To be eligible to submit a bid, the Bidder must possess a valid State of Hawaii Contractor’s license classification “B”.

A voluntary pre-bid meeting will be held at the project site, located at 1001 Sand Island Pkwy, on May 8, 2026, at 10:30 am.

All interested parties are invited to attend a State-conducted site visit that will start immediately following the pre-bid conference mentioned above. It is highly recommended that all interested parties attend the site visit to become familiar with the existing field conditions. The site visit is anticipated to start around 10:45am and end around 11:15 am. Please note that the project is located within a secure facility, so there will be no other accommodation for a site visit.

Bidders are advised that anything discussed at the pre-bid conference does not change any part of this solicitation. Any questions or discussions at the pre-bid conference are not official and all questions shall be submitted through the HIePRO solicitation or emailed to the contract person listed in HIePRO. All changes and/or clarifications to this solicitation will be done in the form of an addendum.

The estimated cost of construction is \$300,000.

The award of the contract, if it be awarded, will be subject to the availability of funds.

Since the estimated value of the cost of construction is \$250,000 or more, the apprenticeship agreement preference pursuant to Hawaii Revised Statutes §103-55.6 (ACT 17, SLH 2009) shall apply.

Should there be any questions, please refer to the HIePRO solicitation.

INFORMATION AND INSTRUCTIONS TO BIDDERS

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INFORMATION AND INSTRUCTIONS TO BIDDERS

- A. PROJECT LOCATION AND SCOPE OF WORK: The project location and scope of work shall be as generally described in the Notice to Bidders.
- B. PROPOSALS: Bidders shall submit their bid, including the completed proposal form, bid bond, and any other documents required by the solicitation as part of their bid through the State of Hawaii e-Procurement System (HIePRO). See Item D, PROPOSAL FORM.
- C. GENERAL CONDITIONS: The Department of Land and Natural Resources Interim General Conditions dated October 1994, as amended, shall be made a part of these contract specifications and are referred to hereafter as the General Conditions.
- D. PROPOSAL FORM: **The Bidders shall fill out and upload the electronic copy of the proposal form to the HIePRO website when submitting the bid. Bid Proposals shall not be mailed, faxed or delivered to the State, unless requested to do so after the designated closing date. The successful Bidder shall fill out and print a hard copy of the proposal form, sign and submit the form with the contract award package.**
- E. OMISSIONS OR ERASURES: Any proposal which contains any omission or erasure or alteration not properly initialed, or conditional bid, or other irregularity may be rejected by the Board of Land and Natural Resources (Board).
- F. NOTICE OF INTENT TO BID AND QUESTIONNAIRE:
A Notice of Intent to Bid is not required for this project. In compliance with HRS Section 103D-310, the lowest responsive and responsible bidder may be required to complete a questionnaire. When requested by the State, the completed questionnaire shall be submitted to the Chief Engineer for evaluation. Failure to furnish the requested information within the time allowed may be grounds for a determination of non-responsibility, in accordance with HRS Section 103D-310 and HAR Section 3-122-108.
- G. BID SECURITY: A bid security will be furnished by each bidder as provided in sub-section 2.7 of the General Conditions. The successful bidder's bid security will be retained until Contract execution and furnished a performance and payment bond in an amount equal to one hundred percent (100%) of the total Contract price, including an amount estimated to be required for extra work, is furnished.
- The Board reserves the right to hold the bid securities of the four lowest bidders until the successful bidder has entered into a contract and has furnished the required performance bond. All bid securities will be returned in accordance with sub-section 3.5 of the General Conditions.
- Should the successful bidder fail to enter into a contract and furnish a satisfactory performance bond within the time stated in the proposal, the bid security shall be forfeited as required by law.
- H. CONTRACTOR'S LICENSE REQUIRED: The Board will reject all bids received from contractors who have not been licensed by the State Contractors License Board in accordance with Chapter 444, HRS; Title 16, Chapter 77, Hawaii Administrative Rules; and statutes

amendatory thereto.

- I. IRREGULAR BIDS: No irregular bids or propositions for doing the work will be considered by the Board.
- J. WITHDRAWAL OF BIDS: No bidder may withdraw his bid between the time of the opening thereof and the award of contract.
- K. SUCCESSFUL BIDDER TO FILE PERFORMANCE AND PAYMENT BONDS: The successful bidder will be required to file performance and payment bonds each; in the amount equal to the total contract price, including amounts estimated to be required for extra work, as provided in sub-section 3.6 of the General Conditions.
- L. NUMBER OF EXECUTED ORIGINAL COUNTERPARTS OF CONTRACT DOCUMENTS: If requested by the Board, six copies of the Contract, performance and payment bonds shall be executed.
- M. CHANGE ORDERS: No work of any kind in connection with the work covered by the plans and specifications shall be considered as change order work, or entitle the Contractor to extra compensation, except when the work has been ordered in writing by the Chief Engineer (Engineer) and in accordance with sub-section 4.2 of the General Conditions.

The Contractor shall clearly identify and inform the Engineer in writing of any deviations from the contract documents at the time of submission and shall obtain the Engineer's written approval to the specified deviation prior to proceeding with any work.

- N. WAGES AND HOURS: In accordance with sub-sections 7.3 to 7.9 of the General Conditions relative to hours of labor, minimum wages and overtime pay, the current minimum wage rates promulgated by the Department of Labor and Industrial Relations (DLIR) shall be paid to the various classes of laborers and mechanics engaged in the performance of this contract on the job site. The minimum wages shall be increased during the performance of the contract in an amount equal to the increase in the prevailing wages for those kinds of work as periodically determined by the DLIR.

The Department of Land and Natural Resources will not recognize any claim for additional compensation because of the payment by the Contractor of any wage rate in excess of the said minimum wage rates. The possibility of wage increase is one of the elements to be considered by the Contractor in determining his bid, and will not, under any circumstances, be considered as the basis of a claim against the Department under this Contract.

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 Engineer. Should permission be granted to work at such times, the Contractor shall pay for all inspection administrative costs thereof. No work shall be done at night unless authorized by the Engineer.

- O. PERMITS: The State will process permit applications whenever possible, and the Contractor shall procure the pre-processed permits and pay the required fees. If permit applications are not processed by the State, the Contractor shall process the permit applications, permits and licenses, and pay all charges and fees. In all cases, the Contractor shall give all notices necessary and incident to the due and lawful prosecution of the work.

- P. PROPERTY DAMAGE: It shall be the responsibility of the contractor to respect State property and to prevent damage to existing improvements. The Contractor will be responsible for damages resulting from construction operations. Immediately upon discovery, the Contractor shall repair such damage to the satisfaction of the Engineer.

All trees and shrubbery outside the excavation, embankment or construction limits shall be fully protected from injury.

- Q. TIME: The time of completion is specified in the Proposal. It is the Board's intention to insist the Contractor diligently prosecute the work to completion within the specified time.

Prospective bidders are reminded that the State has the option to proceed with or abandon a project depending on whether the project can be completed for occupancy in the specified time.

It is the bidder's responsibility to check the availability of all materials before bidding. The bidder shall select sub-contractors and suppliers who can warrant availability and delivery of all specified or qualified materials to assure project completion within the specified time.

The successful bidder must assume all risks for completing the project by the specified date. There shall be no extension of time for any reason except for delays caused by acts of God, labor disputes involving unions, or actions of the State. If for any reason the project falls behind schedule, the Contractor shall at its own cost, take necessary remedial measures to get the project back on schedule, i.e., working overtime, air freighting all materials, etc. In addition, if the Contractor fails to fully complete the project by the completion date, Contractor will be required to make the facility usable at its own cost.

- R. BIDDER'S RESPONSIBILITY TO PROVIDE PROPER SUPERINTENDENCE: The successful low bidder shall designate in writing to the Engineer the name of its authorized superintendent (Superintendent), who will be present at the job site whenever any work is in progress. The Superintendent shall be responsible for all work, receiving and implementing instructions from the Engineer in a timely manner. The cost for superintendence shall be considered incidental to the project.

If the Superintendent is not present at the site of work, the Engineer shall have the right to suspend the work as described under sub-section 5.5 c. and 7.20 - Suspension of Work of the General Conditions.

- S. LIQUIDATED DAMAGES: Liquidated damages in the amount specified in the Proposal will be assessed for each and every calendar day from and after the expiration of the time period stated in the Contract for the completion of the project.

- T. HIRING OF HAWAII RESIDENTS: The Contractor shall comply with Act 68, SLH 2010, in the performance and for the duration of this contract. The Contractor shall ensure that Hawaii residents compose not less than eighty percent of the workforce employed to perform the contract work on the project. The eighty percent requirement shall be determined by dividing the total number of hours worked on the contract by Hawaii residents, by the total number of hours worked on the contract by all employees of the Contractor in the performance of the contract. The hours worked by any Subcontractor of the Contractor shall

count towards the calculation for this section. The hours worked by employees with shortage trades, as determined by the Department of Labor and Industrial Relations (DLIR), shall not be included in the calculation for this section.

The requirements shall apply to any subcontract of \$50,000 or more in connection with the Contractor, that is, such Subcontractors must also ensure that Hawaii residents compose not less than eighty percent of the Subcontractor's workforce used to perform the subcontract.

- U. WATER AND ELECTRICITY: The Contractor shall make all necessary arrangements and pay all expenses for water and electricity used in the construction of this project.
- V. PUBLIC CONVENIENCE AND SAFETY: The Contractor shall conduct construction operations with due regard to the convenience and safety of the public at all times. No materials or equipment shall be stored where it will interfere with the safe passage of public traffic. The Contractor shall provide, install, and maintain in satisfactory condition, all necessary signs, flares and other protective facilities and shall take all necessary precautions for the protection of the work and the convenience and safety of the public. The Engineer shall have the right to suspend the performance of the work in accordance with sub-section 7.20 - Suspension of Work of the General Conditions.
- W. WORK TO BE DONE WITHOUT DIRECT PAYMENT: Whenever the contract that the Contractor is to perform work or furnish materials of any kind for which no price is fixed in the contract, it shall be understood that the Contractor shall perform such work or furnish said materials without extra charge or allowance or direct payment of any sort. The cost of performing such work or furnishing said material is to be included by the Contractor 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.
- X. AS-BUILT DRAWINGS: As-built drawings, the intent of which is to record the actual in-place construction so that any future renovations or tie-ins can be anticipated accurately, shall be required. All authorizations given by the Engineer to deviate from the plans shall be drawn on the job site plans. All deviations from alignments, elevations and dimensions which are stipulated on the plans shall be recorded on the as-built drawings. Final as-built drawings shall be submitted to the Engineer for review and approval. After the Engineer approves the as-built drawings, the contractor shall submit an electronic copy in Adobe PDF format on CD ROM.
- AA. ASBESTOS CONTAINING MATERIALS: The use of asbestos containing materials or equipment is prohibited. The Contractor shall insure that all materials and equipment incorporated in the project are asbestos-free
- BB. WORKER SAFETY: The Contractor shall provide, install and maintain in satisfactory condition all necessary protective facilities and shall take all necessary precautions for the protection and safety of its workers in accordance with the Occupational Safety and Health Standards for the State of Hawaii. The Engineer shall have the right to suspend the performance of the work in accordance with sub-section 7.20 - Suspension of Work of the General Conditions.
- CC. TOILET FACILITIES: All toilet facilities constructed at the project site shall be in accordance with the Public Health Regulations of the State Department of Health (DOH).

All necessary precautions shall be observed at the project site. The use of sanitary facilities shall be strictly enforced and workers violating these provisions shall be promptly discharged.

- DD. SIGNS: Whenever the project involves closing or obstructing any public thoroughfare, the Contractor shall provide traffic signs conforming to the applicable provisions of the current edition of the "Manual on Uniform Traffic Control Devices for Streets and Highways", published by the Federal Highway Administration as directed by the Engineer for the purpose of diverting or warning traffic prior to the construction area. All traffic signs shall bear proper wording stating thereon the necessary information as to diverting or warning traffic.

When indicated in the Proposal, the Contractor shall provide a project sign, size 4'-0" x 7'-0" to be placed as directed by the Engineer. The sign shall be constructed in accordance with Section 01581 - Project Sign of these specifications and approved by the Engineer. All wording, type and size of lettering and color selection shall be as specified in these specifications or as approved by the Engineer.

All signs shall be kept neat and clean, and properly erected at all times.

- EE. FIELD OFFICE AREA FOR DEPARTMENT: When indicated in the Proposal, the Contractor shall provide a housed working area of at least 100 square feet adjacent to the Contractor's office for the Department's use. This area will be used by the Engineer to perform tests and to store equipment. As a minimum, the field office shall include the following: standard sized office desk and chair, lighting, ventilation, window-type air conditioning rated at 5,000 BTU, door and window with locking hardware, electrical outlets, and working communications facilities (a cellular telephone is acceptable). The Department will pay for all long distance toll charges made by the Engineer.

- FF. QUANTITIES: All bids will be compared on the basis of quantities of work to be done as shown in the Proposal; the quantities shown in the Unit Price items are estimated, being given as a basis for comparison of bids. The Board reserves the right to increase or decrease the quantities given under the items or delete items entirely as may be required during the progress of the work.

- GG. OTHER HEALTH MEASURES: Forms of work site exposure or conditions which may be detrimental to the health or welfare of workers or of the general public shall be eliminated or reduced to safe levels as required by the DOH codes, standards, and regulations. Suitable first aid kits and a person qualified to render first aid, as specified in the DOH regulations, shall be provided at all times when work is scheduled.

- HH. HAWAII BUSINESS OR COMPLIANT NON-HAWAII BUSINESS REQUIREMENT: Bidders (Contractors) shall be incorporated or organized under the laws of the State or be registered to do business in the State as a separate branch or division that is capable of fully performing under the contract, as stipulated in §3-122-112 HAR.

- II. COMPLIANCE WITH §3-122-112 HAR:
As a condition for award of the contract and as proof of compliance with the requirements of 103D-310(c) HRS, the apparent low bidder shall furnish the required documents to the Department. If the valid required certificates are not submitted on a timely basis for award of

a contract, a bidder otherwise responsive and responsible may not receive the award. Bidder is responsible to apply for and submit the following documents to the Department.

- A. TAX CLEARANCE REQUIREMENTS (HRS Chapter 237): Bidder shall obtain a tax clearance certificate from the Hawaii State Department of Taxation (DOTAX) and the Internal Revenue Service (IRS). The certificate is valid for six months from the most recently approved stamp date on the certificate; the certificate must be valid on the date received by the Department.
- B. Department of Labor (DLIR) “**Certificate of Compliance**”. (HRS Chapter 383 - Unemployment Insurance, Chapter 386 - Workers’ Compensation, Chapter 392 - Temporary Disability Insurance, and 393 – Prepaid Health Care): Bidder shall obtain a certificate of compliance from the Hawaii State Department of Labor and Industrial relations (DLIR). The certificate is valid for six months from the date of issue; certificates must be valid on the date received by the Department.
- C. Department of Commerce and Consumer Affairs (DCCA), Business Registration Division (BREG) “**Certificate of Good Standing**”. Bidder shall obtain a certificate of good standing issued by the Department of Commerce and Consumer Affairs (DCCA), Business Registration Division (BREG). The certificate of good standing is valid for six months from the date of issue; certificates must be valid on the date received by the Department.

Alternately, instead of separately applying for these certificates at the various state agencies, bidder may choose to use the Hawaii Compliance Express (HCE), which allows businesses to register online through a simple wizard interface at <http://vendors.ehawaii.gov> to acquire a “Certificate of Vendor Compliance” indicating the bidder’s status is compliant with the requirements of §103D-310(c), HRS, and shall be accepted for contracting and final payment purposes. Bidders that elect to use the new HCE services will be required to pay an annual fee of \$15.00 to the Hawaii Information Consortium, LLC (HIC). Bidders choosing not to participate in the HCE program will be required to provide the paper certificates as instructed in the previous paragraphs.

P R O P O S A L

FOR

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION
State of Hawaii

JOB NO. C00BO91C
ANUENUE FISHERIES RESEARCH CENTER
ANNEX FACILITY IMPROVEMENTS – PHASE 1B (SEWER IMPROVEMENTS)
SAND ISLAND, OAHU, HAWAII

_____, 20__

Chief Engineer
Engineering Division
Department of Land and Natural Resources
State of Hawaii
Honolulu, Hawaii

Dear Sir:

The undersigned, having carefully examined the local conditions and all available records and information covering conditions which may affect the cost of the work to be performed, and having carefully examined the Plans and Specifications, and other contract documents, hereby proposes to furnish and pay for all materials, tools, equipment, labor and other incidental work necessary to decommission the existing cesspool and construct a low-pressure sewer system, inclusive of all appurtenances, and connect the grinder pump system to the existing electrical system as required or called for in this Proposal, all according to the true intent and meaning of the Notice to Bidders, Information and Instructions to Bidders, Proposal, Detailed Specifications, Interim General Conditions, Plans, and any and all addenda for:

JOB NO. C00BO91C
ANUENUE FISHERIES RESEARCH CENTER
ANNEX FACILITY IMPROVEMENTS – PHASE 1B (SEWER IMPROVEMENTS)
SAND ISLAND, OAHU, HAWAII

on file in the office of the Engineering Division for the TOTAL BASE BID (Items 1 to 14) of:

_____ Dollars (\$ _____)

and will fully complete all work under this contract within 260 consecutive calendar days from the date of written notice to proceed, including date of said order, said total sum being itemized on the following pages.

PROPOSAL

Item No.	Quantity	Unit	Description	Unit Price	Total
1.		LS	Demolition Work; to include demolition, hauling & disposal as required to construct new improvements.	LS	\$
2.		LS	Removal, abandonment, and backfilling of the existing cesspool, including pumping and disposal of contents.	LS	\$
3.		LS	Best Management Practice (BMPs) including but not limited to the following filter socks, silt sock, and woven fabric sandbags with coarse sand, in place complete.	LS	\$
4.	80	CY	Trenching and Backfill, as required to construct new improvements.	\$	\$
5.	20	SY	4" Asphalt Concrete Pavement, including but not limited to AC pavement, prime coat, aggregate base course and subbase course, and scarification and recompaction, in place complete.	\$	\$
6.	80	SY	2" Aggregate Pavement, including but not limited to aggregate base course, and subbase course, and scarification and recompaction, in place complete.	\$	\$
7.	20	LF	10' Chain-link fence, galvanized steel, in place complete.	\$	\$
8.	345	LF	1-1/4" HDPE sewer line, including but not limited to the following piping, warning tape, in place complete.	\$	\$
9.	10	LF	4" PVC sewer line, including but not limited to the following piping, warning tape, in place complete.	\$	\$
10.	1	EA	Grinder pump, in place complete.	\$	\$
11.		LS	Electrical connection of grinder pump, in place complete.	LS	\$
12.		LS	Project Sign, in place complete.	LS	\$
13.	ALLOWANCE		Field Office	Allowance	\$10,000

Subtotal Base Bid (Items 1-13)				\$	\$
14.		LS	Mobilization and Demobilization (not to exceed 10% of the Subtotal Base Bid)	LS	\$
Total Base Bid (Items 1-14)				\$	\$

RECYCLED PRODUCTS PREFERENCE

This project allows a 10% price preference for recycled products in accordance with HRS 103D-1005. Please indicate your selection of recycled or non-recycled product by indicating its cost FOB jobsite unloaded in the schedule below, including applicable General Excise & Use Taxes.

<u>DESCRIPTION</u>	<u>RECYCLED PRODUCT COST</u>	<u>NONRECYCLED PRODUCT COST</u>
_____	\$ _____	\$ _____
_____	\$ _____	\$ _____
_____	\$ _____	\$ _____
_____	\$ _____	\$ _____

The bidder requesting a recycled product preference shall also complete and submit the form “CERTIFICATION OF RECYCLED CONTENT” as shown in the Interim General Conditions and provide all supporting information with this proposal. Additional information may be requested to qualify a product.

The following definitions are applicable to the CERTIFICATION OF RECYCLED CONTENT form:

"Post-consumer recovered material" means any product used by a consumer, including a business that purchases the material, that has served its intended end use, and that has been separated or diverted from the solid waste stream for the purpose of use, reuse, or recycling.

"Product" includes materials, manufactures, supplies, merchandise, goods, wares, and foodstuffs.

"Recovered material" means waste material and by-products that have been separated, diverted, or removed from the solid waste stream after a manufacturing process for the purpose of use, reuse, or recycling. Recovered material does not include those materials and by-products that are generated and normally reused on-site or within original manufacturing processes (such as mill broke, in the case of paper products).

"Recycled content" means the percentage of a product composed of recovered material, or post-consumer recovered material, or both.

"Recycled product" means a product containing recovered material, or post-consumer recovered material, or both.

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

APPRENTICESHIP AGREEMENT PREFERENCE

1. If applicable to this project, any bidder seeking the preference must be a party to an apprenticeship agreement registered with the State Department of Labor and Industrial Relations (DLIR) at the time the bid is submitted for each apprenticeable trade the bidder will employ to construct the project. “Employ” means the employment of a person in an employer-employee relationship.
 - a. The apprenticeship agreement shall be registered with the DLIR and conform to the requirements of Hawaii Revised Statutes Chapter 372.
 - b. Subcontractors do not have to be a party to an apprenticeship agreement for the bidder to obtain preference.
 - c. The bidder is not required to have apprentices in its employ at the time the bid is submitted to qualify for the preference.
2. A bidder seeking the preference must state the apprenticeable trade the bidder will employ for each trade to be employed to perform the work by submitting a completed signed original *Certification Form 1* verifying participation in an apprenticeship program registered with DLIR. “Apprenticeable trade” shall have the same meaning as “apprenticeable occupation” pursuant to Hawaii Administrative Rules (HAR) §12-30-5.
 - a. The *Certification Form 1* shall be authorized by an apprenticeship sponsor listed on the DLIR list of registered apprenticeship programs. “Sponsor” means an operator of an apprenticeship program and in whose name the program is approved and registered with the DLIR pursuant to HAR §12-30-1.
 - b. The authorization shall be an original signature by an authorized official of the apprenticeship sponsor.
 - c. The completed signed original *Certification Form 1* for each trade must be submitted with the bid. Previous certifications shall not apply.
 - d. When filling out the *Certification Form 1*, the 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 DLIR website. “Registered apprenticeship program” means a construction trade program approved by the DLIR pursuant to HAR §12-301 and §12-30-4.
 - e. The *Certificate Form 1* and the List of Construction Trades in Registered Apprenticeship Programs is available on the DLIR website at: <http://hawaii.gov/labor/wdd>.
3. Upon receiving the *Certification Form 1*, the Procurement Officer will verify that the apprenticeship program is on the List of Construction Trades in Registered Apprenticeship Programs and that the form is signed by an authorized official of the Apprenticeship Program Sponsor. If the programs and signature are not confirmed by the DLIR, the bidder will not qualify for the preference.
4. If the bidder is certified to participate in an apprenticeship program for each trade which will be employed by the bidder for the project, a preference will be applied to decrease the bidder’s bid amount by five percent (5%) for evaluation purposes.

5. Should the bidder qualify for other preferences, all applicable preferences shall be applied to the bid price.

CONTRIBUTIONS BY STATE AND COUNTY CONTRACTORS PROHIBITED

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

CONDITION OF AWARD

It is understood that the award of the contract will be made on the basis of the lowest responsible Total Base Bid (Items 1 to 14) selected by the Board of Land and Natural Resources. Write the total of bid items 1 to 14 on page P-1.

It is understood and agreed that the Board of Land and Natural Resources reserves the right to reject any and/or all bids and waive any defects when, in the Board's opinion, such rejection or waiver will be for the best interest of the State of Hawaii.

In the event all bids exceed available funds certified by the appropriate fiscal officer, the head of the purchasing agency responsible for the procurement in question is authorized in situations where time or economic considerations preclude resolicitation of work of a reduced scope to negotiate an adjustment of the bid price, including changes in the bid requirements, with the low responsible and responsive bidder, in order to bring the bid within the amount of available funds. It is understood and agreed upon that the head of the purchasing agency may delete a portion or all of any item(s) in the proposal at the stated unit or lump sum price as necessary to stay within the available funding. The bidder is responsible to make an earnest effort to represent the actual cost of each item, including all materials, labor, equipment, overhead and profit in their bid proposal to preclude claims of anticipated profit or loss of profit because of an unbalanced bid proposal.

It is also understood that if a mutually agreeable cost for the reduced scope of work necessitated by a lack of available funds cannot be agreed upon between the bidder and the head of the purchasing agency within 14 calendar days after the bid opening, then the bid may be rejected in the best interest of the purchasing agency, and the head of the purchasing agency may negotiate in progressive order (lowest to highest) with the next lowest responsible and responsive bidder.

It is also understood and agreed that the award of the contract shall be conditioned upon funds being made available for this project and further upon the right of the Board of Land and Natural Resources to hold all bids received for a period of one hundred eighty (180) days from the date of the opening thereof, unless otherwise required by law, during which time no bid may be withdrawn.

It is also understood that Notice to Proceed may be delayed up to one (1) year after the bid opening date, and that no additional compensation will be provided for any claim for escalation or delay for issuance of Notice to Proceed on or before that date.

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 increased or decreased, in accordance with the provisions of the Contract Specifications.

It is also understood and agreed that the estimated quantities shown for the items for which a UNIT PRICE is asked in this Proposal are only for the purpose of comparing on a uniform basis, bids offered for the work under this contract, and the undersigned agrees that he is satisfied with and will at no time, dispute said estimated quantities as a means of claims for anticipated profit or loss of profit, because of a difference between the quantities of the various classes of work done or the materials and equipment installed, and the said estimated quantities. On UNIT PRICE bids, payment will be made only for the actual number of units incorporated into the finished project at the contract UNIT PRICE.

After the HIEPRO bid due date and time, the figures will be extended and/or totaled in accordance with the bid prices of the acceptable proposals and the totals will be compared. In the comparison of bids, words written in the proposal shall govern over figures and unit prices will govern over totals. Until the award of the contract, however, the right will be reserved to reject any and all proposals and to waive any

defects or technicalities as may be deemed best for the interest of the State.

It is also understood and agreed that liquidated damages in the amount of one hundred fifty and no/100 Dollars (\$ 150.00) for each and every calendar day in excess thereof prior to completion of the contract shall be withheld from payments due to the Contractor.

It is also understood and agreed that if this bid is accepted, the successful bidder must enter into and execute a contract with the Board of Land and Natural Resources and furnish a Performance and Payment Bond, as required by law. These bonds shall conform to provisions of Section 103D-324 and 325, Hawaii Revised Statutes and any law applicable hereto.

It is also understood and agreed that the successful bidder will provide all necessary labor, materials, tools, equipment, and other incidentals 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 Engineer as therein set forth.

It is understood that by submitting this proposal, the undersigned is declaring that his firm has not been assisted or represented on this matter by an individual who has, in a State capacity, been involved in the subject matter of this contract in the past two years.

It is understood that by submitting this proposal in accordance with HAR 3-122-192, the undersigned is declaring that the price submitted is independently arrived without collusion.

It is also understood that by submitting this proposal, a Certification for Safety and Health Programs for bids in excess of \$100,000 (in accordance with HRS 396-18), the undersigned certifies that his organization will have a written safety and health plan for this project that will be available and implemented by the Notice to Proceed date of this project. Details of the requirements of this plan may be obtained from the Department of Labor and Industrial Relations, Occupational, Safety and Health Division (HIOSH).

It is further understood and agreed that the successful bidder shall comply with paragraph 3.1.a "SUBCONTRACTING" of the General Provisions which requires that the contractor shall perform with his own organization and with the assistance of workmen under his immediate superintendence, work of a value not less than twenty percent (20%) of the value of all work embraced in the Contract, except that certain contract items of work, if specifically referred to in the special provisions, will be exempted from said twenty percent requirement.

Compliance with §103-310 HRS. As a condition of award all bidders shall comply with all laws governing entities doing business in the State, including Chapter 237 HRS (general excise tax); Chapter 383 HRS (employment security – unemployment insurance); Chapter 386 HRS (workers compensation); Chapter 392 HRS (temporary disability insurance); and Chapter 393 HRS (pre-paid health care), and shall produce all documents to the State (DLNR, Engineering Division) required to demonstrate compliance with these subsections. Any bidder making a false affirmation or certification under this subsection shall be suspended and may be debarred from further offerings or awards pursuant to §103D-702 HRS.

RECEIPT OF ADDENDA

The bidder also acknowledges receipt of any and all addenda issued by the Engineering Division, by recording the date of receipt of the respective addenda in the space provided below:

<u>Addendum</u>	<u>Date Received</u>	<u>Addendum</u>	<u>Date Received</u>
No. 1	_____	No. 5	_____
No. 2	_____	No. 6	_____
No. 3	_____	No. 7	_____
No. 4	_____	No. 8	_____

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

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

JOINT CONTRACTORS OR SUBCONTRACTORS
TO BE ENGAGED ON THIS PROJECT

The Bidder agrees that the following is a complete listing of all joint contractors or subcontractors covered under Chapter 444, Hawaii Revised Statutes (HRS), who will be engaged by the Bidder on this project to perform the required work indicated pursuant to Section 103D-302, HRS. 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. The Bidder certifies that the completed listing of joint contractors or subcontractors fulfills the requirements for the project and the Bidder, together with the listed subcontractors or joint contractors have all the specialty contractor's licenses to complete the work, except as provided for in HRS §103D-302(b). Failure of the Bidder to comply with this requirement may be just cause for rejection of the bid.

“A” General Engineering Contractors and “B” General Building Contractors are reminded that due to the Hawaii 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 in which 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” 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 (*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.

General Engineering “A” Contractors automatically have these “C” specialty contractor’s licenses: C-3, C-9, C-10, C-17, C-24, C-31a, C-32, C-35, C-37a, C-37b, C-38, C-43, C-49, C-56, C-57a, C-57b and C-61.

General Building “B” Contractors automatically have these “C” specialty contractor’s licenses: C-5, C-6, C-10, C-12, C-24, C-25, C-31a, C-32a, C-42a and C-42b.

In completing the Joint Contractors or Subcontractors List, describe the specialty contractor’s nature and scope of work to be performed 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 and scope of work to be performed on this project.

List only one joint contractor or subcontractor per required specialty contractor’s classification, unless within the same specialty, the work of each joint contractor or subcontractor can be described so that there is no overlap in work descriptions.

If a contractor’s license is required by law for the performance of the work which is called for in this bid, the bidder and all subcontractors must have the required license before the submission of the bidder’s proposal in the case of a non-federal aid project, and for federal-aid projects, the bidder must have the required license prior to the award of the project and all subcontractors prior to the start of the subcontracted work.

COMPLETE FIRM NAME OF JOINT CONTRACTOR OR SUBCONTRACTOR	NATURE AND SCOPE OF WORK TO BE PERFORMED

Enclosed herewith is a:

- 1. Surety Bond (*1))
- 2. Legal Tender (*2))
- 3. Cashier's Check (*3))
- 4. Certificate of Deposit (*3)) in the
- 5. Certified Check (*3)) amount
- 6. Official Check (*3)) of
- 7. Share Certificate (*3))
- 8. Teller's Check (*3))
- 9. Treasurer's Check (*3))

(Cross Out Those Not Applicable)

Dollars (\$ _____)

as required by law.

Exact Legal Name of Company, Joint Venture or Partnership

Company is:

Sole Proprietor
 Partnership
 Corporation
 Joint Venture
 Other _____

Contractor's License No.: _____

Federal I.D. No.: _____

Hawaii General Excise Tax License I.D. No.: _____

Payment address (other than street address below): _____

City, State, Zip Code: _____

Business Address (street address): _____

City, State, Zip Code: _____

Respectfully submitted,

By _____
 Authorized (Original) Signature (*4)

Title: _____

Print Name: _____

Date: _____

Telephone No.: _____

E-Mail Address: _____

NOTES:

1. Surety bond underwritten by a company licensed to issue bonds in this State;
2. Legal tender; or
3. A certificate of deposit; share certificate; or cashier's, treasurer's, teller's, or official check drawn by, or a certified check accepted by, and payable on demand to the State by a bank, a savings institution, or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration.
 - A. These instruments may be utilized only to a maximum of \$100,000.
 - B. If the required security or bond amount totals over \$100,000, more than one instrument not exceeding \$100,000 each and issued by different financial institutions shall be accepted.
4. Please attach to this page evidence of the authority of this officer to submit bids on behalf of the Company and also the names and residence addresses of all officers of the Company.
5. Fill in all blank spaces with information asked for or bid may be invalidated. PROPOSAL MUST BE INTACT, MISSING PAGES MAY INVALIDATE YOUR BID.

End of Proposal

SPECIAL PROVISIONS

Amend INTERIM GENERAL CONDITIONS, dated October 1994, as follows:

Section 2 – Proposal Requirements and Conditions

1. **AMEND** Section 2.1 Qualification of Bidder with the following:

Written Notice of Intent to Bid or Offer: A written Notice of Intent to Bid is not required for the Solicitation.

Standard Qualification Questionnaire: Bidders may be required to complete a standard qualifications questionnaire. When requested, the information shall be furnished within two working days or longer at the discretion of the Engineer. Failure to furnish the requested information within the time allowed may be grounds for a determination of non-responsibility, in accordance with HRS Section 103D-310 and HAR Section 3-122-108.

Hawaii Business or Compliant Non-Hawaii Business Requirement: Bidders shall be incorporated or organized under the laws of the State or be registered to do business in the State as a separate branch or division that is capable of fully performing under the contract, as stipulated in §3-122-112 HAR. A certified letter is not required prior to bid opening.

Compliance with §3-122-112 HAR: As a condition for award of the contract and as proof of compliance with the requirements of 103D-310(c) HRS, the apparent low bidder shall furnish the required documents to the Department. If the valid required certificates are not submitted on a timely basis for award of a contract, a bidder otherwise responsive and responsible may not receive the award. Bidder is responsible to apply for and submit the following documents to the Department.

- A. Tax Clearance (HRS Chapter 237): Bidder shall obtain a tax clearance certificate from the Hawaii State Department of Taxation (DOTAX) and the Internal Revenue Service (IRS). The certificate is valid for six months from the most recently approved stamp date on the certificate; the certificate must be valid on the date received by the Department.
- B. Department of Labor (DLIR) “Certificate of Compliance”. (HRS Chapter 383 - Unemployment Insurance, Chapter 386 - Workers’ Compensation, Chapter 392 - Temporary Disability Insurance, and 393 – Prepaid Health Care): Bidder shall obtain a certificate of compliance from the Hawaii State Department of Labor and Industrial relations (DLIR). The certificate is valid for six months from the date of issue; certificates must be valid on the date received by the Department.
- C. Department of Commerce and Consumer Affairs (DCCA), Business Registration Division (BREG) “Certificate of Good Standing”. Bidder shall obtain a certificate of good standing issued by the Department of Commerce and Consumer Affairs (DCCA), Business Registration Division (BREG). The certificate of good standing is valid for six months from the date of issue; certificates must be valid on the date received by the Department.

Hawaii Compliance Express. Alternately, instead of separately applying for these certificates at the various state agencies, bidder may choose to use the Hawaii Compliance Express (HCE), which allows businesses to register online through a simple wizard interface at <http://vendors.hawaii.gov> to acquire a “Certificate of Vendor compliance” indicating that bidder’s status is compliant with requirements of §103D-310(c), HRS, shall be accepted for contracting and final payment purposes.

Bidders that elect to use the new HCE services will be required to pay an annual fee of \$15.00 to the Hawaii

Information Consortium, LLC (HIC). Bidders choosing not to participate in the HCE program will be required to provide the paper certificates as instructed in the previous paragraphs.

2. **ADD** Section 2.4a, Pre-Bid Conferences

Required Pre-bid Conferences: For construction and design-build projects with an estimated value of \$500,000 or more and solicited under the competitive sealed bid method (103D-302 HRS); and for construction and design-build projects with an estimated value of \$100,000 or more and solicited under the competitive sealed proposal method (103D-303 HRS); a pre-bid conference is required.

Other Pre-Bid Conferences: The Department may require a pre-bid conference for construction or design-build projects that are below the dollar threshold listed in above or when projects have special or unusual requirements.

Other Conditions: The Department may require the prospective Bidders to make a physical inspection of the project site and make attendance at the pre-bid conference a condition for submitting an offer.

Nothing stated at the pre-bid conference shall change the solicitation unless a change is made by written addendum.

3. **DELETE** Section 2.5, Addenda and Interpretations, in its entirety and replace with the following:

“Discrepancies, omissions, or doubts as to the meaning of drawings and specifications should be communicated using the question and answer section on the HIEPRO solicitation for interpretation and must be received in the time frame set in the HIEPRO solicitation. Any interpretation, if made and any supplemental instructions will be in the form of written addenda to the plans and specifications and made available prior to the offer due date. It shall be the prospective bidder’s sole responsibility to verify and obtain any said addenda. Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligation under his bid as submitted. All addenda so issued shall become part of the contract documents.”

Section 3 – Award and Execution of Contract

1. **AMEND** Section 3.3, Award of Contract, by deleting “sixty (60)” and replacing with “one hundred eighty (180)” in the first paragraph.

2. **AMEND** Section 3.3, Award of Contract, by adding the following after the first paragraph:

“If the contract is not awarded within the one hundred eighty (180) days, the Department may request the successful Bidder to extend the time for the acceptance of its bid. The Bidder may reject such a request without penalty; and in such case, the Department may at its sole discretion make a similar offer to the next lowest responsive and responsible bidder and so on until a bid is duly accepted or until the Department elects to stop making such requests.”

3. **AMEND** Section 3.9, Notice to Proceed, by replacing the last paragraph with the following:

In the event the Notice to Proceed is not issued within three hundred and sixty-five (365) calendar days after the date of bid opening, the Contractor may submit a claim for increased labor and materials costs (but not overhead costs). The claim shall be for labor and material costs incurred after 365 days and the full duration of the contract time allowed for the

performance of the work (as specified on Page P-1 of the [Bid] PROPOSAL) have elapsed. Such claims shall be accompanied with the necessary documentation to justify the claim. No payments will be made for escalation costs that are not fully justified as determined by the State.

4. **ADD** Section 3.10, Protests:

“3.10 PROTESTS—Pursuant to Section 103D-701, Hawaii Revised Statutes, an actual or prospective offeror who is aggrieved in connection with the solicitation or award may submit a protest. Any protest shall be submitting in writing to the Chairperson, Department of Land and Natural Resources, 1151 Punchbowl Street, Honolulu, Hawaii 96813, or designee as specified in the solicitation.

A protest shall be submitted in writing within five (5) working days after the aggrieved person knows or should have known the facts giving rise thereto; provided that a protest based upon the content of the solicitation shall be submitted in writing prior to the date set for receipt of offers. Further provided that a protest of an award or proposed award shall be submitted within five (5) working days after the posting of the award of the contract.

The notice of award, if any, resulting from this solicitation shall be posted on the HIePRO website.

Section 5 – Control of Work

AMEND Section 5.8 Value Engineering Incentive by deleting “\$100,000” and replacing with “\$250,000” in the first paragraph.

Section 6 – Substitution of Materials and Equipment

ADD the following to Section 6.3 Sub-paragraph b:

4. If the substitution meets all the requirements of the specifications and plans.

Section 7 – Prosecution and Progress

1. **DELETE** Section 7.2d in its entirety and replace with the following:

“d. Proof of Insurance Coverage

A Certificate of Insurance or other documentary evidence, to the satisfaction of the Engineer, that the Contractor has in place all insurance coverage required by the contract. The Certificate of Insurance shall contain wording which identifies the Project number and Project title for which the certificate of insurance is issued. Refer to the following for insurance requirements:

1. Insurance Requirements

- (a) **Obligation of Contractor** - Contractor shall not commence any work until it obtains, at its own expense, all required herein insurance. Such insurance must have the approval of the Department as to limit, form and amount and must be maintained with a company authorized by laws of the State to issue such insurance in the State of Hawaii. Coverage by a “Non-Admitted” carrier is permissible provided the carrier has a AM Best’s Rating of “A-VII” or better.

- (b) All insurance described herein will be maintained by the Contractor for the full period of the contract and in no event will be terminated or otherwise allowed to lapse prior to written certification of final acceptance of the work by the Department.
- (c) Certificate(s) of Insurance acceptable to the Department shall be filed with the Engineer prior to commencement of the work. Certificates shall identify if the insurance company is a “captive” insurance company or a “Non-Admitted” carrier to the State of Hawaii. The Best’s Rating must be stated for the “Non-Admitted” carrier. Certificates shall contain a provision that coverages afforded under the policies will not be canceled or changed until at least thirty (30) days written notice has been given to the Engineer by registered mail. The insurance policies shall name the State of Hawaii, its officers and employees as an additional insured and such coverage shall be noted on the certificate. Should any policy be canceled before final acceptance of the work by the Department, and the Contractor fails to immediately procure replacement insurance as specified, the Department, in addition to all other remedies it may have for such breach, reserves the right to procure such insurance and deduct the cost thereof from any money due to the Contractor.
- (d) Nothing contained in these insurance requirements is to be construed as limiting the extent of Contractor’s responsibility for payment of damages resulting from its operations under this contract, including the Contractor’s obligation to pay liquidated damages, nor shall it affect the Contractor’s separate and independent duty to defend, indemnify and hold the Department harmless pursuant to other provisions of this contract. In no instance will the Department’s exercise of an option to occupy and use completed portions of the work relieve the Contractor of its obligation to maintain the required insurance until the date of final acceptance of the work.
- (e) All insurance described herein shall be primary and cover the insured for all work to be performed under the contract, all work performed incidental thereto or directly or indirectly connected therewith, including traffic detour work or other work performed outside the work area, and all change order work.
- (f) The Contractor shall, from time to time, furnish the Engineer, when requested, satisfactory proof of coverage of each type of insurance required or a copy of the actual policies covering the work. Failure to comply with the Engineer’s request may result in suspension of the work, and shall be sufficient grounds to withhold future payments due the Contractor and to terminate the contract for Contractor’s default.
- (g) If the Contractor is self-insured, it shall furnish, upon the request and the satisfaction of the Engineer, any documentation to demonstrate the ability to self-insure itself. The Engineer, from time to time, can conduct an audit to determine the ability of the Contractor to be self-insured. Failure to comply with the Engineer’s request will be considered a material breach of the contract, and at the discretion of the Engineer, may be sufficient grounds to terminate the contract, suspend any work or withhold future payments.
- (h) It is the responsibility of the Contractor to notify the Department of any changes to its insurance policies or if the Contractor receives a notice of cancellation of any of its insurance policies. The Contractor will immediately provide written notice to the Department should the insurance policies evidenced on its Certificate of Insurance form be cancelled, limited in scope, or not renewed upon expiration.

2. Types of Insurance - The Contractor shall purchase and maintain insurance described below

which shall provide coverage against claims arising out of the Contractor's operations under the contract, whether such operations be by the Contractor itself or by the subcontractor or by anyone directly or indirectly employed by any of them or by anyone for whose acts any of them may be liable.

- (a) **Worker's Compensation.** The Contractor and all subcontractors shall obtain worker's compensation insurance for all persons whom they employ or may employ in carrying out the work under this contract. This insurance shall be in strict conformity with the requirements of the most current and applicable State of Hawaii Worker's Compensation Insurance laws in effect on the date of the execution of this contract and as modified during the duration of the contract.
- (b) **Commercial General Liability.** The Contractor shall obtain General Liability insurance with a limit of not less than \$1,000,000 per occurrence and \$2,000,000 aggregate. The insurance policy shall contain the following clauses: 1) "The State of Hawaii is added as an additional insured as respects to operations performed for the State of Hawaii."; and 2) "It is agreed that any insurance maintained by the State of Hawaii will apply in excess of, and not contributed with, insurance provided by this policy." The required limit of insurance may be provided by a single policy or with a combination of primary and excess policies."
- (c) **Comprehensive Automobile Liability.** The Contractor shall obtain Auto Liability insurance covering all owned, non-owned and hired autos with a combined single Limit of not less than \$1,000,000 per accident for bodily injury and property damage. The insurance policy shall contain the following clauses: 1) "The State of Hawaii is added as an additional insured as respects to operations performed for the State of Hawaii."; and 2) "It is agreed that any insurance maintained by the State of Hawaii will apply in excess of, and not contributed with, insurance provided by this policy." The required limit of insurance may be provided by a single policy or with a combination of primary and excess policies.

Furthermore, the Contractor's commercial general liability insurance and automobile liability insurance shall include coverage for bodily injury, sickness, disease or death of any person, arising directly or indirectly out of, or in connection with, the performance of work under this contract.

The Contractor's property damage liability insurance shall provide for all damages arising out of injury to or destruction of property of others including the Department's, arising directly or indirectly out of or in connection with the performance of the work under this contract including explosion or collapse.

The Contractor shall either:

- i. Require each of its subcontractors to procure and to maintain during the life of its subcontract, subcontractors' comprehensive general liability, automobile liability and property damage liability insurance of the type and in the same amounts specified herein; or
- ii. Insure the activities of its subcontractors in its own policy.

The Contractor will be permitted, in cooperation with insurers, to maintain a self-insured retention for up to 25% of the per occurrence combined single limits of the commercial

general liability and the automobile liability policies. The existence of the self-insured retention must be noted on the certificate of insurance coverage submitted to the Department or else it will be understood that the insurer is providing first dollar coverage for all claims. For all claims within the self-insured retention amount, the rights, duties and obligations between the Contractor and the Department shall be identical to that between a liability insurer and the Department, as an additional insured, as if there was no self-insured retention.

- (d) **Builder's Risk Insurance.** Unless included in the Specifications of this project, the Contractor shall not be required to provide builder's risk insurance. If required as noted in the Specifications, builder's risk insurance shall be provided during the progress of work and until final acceptance by the Department upon completion of the contract. It shall be "All Risk" (including but not limited to earthquake, windstorm and flood damage) completed value insurance coverage on all completed work and work in progress to the full replacement value thereof. Such insurance shall include the Department as additional name insured. The insurance policy shall contain the following clauses: 1) "The State of Hawaii is added as an additional insured as respects to operations performed for the State of Hawaii."; and 2) "It is agreed that any insurance maintained by the State of Hawaii will apply in excess of, and not contributed with, insurance provided by this policy." The required limit of insurance may be provided by a single policy or with a combination of primary and excess policies.

The Contractor shall submit to the Engineer for its approval all items deemed to be uninsurable. The policy may provide for a deductible in an amount of up to 25% of the amount insured by the policy. With respect to all losses up to any deductible amount, the relationship between the Contractor and the Department shall be that of insurer and additional insured as if no deductible existed".

2. **DELETE** Section 7.16 in its entirety and replace with the following:

"RESPONSIBILITY FOR DAMAGE CLAIMS; INDEMNITY – The Contractor shall indemnify the State and the Department against all loss of or damage to the State's or the Department's existing property and facilities arising out of any act or omission committed in the performance of the work by the Contractor, any subcontractor or their employees and agents. Contractor shall defend, hold harmless and indemnify the Department and the State, their employees, officers and agents against all losses, claims, suits, liability and expense, including but not limited to attorneys' fees, arising out of injury to or death of persons (including employees of the State and the Department, the Contractor or any subcontractor) or damage to property resulting from or in connection with performance of the work and not caused solely by the negligence of the State or the Department, their agents, officers and employees. The State or the Department may participate in the defense of any claim or suit without relieving the Contractor of any obligation hereunder. The purchase of liability insurance shall not relieve the Contractor of the obligations described herein.

The Contractor agrees that it will not attempt to hold the State and its Departments and Agencies and their officers, representatives, employees or agents, liable or responsible for any losses or damages to third parties from the action of the elements, the nature of the work to be done under these specifications or from any unforeseen obstructions, acts of God, vandalism, fires or encumbrances which may be encountered in the prosecution of the work.

The Contractor shall pay all just claims for materials, supplies, tools, labor and other just claims against the Contractor or any subcontractor in connection with this contract and the surety bond will not be released

by final acceptance and payment by the Department unless all such claims are paid or released. The Department may, but is not obligated to, withhold or retain as much of the monies due or to become due the Contractor under this contract considered necessary by the Engineer to cover such just claims until satisfactory proof of payment or the establishment of a payment plan is presented.

The Contractor shall defend, indemnify and hold harmless the State and its Departments and Agencies and their officers, representatives, employees or agents from all suits, actions or claims of any character brought on account of any claims or amounts arising or recovered under the Worker's Compensation Laws or any other law, by-law, ordinance, order or decree.

Section 8 – Measurement and Payment

1. **DELETE** Section 8.7a in its entirety and replace with the following:

- a. Tax Clearances from the State of Hawaii Department of Taxation and Internal Revenue Service, subject to section 103D-328, HRS, current within two months of issuance date indicating that all delinquent taxes levied or accrued under State Statutes against the contractor have been paid.

2. **ADD** Section 8.7d, Certificate of Compliance:

- d. A Certification from the Contractor affirming that the Contractor has, as applicable, remained in compliance with all laws as required by Section 103D-310, HRS, and Section 3-122-112, HAR. A contractor making a false affirmation shall be suspended and may be debarred pursuant to section 103D-702, HRS.

1. Certification of Compliance for Final Payment, State Procurement Office Form-22. Must be Signed Original.

3. **ADD** Section 8.7e, Hawaii Compliance Express:

- e. In lieu of submitting the tax clearances from Taxation and IRS, and SPO Form -22, the Contractor may choose to use the Hawaii Compliance Express as described on page SP-1 of this Special Provisions.

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DIVISION 1 – GENERAL REQUIREMENTS

SECTION 01019

GENERAL SPECIFICATIONS

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. Work shall consist of furnishing all labor, tools, materials and equipment necessary and required to construct in place complete all work as indicated on the drawings and as specified herein.

1.2 GENERAL

- A. Examination of Premises: The Contractor shall contact the Engineer and obtain permission before visiting the site.
- B. All lines and grades shall be established by a licensed surveyor, or licensed Civil Engineer, registered in the State of Hawaii. The Contractor shall submit evidence of current and valid registration.
- C. Notices: The Contractor shall notify the Engineer and give at least three (3) working days notice before starting any work.
- D. Disruption of Utility Services: All work related to the temporary disconnection of electrical system shall be pre-arranged with the Engineer so that any disruption of such services will be kept to a minimum. In the event temporary power hook up is required, the Contractor shall provide the necessary services.
- E. Contractor's Operations
 - 1. The Contractor must employ, insofar as possible, such methods and means of carrying out the work so as not to cause any interruption or interference to the facility's operations. Where the Contractor's operations would result in interruptions which would hamper the operations of the facilities, the Contractor shall rearrange the schedule of work accordingly.
 - 2. The Contractor shall maintain safe passageway to and from the facility for the user agency personnel and the public at all times.
- F. Lead Paint
 - 1. When the project includes paint to be disturbed that was applied prior to 1980, it shall be assumed to contain lead. The Contractor shall inform its employees, subcontractors, and all other persons engaged in the project that lead containing paints are present in the existing buildings at the job site and to follow the requirements of the Department of Labor and Industrial Relations, Division of

Occupational Safety and Health, Title 12, Subtitle 8, Chapter 148, Lead Exposure in Construction, Hawaii Administrative Rules (Chapter 12-148, HAR).

G. Parking Policy for Contractor

1. The Contractor and its employees will not be allowed to park in zones assigned to facility personnel.
2. Areas to be used by the Contractor shall be as designated by the Engineer. Any lawn damaged by the Contractor shall be restored as instructed by the Engineer at no cost to the State.

H. Toilet Accommodations: The Contractor may use the existing toilet facilities if so designated by the Engineer; however, it is the Contractor's responsibility to keep same clean and in a sanitary condition at all times.

I. Protection of Property: The Contractor shall continually maintain adequate protection of all its work from damage and shall protect all property, including but not limited to buildings, equipment, furniture, grounds, vegetation, material, utility systems located at and adjoining the job site. The Contractor shall repair, replace or pay the expense of repair of damages resulting from its operations.

J. Use of Power Driven Equipment: The Contractor is cautioned to take all necessary safety precautions to protect the facility personnel, and the public whenever power driven equipment is used.

K. Safety: The Contractor shall carefully read and strictly comply with the requirements of the Hawaii Occupational Safety and Health Law, Chapter 396, Hawaii Revised Statutes, as amended, is applicable and made a part of the Contract.

L. Clean Up Premises: The Contractor shall clean up and remove from premises all debris accumulated from operations as necessary or as directed. See also Section 7.25 of the General Conditions.

M. Responsibility

1. The State will hold the Contractor liable for all the acts of Subcontractors and shall deal only with the prime Contractor in matters pertaining to other trades employed on the job. The Contractor shall be responsible for coordinating the work of all trades on the job.
2. Should the Contractor discover any discrepancy in the plans or specifications, the Contractor shall immediately notify the Engineer before proceeding any further with the work, otherwise, the Contractor will be held responsible for any cost involved in correction of work placed due to such discrepancy.

N. Cooperation with Other Contractors: The State reserves the right at any time to contract for or otherwise perform other or additional work within the contract zone limits of this Contract. The Contractor of this project shall, to the extent ordered by the State, conduct its work so as not to interfere with or hinder the progress or completion of the work performed by other contractors.

O. Division of the Work: The Divisions and Sections into which these Specifications are divided shall not be considered an accurate or complete segregation of work by trades. This also applies to all work specified within each Section.

P. Drawings and Specifications

1. The Contractor shall not make alterations in the drawings and specifications. In the event the contractor discovers any errors or discrepancies, the Contractor shall immediately notify the Engineer in accordance with the General Conditions.
2. Where devices, or items, or parts thereof are referred to in the singular, it is intended that such reference shall apply to as many such devices, items or parts as are required to properly complete the work.
3. Specifications and drawings are prepared in abbreviated form and include incomplete sentences. Omission of words or phrases such as "the Contractor shall", "as shown on the drawings", "a", "an", and "the" are intentional. Omitted words and phrases shall be provided by inference to form complete sentences.

Q. Required Submittals

1. Required submittals as specified in the Technical Sections of these specifications include one or more of the following: Shop drawings; color samples; material samples; technical data; schedules of materials; schedules of operations; guarantees; operating and maintenance manuals; and as built drawings.
2. The Contractor shall make a comprehensive list of the required submittals, by Specification Section, and submit this list to the Engineer within 15 days after notice to proceed.
3. As Built Drawings: When as built drawings are required for submittal, the following shall apply:
 - a. As built drawings, the intent of which is to record the actual in place construction so that any future renovations or tie ins can be anticipated accurately, shall be required.
 - b. All deviations from alignments, elevations and dimensions which are stipulated on the plans shall be recorded in red on the as built drawings.
 - c. The following procedure shall be followed:
 - 1) Immediately after these changes are constructed in place, the Contractor shall record them on the field office plans.
 - 2) Within two weeks after final inspection of the project, the Contractor shall transfer the changes marked on the field office plans onto a clean copy of plans using a red pencil. Any deletions shall be so noted and redrawn as necessary. The Contractor shall stamp or mark the tracings "AS BUILT", and also sign and date each drawing so marked.
 - 3) The Contractor shall submit the as built drawings to the Engineer for review and approval. After the Engineer approves the as-built drawings, the Contractor shall submit an electronic copy in Adobe PDF format on CD ROM.

Any as built drawing which the Engineer determines does not accurately record the deviation shall be corrected by the State, and the Contractor shall be charged for the services.

END OF SECTION

SECTION 01050

UTILITIES SURVEY

PART 1 – GENERAL

1.01 DESCRIPTION:

This special provision includes requirements for a pre-construction survey to document existing conditions prior to construction. This survey will be used by the DLNR as a reference for evaluating any damage to existing facilities or private properties as a result of construction activities performed under this Contract. The pre-construction survey and monitoring of conditions during construction are required for this Project.

1.02 SUBMITTALS:

The Contractor shall submit the following.

- A. Prior to conducting the pre-construction survey, the Contractor shall submit a written plan summarizing the procedures to be employed in performing the survey. The written summary shall include the proposed methods to be utilized and the required personnel and equipment.
- B. Provide electronic documentation of all pre-construction survey work including copies of field notebooks, annotated photographs, digital media, sketches and inspection reports. Upon review and acceptance of the pre-construction survey, submit two (2) hard copies of the Survey Report and Photographic Survey as well as digital copies of all pre-construction documentation on digital media.

1.03 NOTIFICATION:

Notify the Officer-in-Charge at least one (1) week prior to conducting the survey. The Officer-in-Charge shall be allowed to accompany the Contractor on the pre-construction survey.

1.04 SURVEY OF PRE-CONSTRUCTION CONDITIONS:

- A. Prior to the start of construction on the Project, the Contractor shall conduct a thorough survey of the existing conditions within one hundred (100) feet of the centerline of the proposed sewer lines to be installed under the Project. The survey shall include the recording of observations in the field notebook, taking photographs, and making sketches of buildings, structures, and other improvements along the sewer line alignment. The Contractor shall also survey those existing areas that are outside of the required distance from the sewer lines but may potentially be affected by the Contractor's work including, but not limited to, Contractor's staging area, buildings and structures, and landscaping. Existing conditions shall be documented in detail and, where applicable, quantified in measurement of lengths, widths, and depths of cracks in structures and pavements, etc. Information obtained from this pre-construction survey shall be used by the Contractor to develop plans for repair, restoration, or replacement of existing improvements that will be affected by their construction activities, to develop and control their construction methods, and as a baseline to compare with post-construction conditions should claims against the Contractor from owners arise.

- B. Documentation of pre-construction survey information shall include the following:
1. Pre-Construction Survey Report - a comprehensive report presenting survey findings with detailed descriptions of existing improvements, including special features of note, defects (cracks and other damages), locations, dimensions, sketches, and other pertinent observations and measurements. Information shall be organized in a logical sequence. Photos will be printed on suitable paper to provide clear images of all noted features with no bleeding or smudging from the printing process. The report shall be printed on 8-1/2-inch by 11-inch bond paper, neatly bound with front and back covers.
 2. Pre-Construction Photographic Survey – a photographic log that provides visual documentation of the information presented in the Survey Report. Photographs shall be taken with a minimum nine (9) megapixel digital camera; and shall include a camera date and time stamp. Provide multiple photographs of locations/areas with defects to convey the scope of the defect and show sufficient detail (i.e. different angles, close-up, and panoramic views). Photographs shall be properly focused and with sufficient lighting. Identifying information (i.e. brief description of each improvement and location and unique identifying number) shall be provided for each photograph. A reference site map shall be provided with the approximate location of every photograph as identified by the photograph's unique number and an arrow depicting the orientation of the photograph.
- C. The Contractor shall submit two (2) copies of the Pre-Construction Survey Report and two (2) copies of the Photographic Survey. All required documents shall be submitted to the Officer-in-Charge within thirty (30) calendar days from the Notice to Proceed date. All submittal copies shall be produced from the Contractor's original documents (i.e. photographs shall be reprinted from electronic files; electronic media shall be professionally reproduced from originals; bindings, covers, labeling, and other presentation materials shall be the same quality as the original). The Contractor will not be allowed to start any construction activity on the Project until the Pre-Construction Survey has been satisfactorily completed and the required documents have been approved by the Officer-in-Charge.

PART 2 – MATERIALS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01090

STANDARD REFERENCES

PART 1 - GENERAL

Wherever used in the project, the following abbreviations will have the meanings listed:

<u>Abbreviation</u>	<u>Company</u>
AA	Aluminum Association Incorporated 818 Connecticut Avenue, N.W. Washington, D.C. 20006
AASHTO	American Association of State Highway and Transportation Officials 444 North Capitol Street, N.W., Suite 225 Washington, D.C. 20001
ACI	American Concrete Institute P.O. Box 19150 Detroit, MI
AEIC	Association of Edison Illuminating Companies 51 East 42nd Street New York, NY 10017
AFBMA	Anti-Friction Bearing Manufacturer's Association 60 East 42nd Street New York, NY 10017
AGA	American Gas Association 8501 East Pleasant Valley Road Cleveland, OH 44131
AGMA	American Gear Manufacturer's Association 1330 Massachusetts Avenue, N.W. Washington, D.C.
AISC	American Institute of Steel Construction 101 Park Avenue New York, NY 10017
AISI	American Iron and Steel Institute 1000 16th Street, N.W. Washington, D.C. 20036

<u>Abbreviation</u>	<u>Company</u>
AITC	American Institute of Timber Construction 333 West Hampden Avenue Englewood, CO 80110
AMCA	Air Moving and Conditioning Association, Inc. 30 West University Drive Arlington Heights, IL 60004
ANSI	American National Standards Institute, Inc. 1430 Broadway New York, NY 10018
APA	American Plywood Association 1119 A Street Tacoma, WA 98401
API	American Petroleum Institute 1801 K Street N.W. Washington, DC 20006
ARI	Air-Conditioning and Refrigeration Institute 1814 North Fort Myer Drive Arlington, VA 22209
ASCE	American Society of Civil Engineers 345 East 47th Street New York, NY 10017
ASCII	American Standard Code for Information Interchange United States of America Standards Institute 1430 Broadway New York, NY 10018
ASE Code	American Standard Safety Code for Elevators, Dumbwaiter and Escalators American National Standards Institute 1430 Broadway New York, NY 10018
ASHRAE	American Society of Heating, Refrigeration and Air Conditioning Engineers United Engineering Center 345 East 47th Street New York, NY 10017

<u>Abbreviation</u>	<u>Company</u>
ASME	American Society of Mechanical Engineers 345 East 47th Street New York, NY 10017
ASTM	American Society for Testing and Materials 1916 Race Street Philadelphia, PA 19103
AWPA	American Wood Preservers Association 1625 Eye Street Washington, DC 20006
AWS	American Welding Society 2501 N.W. 7th Street Miami, FL 33125
AWWA	American Water Works Association 6666 West Quincy Avenue Denver, CO 80235
CBM	Certified Ballast Manufacturers 2120 Keith Building Cleveland, OH 44115
CMAA	Crane Manufacturers Association of America, Inc. (Formerly called: Overhead Electrical Crane Institute - OECI) 1326 Freeport Road Pittsburgh, PA 15238
CRSI	Concrete Reinforcing Steel Institute 180 North La Salle Street Chicago, IL 60601
CSA	Canadian Standards Association 178 Rexdale Boulevard Rexdale, Ontario, M9W 1R3, Canada
DEMA	Diesel Engine Manufacturer's Association 122 East 42nd Street New York, NY 10017

<u>Abbreviation</u>	<u>Company</u>
DIS	Division of Industrial Safety California Department of Industrial Relations 2422 Arden Way Sacramento, CA 95825
EI	Edison Electric Institute 90 Park Avenue New York, NY 10016
EIA	Electronic Industries Association 2001 Eye Street N.W. Washington, DC 20006
EJMA	Expansion Joint Manufacturer's Association 331 Madison Avenue New York, NY 10017
ESO	Electrical Safety Orders, California Administrative Code, Title 8, Chap. 4, Subarticle 5 Office of Procurement, Publications Section P.O. Box 20191 8141 Elder Creek Road Sacramento, CA 95820
FEDSPEC	Federal Specifications General Services Administration Specification and Consumer Information Distribution Branch Washington Navy Yard, Bldg. 197 Washington, DC 20407
FEDSTDS	Federal Standards (see FEDSPECS)
FM	Factory Mutual Research 1151 Boston-Providence Turnpike Norwood, MA 02062
HEI	Heat Exchange Institute 122 East 42nd Street New York, NY 10017
HI	Hydraulic Institute 1230 Keith Building Cleveland, OH 44115

<u>Abbreviation</u>	<u>Company</u>
IAPMO	International Association of Plumbing and Mechanical Officials 5032 Alhambra Avenue Los Angeles, CA 90032
ICBO	International Conference of Building Officials 5360 South Workman Mill Road Whittier, CA 90601
ICEA	Insulated Cable Engineers Association P.O. Box P South Yarmouth, MA 02664
IEEE	Institute of Electrical and Electronics Engineers, Inc. 345 East 47th Street New York, NY 10017
IES	Illuminating Engineering Society C/O United Engineering Center 345 East 47th Street New York, NY 10017
ISA	Instrument Society of America 400 Stanwix Street Pittsburgh, PA 15222
JIC	Joint Industrial Council 7901 Westpark Drive McLean, VA 22101
MILSPEC	Military Specifications Naval Publications and Forms Center 5801 Tabor Avenue Philadelphia, PA 19120
MSS	Manufacturers Standardization Society of the Valve and Fittings Industry, Inc. 127 Park Street, N.E. Vienna, VA 22180
NAAMM	National Association of Architectural Metal Manufacturers 100 South Marion Street Oak Park, IL 60302

<u>Abbreviation</u>	<u>Company</u>
NACE	National Association of Corrosion Engineers P.O. Box 986 Katy, TX 77450
NEC	National Electric Code National Fire Protection Association 470 Atlantic Avenue Boston, MA 02210
NEMA	National Electrical Manufacturer's Association 155 East 44th Street New York, NY 10017
NESC	National Electric Safety Code American National Standards Institute 1430 Broadway New York, NY 10018
NFPA	National Forest Products Association (Formerly called: National Lumber Manufacturer's Association) 1619 Massachusetts Avenue, N.W. Washington, DC 20036
OSHA	Occupational Safety and Health Act U.S. Department of Labor San Francisco Regional Office 450 Golden Gate Avenue, Box 36017 San Francisco, CA 94102
PPIC	The Plumbing & Piping Industry Council, Inc. Suite 402 510 Shatto Place Los Angeles, CA 90020
SAE	Society of Automotive Engineers 2 Pennsylvania Street New York, NY 10001
SAMA	Scientific Apparatus Makers Association One Thomas Circle Washington, DC 20005

<u>Abbreviation</u>	<u>Company</u>
SBCC	Southern Building Code Congress 1116 Brown-Marx Building Birmingham, AL 35203
SMACNA	Sheet Metal and Air Conditioning Contractors National Association, Inc. 8224 Old Courthouse Road Tysons Corner Vienna, VA 22180
SSPWC	Standard Specifications for Public Works Construction Building News, Inc. 3055 Overland Avenue Los Angeles, CA 90034
TEMA	Tubular Exchanger Manufacturer's Association 331 Madison Avenue New York, NY 10017
UBC	Uniform Building Code Published by ICBO
UL	Underwriters Laboratories Inc. 207 East Ohio Street Chicago, IL 60611
UMC	Uniform Mechanical Code Published by ICBO
UPC	Uniform Plumbing Code Published by IAPMO
USBR	Bureau of Reclamation U.S. Department of Interior Engineering and Research Center Denver Federal Center, Building 67 Denver, CO 80225
WWPA	Western Wood Products Association (Formerly called: West Coast Lumberman's Association - WCLA) Yeon Building Portland, CA 97204

PART 2 PRODUCTS (NOT USED)
PART 3 EXECUTION (NOT USED)

END OF SECTION

Anuenue Fisheries Research Center Annex Facility Improvements
Phase 1B (Sewer Improvements)
Job No. C00BO91C

Standard References
01090-7

SECTION 01100

ARCHAEOLOGICAL PROTECTION

PART 1 - GENERAL

- 1.1 This section covers the requirements for the protection and preservation of historical sites and values.

PART 2 PRODUCTS (NOT USED)

PART 3 - EXECUTION

- 3.1 **CONSTRUCTION METHOD:** Representatives of the State will from time to time examine the area as work proceeds. If historical values are noted, the State may order a halt to the work in the vicinity of the historical values until the State can examine further. The Contractor shall notify the State if he finds anything he suspects to be of historic significance and shall discontinue further work in the vicinity of the find until the State can examine the area. In either case, further work in the vicinity of such historical or suspected historical values may proceed only upon approval by the State. Such approval can be normally expected within one week and shall in no case require more than one month.
- 3.2 Pursuant to Chapter 6E of the Hawaii Revised Statutes (HRS), in the event any artifacts, or human remains are uncovered during construction operations, the contractor shall immediately suspend work and notify the Honolulu Police Department, The Department of Planning and Permitting's Civil Engineering Branch (phone number 768-8084), along with the Engineering Division of the Department of Land and natural Resources.

END OF SECTION

SECTION 01300

SUBMITTALS

PART 1 - GENERAL

1.1 SUBMITTALS

A. Shop drawings shall be required for:

1. Division 1 - Project Sign
2. Any others as called for in the plans, specifications or by the Engineer.

B. Other required submittals shall include:

1. Piping Layout.
2. Manufacturer's Data.
3. Certificates of Warranty.
4. Any item listed in the "Submittal List".
5. Any others as called for in the plans, specifications, or by the Engineer.

1.2 BIDDER'S SPECIAL RESPONSIBILITY FOR COORDINATING CONTRACTUAL WORK AND SUBMITTALS:

A. The Contractor is responsible for the coordination of all contractual work and submittals.

B. The Contractor shall have a rubber stamp made up in the following format:

CONTRACTOR NAME

PROJECT: _____

JOB NO: _____

THIS SUBMITTAL HAS BEEN CHECKED BY THIS GENERAL CONTRACTOR. IT IS CERTIFIED CORRECT, COMPLETE, 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 _____

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 8-1/2" x 11" format, or on one face of a cardstock tag (min. 3" x 6") tied to each sample. The tag on the samples should state what the sample is so that, if the tag is accidentally separated from the sample, it can be matched up again. The back of this tag will be used by the Engineer for his receipt, review, and log stamp and for any comments that relate to the sample.
- D. All submittals for material, equipment, and shop drawings listed in the contract documents, including dimensioned plumbing shop drawings, shall be required and shall be reviewed by the Engineer, prior to any ordering of materials and equipment.
- E. Unless otherwise noted, the Contractor shall submit to the Engineer for his review eight copies of all shop drawings, piping layout, and/or catalog cuts for fabricated items and manufactured items (including mechanical and electrical equipment) required for the construction. Drawings shall be submitted in sufficient time to allow the Engineer not less than twenty regular working days for examining the drawings.
- F. The drawing shall be accurate, distinct, and complete and shall contain all required information, including satisfactory identification of items, units and assemblies in relation to the contract drawings and specifications.
- G. Unless otherwise approved by the Engineer, shop drawings shall be submitted only by the Contractor, who shall indicate by a signed stamp on the drawings or other approved means that the Contractor has checked the shop drawings and that the work or equipment 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 listed. The practice of submitting incomplete or unchecked shop drawings for the Engineer to correct or finish will not be acceptable, and shop drawings which, in the opinion of the Engineer, clearly indicate that they have not been checked by the Contractor will be considered as not complying with the intent of the contract documents and will be returned to the Contractor for resubmission in the proper form.

- H. When the shop drawings 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 drawing 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 eight 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. The review of such drawings and catalog cuts by the Engineer shall not relieve the Contractor from responsibility for correctness of the dimensions, fabrication details, and space requirements or for deviations from the contract drawings and specifications, unless the Contractor has called attention to such deviations, in writing, by a letter accompanying the drawings and the Engineer approved the change or deviations, in writing, at the time of submission; nor shall review by the Engineer relieve the Contractor from the responsibility for errors in the shop drawings. When the Contractor does call such deviations to the attention of the Engineer, he shall state in his letter whether or not such deviations involve any deduction or extra cost adjustment.
- J. The approval of the above drawings, lists, prints, specifications, or other data shall in no way release the Contractor from his responsibility for the proper fulfillment of the requirements of this contract nor for fulfilling the purpose of the installation nor from his liability to replace the same should it prove defective or fail to meet the specified requirements.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SUBMITTAL LIST

Section No. - Title	Shop Drawings & Diagrams	Samples	Certificates (Prequalification/Quality Assurance, Material, Treatment, Applicator, etc.)	Product Data, Manufacturer' s Technical Literature, Sample Warranty and Brochures	SDS Sheets	Reports (Testing, Maintenance, Inspection, etc.)	O & M Manual	Equipment or Fixture Listing	Schedules (Project Installation)	Maintenance Service Contract	Field Posted As-Built Drawings	Others	Guaranty or Warranty	Manufacturer's Guaranty or Warranty (Greater than one year)
02050 – Demolition											■			
02220 – Excavation and Fill											■			
02221 – Trench Excavation and Backfill											■			
02510 – Asphalt Paving	■		■	■		■								
02230 – Erosion and Sediment Control											■			
02730 – Sanitary Sewerage Utilities	■			■		■	■						■	■
02734 – Grinder Pump	■		■	■		■	■	■					■	■
16011 – General Electrical Requirements											■			
16400 – Electrical Work	■		■	■									■	■

SECTION 01505
MOBILIZATION AND DEMOBILIZATION

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

A. Description: This section covers the requirements for mobilization and demobilization.

1.2 MOBILIZATION: Mobilization shall consist of the transporting, assembling, constructing, installing, and making ready for use at the job site, all the equipment, machinery, structures, utilities, materials, labor, and incidentals necessary to do the work covered by this contract.

1.3 DEMOBILIZATION: Demobilization shall consist of the dismantling and removal of the above-mentioned equipment, machinery, structures, utilities, materials, and incidentals, and the cleaning up of the site.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 GUIDELINES: If the Contractor utilizes private lands other than the sites provided by the Department for mobilization purposes, the provisions of this section shall apply, and the mobilization and demobilization work on said private lands shall be in accordance with the agreement between the Contractor and the land owner.

Any and all additional mobilization or demobilization costs in excess of the maximum amounts specified in the Proposal shall be included in the appropriate unit prices bid in the Proposal. The Contractor shall not receive any compensation for mobilization and demobilization in addition to those specified in the Proposal.

All equipment, machinery, buildings, utilities and incidentals mobilized and demobilized under this section shall remain the property of the Contractor.

END OF SECTION

SECTION 01530

BARRICADES

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. Description. This work shall consist of furnishing, installing and maintaining barricades in accordance with the requirements of the contract.

Barricade application shall be provided for in the latest edition of the FHWA publication, Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD), and as amended.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Hardware: Nails shall be galvanized wire nails. As many and as large a size as is practicable shall be used.
- B. Paints: Paints shall be exterior enamel paint of the best grade or first line as made by approved manufacturers.
- C. Sheet Reflecting Material: Sheet reflecting material shall conform to the applicable requirements of Subsection 712.20(C) of the "Standard Specifications for Road and Bridge Construction".
- D. Alternate Designs: Alternate barricade designs such as plastic molded barricades may be used subject to the Engineer's approval. The Contractor shall submit shop drawings or catalog cuts for approval.

PART 3 - EXECUTION

3.1 CONSTRUCTION REQUIREMENTS

- A. General: Barricades shall be constructed in a first class, workmanlike manner in accordance with details shown on the plans and as specified herein.

Barricades shall be in good condition and approved by the Engineer for use within the project limits. Barricade application and installation shall be as shown on the plans and as directed by the Engineer in accordance with the guidelines provided in the latest edition of the FHWA publication, Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD), and any amendments or revisions thereof as may be made from time to time.

Sand bags or other approved weights shall be provided where required or as directed by the Engineer. Sand bags or other approved weights shall not be placed on any striped barricade rail.

Steady burn and/or flashing lamps shall be required on selected barricades used during hours of darkness. Locations shall be as shown on the plans and as directed by the Engineer. Lamps shall be attached on the barricade ends closest to the traveled way and shall be visible to the motorist.

Barricades furnished and paid for as provided for as provided herein may be used for temporary detours, construction phasing, or other temporary traffic control work.

Barricades furnished and paid for use in temporary detours or construction phasing may be used for permanent location called for on the plans.

Upon completion of the construction work, barricades shall be left in place, relocated, or removed and disposed of as shown on the plans or as directed by the Engineer. Barricades left in place, or relocated to new permanent locations shall become the property of the State. Barricades directed to be removed and disposed of shall become the property of the Contractor.

- B. Painting: Wooden rails, frames and braces shall be given a prime coat and 2 finish coats of new white exterior enamel paint. Rail faces to be reflectorized may be left unpainted unless otherwise specified or directed.
- C. Reflectorization: Reflectorization of barricade rails shall be done in a first class, workmanlike manner and the attachment of reflective sheeting shall be as shown on the plans, specified herein, or as directed and approved by the Engineer.

Both vertical faces of each barricade rail shall be reflectorized as shown on the plans.

Wooden rails shall be reflectorized with one of the following:

- 1. Reflective sheeting specified in Subsection 712.20(C)(4) of the "Standard Specifications for Road and Bridge Construction" and backed with a 26 gage galvanized steel sheet, or
- 2. A hardened aluminum backed reflective sheeting as specified in Subsection 712.20(C)(5) of the "Standard Specifications for Road and Bridge Construction."

- D. Color: Rails, frames and braces shall be white.

The front and back faces of barricade rails shall have 6-inch wide alternative colored and white striped sloping downward toward the traveled way at an angle of 45

degrees with the vertical. The colored stripes shall be either orange or red in accordance with the following requirements:

1. Orange and white stripes shall be used in the following conditions:
 - a. Construction work.
 - b. Detours.
 - c. Maintenance work.
 2. Red and white stripes shall be used in the following conditions:
 - a. On roadways with no outlet (ie. dead-ends, cul-de-sacs).
 - b. Ramps or lanes closed for operational purposes.
 - c. Permanent or semipermanent closure or termination of a roadway.
- E. Maintenance: Barricades shall be kept in good condition throughout their usage during construction until the end of the contract.
- F. The Contractor shall repair, repaint, clean or replace the barricades as required and as directed by the Engineer to maintain their effectiveness and appearance.

The Constructor shall immediately replace all lost, stolen or damaged barricades, lamps, sand bags and other approved weights.

Barricades used during construction phasing, temporary detours or other temporary traffic control work shall be cleaned and repaired as necessary, prior to being relocated to a permanent location shown on the plans or as directed.

No extra payment will be made for any repair work, repainting, or cleaning of barricades. The Engineer shall determine the suitable condition of each barricade and shall determine when each barricade shall be repaired, repainted or cleaned.

END OF SECTION

SECTION 01567

POLLUTION CONTROL

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

A. Rubbish Disposal

1. No burning of debris and/or waste materials shall be permitted on the project site.
2. No burying of debris and/or waste material except for materials which are specifically indicated elsewhere in these specifications as suitable for backfill shall be permitted on the project site.
3. All unusable debris and waste material shall be hauled away to an appropriate off-site dump area. During loading operations, debris and waste materials shall be watered down to allay dust.
4. No dry sweeping shall be permitted in cleaning rubbish and fines which can become airborne from floors or other paved areas. Vacuuming, wet mopping or wet or damp sweeping is permissible.
5. Enclosed chutes and/or containers shall be used for conveying debris from above to ground floor level.
6. Clean-up shall include the collection of all waste paper and wrapping materials, cans, bottles, construction waste materials and other objectionable materials, and removal as required. Frequency of clean-up shall coincide with rubbish producing events.

B. Dust

1. The Contractor shall prevent dust from becoming airborne at all times including non-working hours, weekends and holidays in conformance with the State Department of Health, Administrative Rules, Title 11, Chapter 60 - Air Pollution Control.
2. The method of dust control and costs shall be the responsibility of the Contractor. Methods of dust control shall include the use of water, chemicals or asphalt over surfaces which may create airborne dust.
3. The Contractor shall be responsible for all damage claims in accordance with Section 7.16 - "Responsibility for Damage Claims" of the GENERAL CONDITIONS.

C. Noise

1. Noise shall be kept within acceptable levels at all times in conformance with the State Department of Health, Administrative Rules, Title 11, Chapter 46 - Community Noise Control for Oahu. The Contractor shall obtain and pay for the Community Noise Permit from the State Department of Health when the

construction equipment or other devices emit noise at levels exceeding the allowable limits.

2. All internal combustion engine-powered equipment shall have mufflers to minimize noise and shall be properly maintained to reduce noise to acceptable levels.
3. Pile driving operations shall be confined to the period between 9:00 a.m. and 5:30 p.m., Monday through Friday. Pile driving will not be permitted on weekends and legal State and Federal holidays.
4. Starting-up of construction equipment meeting allowable noise limits shall not be done prior to 6:45 a.m. without prior approval of the Engineer. Equipment exceeding allowable noise levels shall not be started-up prior to 7:00 a.m.

D. Erosion

1. During interim grading operations, the grade shall be maintained so as to preclude any damage to adjoining property from water and eroding soil.
2. Temporary berms, cut-off ditches and other provisions which may be required because of the Contractor's method of operations shall be installed at no cost to the State.
3. Drainage outlets and silting basing shall be constructed and maintained as shown on the plans to minimize erosion and pollution of waterways during construction.

E. Others

1. Wherever trucks and/or vehicles leave the site and enter surrounding paved streets, the Contractor shall prevent any material from being carried onto the pavement. Waste water shall not be discharged into existing streams, waterways, or drainage systems such as gutters and catch basins unless treated to comply with the State Department of Health water pollution regulations.
2. Trucks hauling debris shall be covered as required by PUC Regulation. Trucks hauling fine materials shall be covered.
3. No dumping of waste concrete will be permitted at the job-site.
4. Except for rinsing of the hopper and delivery chute, and for wheel washing where required, concrete trucks shall not be cleaned on the job-site.
5. Except in an emergency, such as a mechanical breakdown, all vehicle fueling and maintenance shall be done in a designated area. A temporary berm shall be constructed around the area when runoff can cause a problem.
6. When spray painting is allowed such spray painting shall be done by the "airless spray" process. Other types of spray painting will not be allowed.

F. Suspension of Work

1. Violations of any of the above requirements or any other pollution control requirements which may be specified in the Technical Specifications herein shall be cause for suspension of the work creating such violation. No additional compensation shall be due the Contractor for remedial measures to correct the offense. Also, no extension of time will be granted for delays caused by such

2. If no corrective action is taken by the Contractor within 72 hours after a suspension is ordered by the Engineer, the State reserves the right to take whatever action is necessary to correct the situation and to deduct all costs incurred by the State in taking such action from monies due the Contractor.
3. The Engineer may also suspend any operations which he feels are creating pollution problems although they may not be in violation of the above-mentioned requirements. In this instance, the work shall be done by force account as described in Subsection 4.2b -"Additional Work" of the GENERAL CONDITIONS and paid for in accordance with Subsection 8.4b - "Force - Account Work" therein. The count of elapsed working days to be charged against the contract in this situation shall be computed in accordance with Subsection 7.18 - "Contract Time" of the GENERAL CONDITIONS.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01581

PROJECT SIGN

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

Furnish all labor, materials and equipment necessary to construct and install all project sign as specified hereinafter.

1.2 SUBMITTAL

The contractor shall provide the Engineer with six (6) shop drawings of the project sign for review and approval by the Engineer prior to ordering the sign.

1.3 LETTER STYLE

Copy is centered and set in Adobe Type Futura Heavy. If this specific type is not available, Futura Demi Bold may be substituted. Copy should be set and spaced by a professional typesetter and enlarged photographically for photo stencil screen process.

1.4 ART WORK

Constant elements of the sign layout - frame, outline, stripe, and official state information - may be duplicated following drawing measurements, or be reproduced and enlarged photographically using a layout template if provided. The "STATE OF HAWAII" masthead should be reproduced and enlarged as specified, using the artwork provided.

1.5 TITLES

The specific major work of the project under construction is emphasized by using 3-3/4" type, all capitals. Secondary information such as location or buildings uses 2-1/4" type, all capitals. Other related information of lesser importance uses letter heights as indicated on 01581-3, upper / lower case letters.

Design should follow the example on page 01581-3.

PART 2 - PRODUCTS

2.1 MATERIALS

A. LUMBER

1. Panel is 3/4" exterior grade high density overlaid plywood, with resin-bonded surfaces on both sides.

2. 4"x4" sign posts shall be Douglas Fir No. 1 or better.

B. PAINTS & INKS

Screen print inks are matte finish. Paints are satin finish, exterior grade. References to Ameritone Color Key Paint are for color match only.

COLOR:

1. 1BL10A Bohemian Blue
2. 2H16P Softly (White)
3. 2VR2A Hot Tango (Red)
4. 1M52E Tokay (Gray)

C. CONCRETE

Concrete shall be class B with a 2,500 psi 28-day compressive strength.

PART 3 - EXECUTION

3.1 GENERAL

- A. The Project Sign shall be constructed with new materials as specified above.
- B. The Project sign shall be installed at the location indicated on the drawings or as designated by the Engineer. The project sign shall be erected upon commencement of work.

3.2 MEASUREMENTS AND PAYMENT

The construction of the project sign, including all equipment, labor and material necessary to furnish and install the project sign will be paid for under the "Project Sign" proposal item.

END OF SECTION

DIVISION 2 – SITE CONSTRUCTION

SECTION 02200

EXCAVATION AND FILL (EARTHWORK)

PART 1 – GENERAL

1.01 DESCRIPTION:

A. This item of work includes the furnishing of all labor, tools, materials, and equipment necessary for and incidental to grading required for project construction and post-construction reports to assist with closure of the grading permit.

B. Access Road and Walkways:

Adjacent access roadways and walkways shall be kept free of dirt and debris at all times.

C. Utility Lines:

It is the Contractor's responsibility to locate and detect the exact location of utility lines. The Contractor must avoid damaging any utility lines in the project area. If any damage should occur, BWS must be notified immediately. The Contractor is responsible for repairing and paying for all damaged utility lines.

D. Blasting:

The use of explosives is not permitted.

PART 2 – MATERIALS (NOT USED)

PART 3 – EXECUTION

3.01 SITE PREPARATION:

A. Any areas where voids or very loose materials are encountered should be over-excavated to expose firm ground, and the resulting excavation should be backfilled with select fill materials. Refer to DOT Standard Specifications SECTION 203 – EXCAVATION AND EMBANKMENT for the option of coarse aggregate materials such as No. 2 Coarse aggregate, tremie concrete, or cement grout for the backfilling of voids.

B. Imported fill materials should consist of select granular fill material, such as crushed coralline and/or basaltic materials. The materials should be well-graded from coarse to fine with particles no larger than 3 inches in the largest dimension and should contain between 10 and 30 percent particles passing the No. 200 sieve. The material should have a laboratory California Bearing Ratio (CBR) value of 20 or more and should have a maximum swell of 1 percent or less when tested in accordance with ASTM D1883. Imported fill material should be tested by the Geotechnical Engineer for conformance with these recommendations prior to delivery to the project site for the intended use.

- C. In general, the on-site sandy and gravelly soils should be suitable for use as general fill materials provided that the maximum particle size is less than 3 inches in largest dimension. The on-site materials generated from the excavations may be used as a source of general fill or backfill materials, provided they are screened of the over-sized materials and/or processed to meet the gradation requirements.

END OF SECTION

SECTION 02221

TRENCH EXCAVATION AND BACKFILL

PART 1 – GENERAL

1.01 DESCRIPTION:

This item of work includes the furnishing of all labor, tools, materials, and equipment necessary for and incidental to all trench excavation and backfill required for the project construction.

The work under this Section is specified in SECTION 204 – EXCAVATION AND BACKFILL FOR MISCELLANEOUS FACILITIES, SECTION 314 – CONTROLLED LOW STRENGTH MATERIAL (CLSM) FOR UTILITIES AND STRUCTURES, and SECTION 625 – SEWER SYSTEM of the DOT Standard Specifications.

PART 2 – MATERIALS

2.01 SUBMITTALS:

Before installation, submit manufacturer's or supplier's certificates of compliance or conformance and/or testing reports for all materials proposed to be furnished and installed under this Section, certifying that such materials delivered to the project site conform to the requirements approved by the State.

2.02 MATERIALS:

Bedding and backfill materials for sewer lines must be in accordance with Sections 204, 314, and 625 of the DOT Standard Specifications. Bedding material for on-site lines must be crushed rock (ASTM C33, No. 67 gradation). Where groundwater is encountered, bedding must be wrapped on all sides by non-woven filter fabric. The upper portion of trench backfill from a level of 12 inches above the pipe to the top of subgrade or finished grade must consist of excavated granular materials with maximum particle size of 6 inches or select granular fill materials. CLSM may be used in place of trench and structure backfill material, subject to the Engineer's acceptance. Mirafi 180N or similar filter fabric shall be used around the pipe bedding.

PART 3 – EXECUTION

3.01 EXCAVATION AND BACKFILLING:

Perform excavation, and placement and compaction of bedding and backfill materials for sewer lines and structures as indicated and specified in sections 204 and 625 of the DOT standards specifications.

Soft and/or loose materials encountered at the bottom of pipe trenching excavations should be over-excavated an additional twenty-four (24) inches if necessary. The over-excavation should be backfilled with crushed rock general fill wrapped with geotextile fabric to sufficiently support the pipe bedding if necessary. Pipe bedding shall conform to Item 2.02 of this section.

Localized hard and/or crystallized zones within the coral formation and coralline materials should be anticipated. These localized hard zones may require the use of hoerams or chipping. The contractor must

exercise care to avoid over-ripping, which would disrupt the structure of the coral formation, resulting in a potential loss of bearing strength for improvements in the vicinity.

The excavation will comply with all applicable local, state, and federal safety requirements. Trench shoring design and installation will be the responsibility of the contractor. Trench shoring and bracing will conform to the appropriate health and safety requirements.

Where utility trenching require excavation under existing utilities, the contractor shall provide supports and protections of the crossing utilities as necessary.

For verification of underground lines, the contractor will call the Hawaii One Call Center at 866-423-7287.

END OF SECTION

SECTION 02270

EROSION CONTROL

PART 1 – GENERAL

1.01 DESCRIPTION:

This item of work shall include the furnishings of all labor, tools, materials, and equipment necessary for and incidental to providing erosion control measures during the life of the Service Agreement.

A. Requirements:

1. Furnish, install, and maintain temporary erosion and siltation control measures during the life of the Service Agreement using silt fence and filter socks, or other erosion control devices or methods.
2. No work shall start until the Contractor has installed the erosion control devices. Erosion control devices shall be immediately repaired when damaged during the life of the Service Agreement. Silt and debris trapped by erosion control devices shall be removed. Contractor shall remove and dispose of off-site erosion control devices when the project is completed.

1.02 EROSION AND SEDIMENT CONTROL PLAN (ESCP):

- A. This project is subject to the DPP Amended Rules Relating to Water Quality, effective August 16, 2017 and amended on September 17, 2018. In accordance with §20-3-23, this Category 5 Project requires an Erosion and Sediment Control Plan (ESCP). Contractor to provide a designated City and County of Honolulu certified Erosion and Sediment Control Plan (ESCP) coordinator throughout the course of construction in order to comply with the City's Water Quality Rules.
- B. Per §20-3-23 of the DPP Amended Rules Relating to Water Quality, an ESCP Coordinator with a valid certificate from the City and County of Honolulu Department of Planning and Permitting is required for this project. The ESCP Coordinator shall perform a preconstruction inspection prior to commencing ground-disturbing activities. Regular inspections shall be performed once every seven days and within 24 hours after rainfall of 0.25 inches or greater within a 24-hour period. During prolonged rainfall, daily checking is necessary. The Contractor shall maintain records of checks and repairs. The Project Log containing all photographs, checklists, and inspection reports shall be kept in a 3-ring binder or folder on Site or be electronically accessible from the Site at all times. At the conclusion of the Project, the property owner or ESCP Coordinator shall inspect the Site and confirm that all disturbed areas have been stabilized and all temporary BMPs have been removed. An electronic copy of the final Project Log with a letter confirming compliance shall be provided within 5 business days of completing work on the Project.

PART 2 – MATERIALS (NOT USED)

PART 3 – EXECUTION (NOT USED)

SECTION 02410
DEMOLITION

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. Work under this section consists of furnishing all labor, materials and equipment required to complete all demolition, removal or relocation work as shown in the Drawings, or specified herein. Work to include, but not limited to:
 - 1. Demolition and removal of asphalt concrete paving, and gravel paving within the demolition limits as indicated in the Drawings.
 - 2. Demolition and removal or abandonment of cesspool and chain-link fence as indicated in the Drawings
- B. Related Sections:
 - 1. Division 1 Sections.

1.2 JOB CONDITIONS:

- A. Contractor to visit the project site to examine the work area and note all existing conditions and determine the character and extent of the demolition work involved.
- B. Contractor to protect existing archaeological preserve site and maintain clearance from the site and buffer area.

1.3 SUBMITTALS:

- A. Submit a demolition work plan to coordinate the work with the Owner's Representative.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 GENERAL:

- A. Existing Conditions:
 - 1. The Drawings show general information only. Examine the site to determine the exact existing conditions and character and extent of the work to be performed and demolition operations required to complete the work.
 - 2. The failure or omission of the Contractor to visit the site and acquaint himself with the existing conditions must in no way relieve him from obligations with respect to his bid or to his Contract.
- B. Existing Utilities:

1. Existing underground lines and laterals shown on the Drawings are shown from the best possible information available. Verify all utility line and lateral locations prior to the start of any work.
2. It is understood and agreed that certain lines and laterals cannot be or have not been located and no indication is contained on any of the Drawings or referred to in the specifications (i.e. storm drainage, electrical, plumbing, sewer, water, irrigation, gas, cable television or telephone); therefore, exercise extreme caution during demolition and like work. Should any such lines or laterals be encountered, written notice must be given to the Owner's Representative, and no further work in the area must proceed until adequate investigation has been made, the line or lateral identified, and instructions are issued as to how to proceed.
3. The Contractor must be liable for any and all damages associated with his activities which may disrupt services as a result of any utility line or lateral damage.

C. Equipment:

1. The use of proper equipment is the responsibility of the Contractor.

D. Protection of Property:

1. Existing appurtenances and improvements, which are to remain, must be protected from damage due to work under this section.

E. Protection of Utilities:

1. Preserve in operating condition all active utilities traversing or within and about the site; protect all such property and items, including but not limited to piping, mains, laterals, valve boxes, meters, and other appurtenances and structures. Promptly repair and notify the affected utility company of any damage to such utility or work caused by work under this Contract.

3.2 DEMOLITION:

A. Pavement Demolition:

1. Remove from site all pavements as indicated for demolition in the Drawings.
2. Provide a breakline for removal of paving by machine saw-cutting the existing pavement. The depth of the saw cut must be as required to produce a uniform breakline both vertically and horizontally.
3. Remove paving so as to prevent spalling, cracking or other damage to adjacent paving which is to remain. The Contractor must at his expense remove and replace damaged pavement outside the limits of removal.
4. Reuse of demolished concrete or asphalt paving as rubble fill must not be permitted, unless otherwise accepted by the Soils Engineer.

B. Utilities:

1. All existing work and items which are required to be removed must be removed in such manner that minimum damage and disturbance is caused to adjacent and connecting work. The Contractor must be responsible for repairing and/or replacing all work which is damaged by these operations to the satisfaction of the Owner's Representative.
2. Excavate cesspool and lateral indicated for demolition and removal. Excavate and backfill according to the requirements of HAR Title 11 Chapter 62 – Wastewater Systems.
3. Plug or cap all existing utilities to be abandoned and not interfering with the work. Remove and dispose of existing piping within the limits of new work.

3.3 CLEANUP:

- A. Removal of Demolished Material: Remove all waste material from the project site and comply with all applicable government regulations in disposing of said waste material.
- B. All materials and equipment to be removed, except that indicated to be reused or delivered as directed by the Owner's Representative, must become the property of the Contractor and must be removed from the site.
- C. Remove debris resulting from this work from the site as promptly as it accumulates.
- D. Cleanup: Remove all evidence of demolition work and leave areas impacted by demolition work in clean and debris-free condition.

END OF SECTION

SECTION 02510
ASPHALT PAVING

PART 1 - GENERAL

1.1 SUMMARY

- A. Work under this section consists of furnishing all labor, materials and equipment required to complete the asphalt concrete paving as shown on the Drawings and as specified herein.
- B. Related Sections:
 - 1. Division 1 Sections.
 - 2. 02221 – Trench Excavation and Backfilling.
- C. Work in this section is specified in the following sections of the DOT Standard Specifications:
DOT Standard Specifications:
 - 1. Section 301 - Hot Mix Asphalt Base Course
 - 2. Section 304 – Aggregate Base Course
 - 3. Section 305 – Aggregate Subbase Course
 - 4. Section 401 - Hot Mix Asphalt Pavement
 - 5. Section 407 - Tack Coat

All references to measurement and payment must be deleted.

1.2 SOILS TESTING AND ANALYSES

- A. Soils Engineer or technician must be present at the site to observe and direct paving operations and to take density or make visual tests as appropriate. Where low density test results are noted, the area must be reworked by the Contractor and retested.
- B. If the field observations and test results, in the opinion of the testing personnel or Soils Engineer indicate that the paving is not in general conformance to the intent of the plans and specifications, the discrepancy must be reported to the Contractor for corrective action with the Owner's Representative notified.

1.3 SUBMITTALS

- A. Submit manufacturer's certificates of conformance for each type of bituminous material and for the job mix formula.
- B. Submit certification that the specified herbicides were applied at the specified application rate over the entire subgrade to be paved.
- C. Submit certification from a licensed surveyor employed by the Contractor that the monument stakeout and installation is correct. The certification must include the elevation and coordinates of all monuments and the azimuths and distances between monuments.

PART 2 - PRODUCTS

2.1 ASPHALT CONCRETE PAVEMENT MATERIALS

- A. Materials for asphalt concrete pavements must be in accordance with the below-listed sections of the City DPW Standard Specifications and DOT Standard Specifications, except as amended in the plans and/or specifications herewith.

DOT Standard Specifications:

- | | |
|--|-------------|
| 1. Hot Mix Asphalt Base Course | Section 301 |
| 2. Tack Coat for Pavement, SS-1 or SS-1H | Section 407 |
| 3. Asphalt Concrete Pavement, Mix IV | Section 401 |

2.2 HERBICIDES

- A. Pre-Paving Vegetation Destruction: Herbicide must be Roundup by Monsanto or accepted equivalent.
- B. Pre-Emergence Control: Herbicide must be Treflan by Elanco Products Company or accepted equivalent.

2.3 STREET SURVEY MONUMENTS

- A. Street survey monuments must be in accordance with Section 614 of the DOT Standard Specifications.

PART 3 - EXECUTION

3.1 SURFACE PREPARATION

- A. The subgrade must be prepared and compacted in accordance with the requirements of the DOT Standard Specifications. Soil tests must be made at the subgrade level and the final pavement structure verified or modified as necessary.
- B. Apply pre-paving herbicide to all new pavement areas. Application must not be made immediately after heavy rains or when rain is forecasted within the next 48 hours. The herbicide must be applied in accordance with the manufacturer's recommended procedures and rates. Perform two herbicide applications at least three days apart.

3.2 SELECT BORROW SUBBASE COURSE

- A. The select borrow subbase course within the City roads must be constructed in accordance with Section 305 of the DOT Standard Specifications. Field density tests must be made by the Soils Engineer to verify that the compaction obtained meets the Specifications.

3.3 AGGREGATE SUBBASE COURSE

- A. The aggregate subbase course within the State roads must be constructed in accordance with Section 305 of the DOT Standard Specifications. Field density tests must be made by the Soils Engineer to verify that the compaction obtained meets the Specifications.

3.4 ASPHALT CONCRETE BASE COURSE

- A. The asphalt concrete base course within the State roads must be construction in accordance with Section 301 of the DOT Standard Specifications. Field density tests must be made by the Soils Engineer to verify that the compaction obtained meets the Specifications.

3.5 PRIME COAT

- A. Prime coat must be applied in accordance with Section 33 of the City Standard Specifications to new base course within the City roads and the building site.

3.6 AGGREGATE BASE COURSE

- A. The base course must be constructed in accordance with Section 304 of the DOT Standard Specifications. Field density tests must be made by the Soils Engineer to verify that the compaction obtained meets the Specifications.
- B. Apply pre-emergence herbicide on the prepared base for new asphalt concrete pavements in accordance with the manufacturer's recommendations.

3.7 ASPHALT CONCRETE PAVEMENT

- A. The asphalt concrete pavement must be constructed in accordance with Section 401 of the DOT Standard Specifications, within State roads.

3.8 STREET SURVEY MONUMENTS

- A. The centerline monuments must be constructed in the locations indicated in accordance with Section 614 of the DOT Standard Specifications.

END OF SECTION

SECTION 02730
SANITARY SEWERAGE UTILITIES

PART 1 - GENERAL

1.1 SUMMARY:

- A. Work under this section consists of furnishing all labor, materials and equipment to complete the sanitary sewer system as shown on the Drawings and as specified herein.
- B. Related Sections:
 - 1. Division 1 Sections.
 - 2. Section 02221 – Trench Excavation and Backfill.
- C. Work in this section is specified in the following sections of the DPW Standard Specifications.
 - 1. Section 21 - PVC Sewer Pipe and AppurtenancesAll references to measurement and payment must be deleted.

1.2 SUBMITTALS:

- A. Submit manufacturer's certificates of compliance or conformance for pipe and pipe joint materials certifying that such materials proposed to be furnished and installed under this section conform to the requirements in the DPW Standard Specifications.
- B. Submit pipe bedding gradation tests to the Geotechnical Engineer for acceptance with copies of acceptance provided to the Engineer.
- C. Submit the name and qualifications of the Inspector to be employed by the Contractor to inspect the sewer line installation and witness the sewer line leakage and mandrel tests.
- D. Submit three (3) copies of the sewer line inspection report by the Inspector, certifying that the work was completed in conformance with the requirements in the DPW Standard Specifications. The report must include tables summarizing the test results for each segment of the sewer line.

PART 2 - PRODUCTS

2.1 MATERIALS:

- A. Pipeline Materials.
 - 1. Material for the gravity sewer line must be as indicated on the Drawings. Pipe must conform to the requirements of the ASTM D3034. Fittings including but not limited to plugs and saddle wyes must be of the same material as the pipe unless otherwise accepted by the Owner's Representative.
 - 2. Material for the sewer cleanouts must conform to the requirements of ASTM D1785.

- B. Pipe Bedding and Bedding Material.
 - 1. Class A and C bedding must be in accordance with the DPW Standard Details unless otherwise specified.
 - 2. Class B bedding must be to 12 inches above the top of the pipes and must be in accordance with the DPW Standard Details unless otherwise specified.
 - 3. Bedding material must be crushed rock (ASTM C33, No. 67 gradation) or CLSM.
- C. Filter Fabric
 - 1. Mirafi 180N or similar shall be used around pipe bedding material.
- D. Warning Tape
 - 1. Warning Tape shall be manufactured from polyethylene film, suitable for direct burial and resistant to moisture, rot, corrosion, and chemicals commonly found in soil.
 - a. 6 inches minimum width and 4 mils minimum thickness.
 - b. Shall conform to ASTM D2103 – Polyethylene Film and Sheeting.

PART 3 - EXECUTION

3.1 CONSTRUCTION REQUIREMENTS:

- A. Pipe Installation: The DPW Standard Specifications must apply for installation of pipe, testing and trench backfilling. Pipe must be placed on a prepared bedding material which must conform to the Standard Specifications.

3.2 TESTING:

- A. Pipelines. Sewer line testing must include, but not is not limited to, sewer lines and manholes to be dedicated to the City. All tests specified in the DPW Standard Specifications, including the sewer line leak and mandrel tests and alignment verification, must be performed on the lines installed. Tests must be witnessed by the Inspector, with copies of the test results and reports furnished to the Owner.

END OF SECTION

SECTION 02734
LOW PRESSURE SEWER SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY:

- A. Work under this section consists of furnishing all labor, materials and equipment to complete the sanitary sewer system as shown on the Drawings and as specified herein.
- B. The Manufacturer shall furnish complete factory-built and tested Wetwell/Drywell Grinder Pump Station(s), each consisting of grinder pump(s) suitably mounted in a basin constructed of polyethylene (HDPE) with dimensions and capacities as shown on the Contract Drawings, NEMA 6P electrical quick disconnect (EQD), pump removal system, stainless steel discharge assembly/shut-off valve, anti-siphon valve/check valve, each assembled in the basin, electrical alarm panel and all necessary internal wiring and controls. Component type grinder pump systems that require field assembly will not be acceptable due to the potential problems that can occur during field assembly. All components and materials shall be in accordance with section 2.0 of this Product Specification. For ease of serviceability, all pump, motor/grinder units shall be of like type and horsepower throughout the system.

1.2 SUBMITTALS:

- A. Submit manufacturer's certificates of compliance or conformance for pipe and pipe joint materials certifying that such materials proposed to be furnished and installed under this section conform to the requirements in the DPW Standard Specifications.
- B. Submit shop drawings detailing the equipment to be furnished including dimensional data and materials of construction.

1.3 MANUFACTURER:

- A. Grinder pump stations, complete with all appurtenances, form an integral system, and as such, shall be supplied by one grinder pump station manufacturer. The Contractor shall be responsible for the satisfactory operation of the entire system. The equipment specified shall be a product of a company experienced in the design and manufacture of grinder pumps for specific use in low pressure sewage systems. The company shall submit detailed installation and user instructions for its product, submit evidence of an established service program including complete parts and service manuals, and be responsible for maintaining a continuing inventory of grinder pump replacement parts. The Manufacturer shall provide, upon request, a reference and contact list from ten of its largest contiguous grinder pump installations of the type of grinder pumps described within this specification
- B. The Manufacturer of the grinder pump station shall be Environment One Corporation (or approved Alternate).
- C. Attention is directed to the fact that the drawings and overall system design are based on a particular piece of equipment from a particular manufacturer. These specifications are intended

to provide guidelines for standard equipment of a recognized manufacturer who already meets all the requirements of this specification.

1.4 EXPERIENCE CLAUSE:

- A. The equipment furnished hereunder shall be the product of a company experienced in the design and manufacture of grinder pumps specifically designed for use in low pressure systems. All manufacturers proposing equipment for this project shall have at least 10 years of experience in the design and manufacture of units of identical size(s) and performance to the specified units. All manufacturers proposing equipment for this project must also have not less than 500 successful installations of low pressure sewer systems utilizing grinder pumps of like type to the grinder pumps specified herein. An installation is defined as a minimum of 25 pumps discharging into a common force main which forms a low pressure sewer system. The contractor (supplier) proposing alternate equipment shall also submit, as part of the bid schedule, an installation list with contact person(s), phone number(s) and date(s) of at least 10 installations of the type of pump specified herein that have been in operation for at least 10 years.
- B. In lieu of this experience clause, the contractor (supplier) of alternate equipment will be required to submit a 5-year performance bond for 100 percent of the stipulated cost of the equipment as bid and as shown in the Bid Schedule. This performance bond will be used to guarantee the replacement of the equipment in the event that it fails within the bond period.

1.5 OPERATING CONDITIONS:

- A. The pumps shall be capable of delivering 15 GPM against a rated total dynamic head of 0 feet (0 PSIG), 11 GPM against a rated total dynamic head of 92 feet (40 PSIG), and 7.8 GPM against a rated total dynamic head of 185 feet (80 PSIG). The pump(s) must also be capable of operating at negative total dynamic head without overloading the motor(s). Under no conditions shall in-line piping or valving be allowed to create a false apparent head.

1.6 WARRANTY

- A. The grinder pump Manufacturer shall provide a parts and labor warranty on the complete station and accessories, including, but not limited to, the panel for a period of 24 months after notice of acceptance, but no greater than 27 months after receipt of shipment. Any manufacturing defects found during the warranty period will be reported to the Manufacturer by the Owner and will be corrected by the Manufacturer at no cost to the Owner.
- B. Only after the installation and start-up data have been successfully completed and submitted via apps.eone.com will the Owner be issued a 5-Year Certified Installation Program certificate for each applicable DH071 or DH151 grinder pump station. This certificate is the proof of the program coverage. If submissions are not received, no additional coverage has been applied.

1.7 WARRANTY PERFORMANCE CERTIFICATION

- A. As a bid certification requirement, each bidder shall provide with their bid schedule a Warranty Performance Certification statement executed by the most senior executive officer of the grinder pump Manufacturer, which certifies a minimum of a 24-month warranty. They must further detail any exclusions from the warranty or additional cost items required to maintain the equipment in warrantable condition, including all associated labor and shipping fees, and certify that the Manufacturer will bear all costs to correct any original equipment deficiency for the effective

period of the warranty. All preventive maintenance type requirements shall be included in this form as exclusions. These requirements include, but are not limited to, unjamming of grinder mechanism, periodic motor maintenance, and periodic cleaning of liquid level controls. Should the Contractor elect to submit a performance bond in lieu of the experience clause outlined above, this Warranty Performance Certification shall also be used as a criterion to evaluate the Contractor's performance over the warranty period. A Warranty Performance Certification form is included with the bid schedule and must be completed and submitted as part of the bid package. Bids with incomplete forms or missing forms will be considered nonresponsive

PART 2 - PRODUCTS

2.1 PUMP:

- A. The pump shall be a custom designed, integral, vertical rotor, motor driven, solids handling pump of the progressing cavity type with a single mechanical seal. Double radial O-ring seals are required at all pump, motor, and control housing joints to minimize corrosion and create a protective barrier. Unit housings constructed of cast iron shall be fully epoxy coated to 8-10 mil Nominal dry thickness, wet applied. Housings not constructed of cast iron shall be injection molded from thermoplastic composite materials specifically selected for excellent corrosion resistance, high impact strength and superior resistance to UV degradation. The rotor shall be through-hardened, highly polished, precipitation hardened stainless steel. The stator shall be of a specifically compounded ethylene propylene synthetic elastomer. This material shall be suitable for domestic wastewater service. Its physical properties shall include high tear and abrasion resistance, grease resistance, water and detergent resistance, temperature stability, excellent aging properties, and outstanding wear resistance. Buna-N is not acceptable as a stator material because it does not exhibit the properties as outlined above and required for wastewater service.

2.2 GRINDER

- A. The grinder shall be placed immediately below the pumping elements and shall be direct-driven by a single, one-piece motor shaft. The grinder impeller (cutter wheel) assembly shall be securely fastened to the pump motor shaft by means of a threaded connection attaching the grinder impeller to the motor shaft. Attachment by means of pins or keys will not be acceptable. The grinder impeller shall be a one-piece, 4140 cutter wheel of the rotating type with inductively hardened cutter teeth. The cutter teeth shall be inductively hardened to Rockwell 50 – 60c for abrasion resistance. The shredder ring shall be of the stationary type and the material shall be white cast iron. The teeth shall be ground into the material to achieve effective grinding. The shredder ring shall have a staggered tooth pattern with only one edge engaged at a time, maximizing the cutting torque. These materials have been chosen for their capacity to perform in the intended environment as they are materials with wear and corrosive resistant properties.
- B. This assembly shall be dynamically balanced and operate without objectionable noise or vibration over the entire range of recommended operating pressures. The grinder shall be constructed so as to minimize clogging and jamming under all normal operating conditions including starting. Sufficient vortex action shall be created to scour the tank free of deposits or sludge banks which would impair the operation of the pump. These requirements shall be accomplished by the following, in conjunction with the pump:
 - 1. The grinder shall be positioned in such a way that solids are fed in an upward flow direction.

2. The maximum flow rate through the cutting mechanism must not exceed 4 feet per second. This is a critical design element to minimize jamming and as such must be adhered to.
 3. The inlet shroud shall have a diameter of no less than 5 inches. Inlet shrouds that are less than 5 inches in diameter will not be accepted due to their inability to maintain the specified 4 feet per second maximum inlet velocity which by design prevents unnecessary jamming of the cutter mechanism and minimizes blinding of the pump by large objects that block the inlet shroud.
 4. The impeller mechanism must rotate at a nominal speed of no greater than 1800 rpm.
- C. The grinder shall be capable of reducing all components in normal domestic sewage, including a reasonable amount of “foreign objects,” such as paper, wood, plastic, glass, wipes, rubber and the like, to finely-divided particles which will pass freely through the passages of the pump and the 1-1/4" diameter stainless steel discharge piping.

2.3 ELECTRIC MOTOR

- A. As a maximum, the motor shall be a 1 HP, 1725 RPM, 240 Volt 60 Hertz, 1 Phase, capacitor start, ball bearing, air-cooled induction type with Class F insulation, low starting current not to exceed 30 amperes and high starting torque of 8.4 foot pounds. The motor shall be press-fit into the casting for better heat transfer and longer winding life. Inherent protection against running overloads or locked rotor conditions for the pump motor shall be provided by the use of an automatic-reset, integral thermal overload protector incorporated into the motor. The motor protector shall be specifically investigated and listed by Underwriters Laboratories Inc. for the application. Non-capacitor start motors or permanent split capacitor motors will not be accepted because of their reduced starting torque and consequent diminished grinding capability. The wet portion of the motor armature must be 300 Series stainless steel. To reduce the potential of environmental concerns, the expense of handling and disposing of oil, and the associated maintenance costs, oil-filled motors will not be accepted. Pump operation during instances of potentially damaging high current or low voltage conditions shall be inhibited by an in-pump electrical monitoring system that has been investigated and listed by Underwriters Laboratories Inc. for the application. Motor start shall be controlled by a DC driven electromechanical relay integrated within the control compartment of the pump. Electrical monitoring shall ensure the relay operates reliably. AC Mechanical contactors for motor start are susceptible to damage from short cycling and will not be accepted

2.4 MECHANICAL SEAL

- A. The pump/core shall be provided with a mechanical shaft seal to prevent leakage between the motor and pump. The seal shall have a stationary ceramic seat and carbon rotating surface with faces precision lapped and held in position by a stainless steel spring.

2.5 TANK AND INTEGRAL ACCESSWAY: HIGH DENSITY POLYETHYLENE CONSTRUCTION

- A. The tank shall be a Wetwell/Drywell design made of high density polyethylene, with a grade selected to provide the necessary environmental stress cracking resistance. Corrugated sections are to be made of a double wall construction with the internal wall being generally smooth to promote scouring. The corrugations of the outside wall are to be a minimum amplitude of 1-1/2"

to provide necessary transverse stiffness. Any incidental sections of a single wall construction are to be 0.250" thick (minimum). All seams created during tank construction are to be thermally welded and factory tested for leak tightness. The tank wall and bottom must withstand the pressure exerted by saturated soil loading at maximum burial depth. All station components must function normally when exposed to 150 percent of the maximum external soil and hydrostatic pressure. The tank base shall be designed in a manner that does not require a concrete anti-flotation collar.

- B. The tank shall be furnished with one EPDM grommet fitting to accept a 4.50" OD DWV or Schedule 40 pipe. The tank capacities shall be as shown on the contract drawings.
- C. The Drywell accessway shall be an integral extension of the Wetwell assembly and shall include a lockable cover assembly providing low profile mounting and watertight capability. The accessway design and construction shall enable field adjustment of the station height in increments of 3" or less without the use of any adhesives or sealants requiring cure time before installation can be completed.
- D. All discharge piping shall be constructed of 304 stainless steel. The discharge shall terminate outside the accessway bulkhead with a stainless steel, 1-1/4" Female NPT fitting. The discharge piping shall include a stainless steel ball valve rated for 235 psi WOG; PVC ball valves or brass ball/gate will not be accepted. The bulkhead penetration shall be factory installed and warranted by the manufacturer to be watertight.
- E. The accessway shall include a single NEMA 6P Electrical Quick Disconnect (EQD) for all power and control functions, factory installed with accessway penetrations warranted by the manufacturer to be watertight. The EQD will be supplied with 32', 25' of useable Electrical Supply Cable (ESC) outside the station, to connect to the alarm panel. The ESC shall be installed in the basin by the manufacturer. Field assembly of the ESC into the basin is not acceptable because of potential workmanship issues. The EQD shall require no tools for connecting, seal against water before the electrical connection is made, and include radial seals to assure a watertight seal regardless of tightening torque. Plug-type connections of the power cable onto the pump housing will not be acceptable due to the potential for leaks and electrical shorts. A junction box shall not be permitted in the accessway due to the large number of potential leak points. The EQD shall be so designed to be conducive to field wiring as required. The accessway shall also include an integral 2-inch vent to prevent sewage gases from accumulating in the tank.

2.6 CHECK VALVE

- A. The pump discharge shall be equipped with a factory installed, gravity operated, flapper-type integral check valve built into the stainless steel discharge piping. The check valve will provide a full-ported passageway when open, and shall introduce a friction loss of less than 6 inches of water at maximum rated flow. Moving parts will be made of a 300 Series stainless steel and fabric reinforced synthetic elastomer to ensure corrosion resistance, dimensional stability, and fatigue strength. A nonmetallic hinge shall be an integral part of the flapper assembly providing a maximum degree of freedom to assure seating even at a very low back-pressure. The valve body shall be an injection molded part made of a thermoplastic composite resin. The valve shall be rated for continuous operating pressure of 235 psi. Ball-type check valves are unacceptable due to their limited sealing capacity in slurry applications.

2.7 ANTI-SIPHON VALVE

- A. The pump discharge shall be equipped with a factory-installed, gravity-operated, flapper-type integral anti-siphon valve built into the stainless steel discharge piping. Moving parts will be made of 300 Series stainless steel and fabric-reinforced synthetic elastomer to ensure corrosion resistance, dimensional stability, and fatigue strength. A nonmetallic hinge shall be an integral part of the flapper assembly, providing a maximum degree of freedom to ensure proper operation even at a very low pressure. The valve body shall be injection-molded from a thermoplastic composite resin. Holes or ports in the discharge piping are not acceptable anti-siphon devices due to their tendency to clog from the solids in the slurry being pumped. The anti-siphon port diameter shall be no less than 60% of the inside diameter of the pump discharge piping.

2.8 CORE UNIT

- A. The grinder pump station shall have a cartridge type, easily removable core assembly consisting of pump, motor, grinder, all motor controls, check valve, anti-siphon valve, level controls, electrical quick disconnect and wiring. The core unit shall be installed in the basin by the manufacturer. Field assembly of the pump and controls into the basin is not acceptable because of potential workmanship issues and increased installation time. In some cases, stations taller than 96" may be shipped on their side without the cores assembled in the basin for freight purposes but this is the only exception. The core unit shall seal to the tank deck with a stainless steel latch assembly. The latch assembly must be actuated utilizing a single quick release mechanism requiring no more than a half turn of a wrench. The watertight integrity of each core unit shall be established by a 100 percent factory test at a minimum of 5 PSIG.

2.9 CONTROLS

- A. All necessary motor starting controls shall be located in the core unit. Locating the motor starting controls in a separate enclosure is not acceptable. The wastewater level sensing controls shall be housed in a separate enclosure from motor starting controls. The level sensor housing must be sealed via a radial type seal; solvents or glues are not acceptable. The level sensing control housing must be integrally attached to pump assembly so that it may be removed from the station with the pump and in such a way as to minimize the potential for the accumulation of grease and debris accumulation, etc. The level sensing housing must be constructed from a high-impact thermoplastic composite. The use of PVC for the level sensing housing is not acceptable.
- B. Non-fouling wastewater level controls for controlling pump operation shall be accomplished by monitoring the pressure changes in an integral air column connected to a pressure switch. The air column shall be molded from a thermoplastic composite suitable for use in wastewater and with excellent impact resistance. The air column shall have only a single connection between the water level being monitored and the pressure switch. Any connections are to be sealed radially with redundant O-rings. The level detection device shall have no moving parts in direct contact with the wastewater and shall be integral to the pump core assembly in a single, readily-exchanged unit. Depressing the push to run button must operate the pump even with the level sensor housing removed from the pump.
- C. All fasteners throughout the assembly shall be 300 Series stainless steel. High-level sensing will be accomplished in the manner detailed above by a separate air column sensor and pressure switch of the same type. Closure of the high-level sensing device will energize an alarm circuit as well as a redundant pump-on circuit. For increased reliability, pump ON/OFF and high-level alarm functions shall not be controlled by the same switch. Float switches of any kind, including float

trees, will not be accepted due to the periodic need to maintain (rinsing, cleaning) such devices and their tendency to malfunction because of incorrect wiring, tangling, grease buildup, and mechanical cord fatigue. To assure reliable operation of the pressure switches, each core shall be equipped with a factory installed equalizer diaphragm that compensates for any atmospheric pressure or temperature changes. Tube or piping runs outside of the station tank or into tank-mounted junction boxes providing pressure switch equalization will not be permitted due to their susceptibility to condensation, kinking, pinching, and insect infestation. The grinder pump will be furnished with a 6 conductor 14 gauge, type SJOW cable, pre-wired and watertight to meet UL requirements with a FACTORY INSTALLED NEMA 6P EQD half attached to it.

2.10 STAINLESS TEEL CURB STOP/CHECK VALVE ASSEMBLY

- A. The curb stop shall be pressure-tight in both directions. The ball valve actuator shall include position stop features at the fully opened and closed positions. The curb stop/check valve assembly shall be designed to withstand a working pressure of 235 psi.
- B. The stainless steel check valve shall be integral with the curb stop valve. The check valve will provide a full-ported 1-1/4" passageway and shall introduce minimal friction loss at maximum rated flow. The flapper hinge design shall provide a maximum degree of freedom and ensure seating at low back pressure.
- C. Thermoplastic Composite Fittings – All plastic fitting components are to be in compliance with applicable ASTM standards.
- D. All pipe connections shall be made using compression fitting connections including a Buna-N O-ring for sealing to the outside diameter of the pipe. A split-collet locking device shall be integrated into all pipe connection fittings to securely restrain the pipe from hydraulic pressure and external loading caused by shifting and settling.
- E. Curb Boxes – Curb boxes shall be constructed of ABS, conforming to ASTM-D 1788. Lid top casting shall be cast iron, conforming to ASTM A-48 Class 25, providing magnetic detectability, and be painted black. All components shall be inherently corrosion-resistant to ensure durability in the ground. Curb boxes shall provide height adjustment downward (shorter) from their nominal height.
- F. High Density Polyethylene Pipe (Supplied by others) – Pipe shall be have a working pressure of 160 psi minimum and shall be classified SDR per ASTM D 3035.
- G. Factory Test – The stainless steel, combination curb stop/check valve component shall be 100 percent hydrostatically tested to 150 psi in the factory.
- H. Construction Practices – Pipe shall be stored on clean, level ground to prevent undue scratching or gouging of the pipe. If the pipe must be stacked for storage, such stacking should be in accordance with the pipe manufacturer's recommendations. The pipe should be handled in such a manner that it is not damaged by being dragged over sharp objects or cut by chokers or lifting equipment.
- I. Segments of pipe having cuts or gouges in excess of 10 percent of the wall thickness of the pipe shall be cut out and removed. The undamaged portions of the pipe shall be rejoined using the butt fusion joining method. Sections of polyethylene pipe should be joined into continuous lengths on the job site above ground. The joining method shall be the butt-fusion method and shall be

performed in strict accordance with the pipe manufacturer's recommendations. The butt-fusion equipment used in the joining procedure shall be capable of meeting all conditions recommended by the pipe manufacturer, including, but not limited to, fusion temperature, alignment, and fusion pressure.

- J. Fused segments of pipe shall be handled so as to avoid damage to the pipe. When lifting fused sections of pipe, chains or cable-type chokers should be avoided. Nylon slings are preferred. Spreader bars should be used when lifting long, fused sections. Care should be exercised to avoid cutting or gouging the pipe.
- K. Assemble the compression fittings according to the fitting manufacturer's recommendations.
- L. The trench and trench bottom should be constructed in accordance with ASTM D 2321. Embedment materials should be Class I, Class II or Class III materials as defined in ASTM D 2321. The use of Class IV and/or Class V materials for embedment is not recommended and should be allowed only with the approval of the Engineer. Bedding of the pipe should be performed in accordance with ASTM D 2321. Compaction should be as specified in ASTM D 2321. Deviations from the specified compaction shall be approved by the SPECIFYING ENGINEER.
- M. Haunching and initial backfill should be as specified in ASTM D 2321 using Class I, Class II or Class III materials. In cases where a compaction of 85 percent Standard Proctor Density is not attainable, the Engineer may wish to increase the SDR of the pipe to provide adequate stiffness. ASTM D 2321 sections titled "Minimum Cover for Load Application," "Use of Compaction Equipment" and "Removal of Trench Protection" should apply.

2.11 ALARM PANEL

- A. Each grinder pump station shall include a NEMA 4X, UL-listed alarm panel suitable for wall or pole mounting. The NEMA 4X enclosure shall be manufactured of thermoplastic composite to ensure corrosion resistance. The enclosure shall include a hinged, lockable cover with padlock, preventing access to electrical components, and creating a secured safety front to allow access only to authorized personnel. The enclosure shall not exceed 10.5" W x 14" H x 7" D, or 12.5" W x 16" H x 7.5" D if certain options are included.
- B. The alarm panel shall contain one 15-amp, double-pole circuit breaker for the pump core's power circuit and one 15-amp, single-pole circuit breaker for the alarm circuit. The panel shall contain a push-to-run feature, an internal run indicator, and a complete alarm circuit. All circuit boards in the alarm panel are to be protected with a conformal coating on both sides and the AC power circuit shall include an auto resetting fuse.
- C. The alarm panel shall include the following features: external audible and visual alarm; push-to-run switch; push-to-silence switch; redundant pump start; and high level alarm capability. The alarm sequence is to be as follows when the pump and alarm breakers are on:
 - 1. When liquid level in the sewage wet-well rises above the alarm level, the contacts on the alarm pressure switch activate, audible and visual alarms are activated, and the redundant pump starting system is energized.
 - 2. The audible alarm may be silenced by means of the externally mounted, push-to-silence button.

3. Visual alarm remains illuminated until the sewage level in the wet-well drops below the “off” setting of the alarm pressure switch.
- D. The visual alarm lamp shall be inside a red, oblong lens at least 3.75" L x 2.38" W x 1.5" H. Visual alarm shall be mounted to the top of the enclosure in such a manner as to maintain NEMA 4X rating. The audible alarm shall be externally mounted on the bottom of the enclosure, capable of 93 dB @ 2 feet. The audible alarm shall be capable of being deactivated by depressing a push-type switch that is encapsulated in a weatherproof silicone boot and mounted on the bottom of the enclosure (push-to-silence button).
- E. The entire alarm panel, as manufactured and including any of the following options shall be listed by Underwriters Laboratories, Inc

PART 3 - EXECUTION

3.1 FACTORY TEST

- A. Each grinder pump shall be submerged and operated for 1.5 minutes (minimum). Included in this procedure will be the testing of all ancillary components such as, the anti-siphon valve, check valve, discharge assembly and each unit’s dedicated level controls and motor controls. All factory tests shall incorporate each of the above listed items. Actual appurtenances and controls which will be installed in the field shall be particular to the tested pump only. A common set of appurtenances and controls for all pumps is not acceptable. Certified test results shall be available upon request showing the operation of each grinder pump at two different points on its curve. Additional validation tests include: integral level control performance, continuity to ground and acoustic tests of the rotating components.
- B. The Engineer reserves the right to inspect such testing procedures with representatives of the Owner, at the Grinder Pump Manufacturer’s facility.
- C. All completed stations shall be factory leak tested to assure the integrity of all joints, seams and penetrations. All necessary penetrations such as inlets, discharge fittings and cable connectors shall be included in this test along with their respective sealing means (grommets, gaskets etc.).

3.2 CERTIFIED SERVICE PROGRAM:

- A. The grinder pump Manufacturer shall provide a program implemented by the Manufacturer’s personnel as described in this specification to certify the service company as an authorized serviced center. As evidence of this, the Manufacturer shall provide, when requested, sufficient evidence that they have maintained their own service department for a minimum of 30 years and currently employ a minimum of five employees specifically in the service department.
- B. As part of this program, the Manufacturer shall evaluate the service technicians as well as the service organization annually. The service company will be authorized by the Manufacturer to make independent warranty judgments. The areas covered by the program shall include, as a minimum.
 1. Pump Population Information — The service company will maintain a detailed database for the grinder pumps in the territory that tracks serial numbers by address.

2. Inventory Management — The service company must maintain an appropriate level of inventory (pumps, tanks, panels, service parts, etc.) including regular inventory review and proper inventory labeling. Service technicians will also maintain appropriate parts inventory and spare core(s) on service vehicles.
3. Service Personnel Certification — Service technicians will maintain their level-specific certification annually. The certifications are given in field troubleshooting, repair, and training.
4. Service Documentation and Records — Start up sheets, service call records, and customer feedback will be recorded and available by the service company.
5. Shop Organization — The service company will keep its service shop organized and pumps will be tagged with site information at all times. The shop will have all required equipment, a test tank, and cleaning tools necessary to service pumps properly.

3.3 DELIVERY

- A. All grinder pump units will be delivered to the job site 100 percent completely assembled, including testing, ready for installation. Field installation of the pump in tanks under 96 inches is not allowed. Field installation of the level sensor into the tank is not allowed. Grinder pump stations will be individually mounted on wooden pallets.

3.4 INSTALLATION

- A. Earth excavation and backfill are specified under SECTION 02220 – Excavation and Fill, but are also to be done as a part of the work under this section, including any necessary sheeting and bracing.
- B. The Contractor shall be responsible for handling ground water to provide a firm, dry subgrade for the structure, and shall guard against flotation or other damage resulting from general water or flooding.
- C. The grinder pump stations shall not be set into the excavation until the installation procedures and excavation have been approved by the Engineer.
- D. Remove packing material. User instructions must be given to the Owner. Hardware supplied with the unit, if required, will be used at installation. The basin will be supplied with a standard 4" inlet grommet (4.50" OD) for connecting the incoming sewer line. Appropriate inlet piping must be used. The basin may not be dropped, rolled or laid on its side for any reason.
- E. Installation shall be accomplished so that 1 inch to 4 inches of accessway, below the bottom of the lid, extends above the finished grade line. The finished grade shall slope away from the unit. The diameter of the excavated hole must be large enough to allow adequate clearance for field connections, backfill installation and compaction.
- F. A 6" inch minimum layer of naturally rounded aggregate, clean and free flowing, with particle size of not less than 1/8" or more than 3/4" shall be used as bedding material under each unit.
- G. A concrete anti-flotation collar, as detailed on and sized according to the manufacturer's instructions, shall be required and shall be pre-cast to the grinder pump tank or poured in place.

Each grinder pump station with its pre-cast anti-flotation collar shall have a minimum of three lifting eyes for loading and unloading purposes. All Model DH071 tanks have been designed such that a concrete anti-flotation collar is not required. Other D-Series Models may require an anti-flotation collar.

- H. The Contractor will provide and install a 4-foot piece of 4-inch SCH 40 PVC pipe with water tight cap, to stub-out the inlet for the property owners' installation contractor, as depicted on the contract drawings.
- I. E/One requires that an E/One Uni-Lateral assembly (E/One part number NB0184PXX or NC0193GXX) or E/One Redundant Check Valve (E/One part number PC0051GXX) be installed in the pipe lateral outside the home between the pump discharge and the street main on all installations.
- J. The electrical enclosure shall be furnished, installed and wired to the grinder pump station by the Contractor. An alarm device is required on every installation, there shall be no exceptions.
- K. The Contractor shall mount the alarm device in a conspicuous location, as per national and local codes. The alarm panel will be connected to the grinder pump station by a length of 6-conductor type TC cable as shown on the contract drawings. The power and alarm circuits must be on separate power circuits. The grinder pump stations will be provided with 32 feet, 25 feet of useable, electrical supply cable to connect the station to the alarm panel. This cable shall be supplied with a factory installed EQD half to connect to the mating EQD half on the core.

3.5 BACKFILL REQUIREMENTS

- A. Proper backfill is essential to the long-term reliability of any underground structure. Several methods of backfill are available to produce favorable results with different native soil conditions. The most highly recommended method of backfilling is to surround the unit to grade using Class I or Class II backfill material as defined in ASTM 2321.
- B. Class 1, angular crushed stone offers an added benefit in that it doesn't need to be compacted. Class II, naturally rounded stone, may require more compactive effort, or tamping, to achieve the proper density. If the native soil condition consists of clean compactible soil, with less than 12 percent fines, free of ice, rocks, roots and organic material, it may be an acceptable backfill. Such soil must be compacted in lifts not to exceed one foot to reach a final Proctor Density of between 85 percent and 90 percent. Non-compactible clays and silts are *not* suitable backfill for this or any underground structure such as inlet or discharge lines. If you are unsure of the consistency of the native soil, it is recommended that a geotechnical evaluation of the material is obtained before specifying backfill.
- C. Another option is the use of a flowable fill (i.e., low slump concrete). This is particularly attractive when installing grinder pump stations in augured holes where tight clearances make it difficult to assure proper backfilling and compaction with dry materials. Flowable fills should not be dropped more than 4 feet from the discharge to the bottom of the hole to avoid separation of the constituent materials.
- D. Improper backfilling may result in damaged stations. The grinder pump station shall be installed at a minimum depth from grade to the top of the 1 1/4" discharge line, to assure maximum frost protection. The finish grade line shall be 1" to 4" below the bottom of the lid, and final grade shall slope away from the grinder pump station.

- E. All restoration will be the responsibility of the Contractor. Per unit costs for this item shall be included in the Contractor's bid price for the individual grinder pump stations. The properties shall be restored to their original condition in all respects, including, but not limited to, curb and sidewalk replacement, landscaping, loaming and seeding, and restoration of the traveled ways.

3.6 START-UP AND FIELD TESTING

- A. The Manufacturer shall provide the services of qualified factory trained technicians who shall inspect the placement and wiring of each station, perform field tests as specified herein, and instruct the Owner's personnel in the operation and maintenance of the equipment before the stations are accepted by the Owner.
- B. All equipment and materials necessary to perform testing shall be the responsibility of the Contractor. This includes, as a minimum, a portable generator and power cable (if temporary power is required), water in each basin (filled to a depth sufficient to verify the high level alarm is operating), and opening of all valves in the system. These steps shall be completed prior to the qualified factory trained technicians arrival on site.
- C. Upon completion of the installation, the authorized factory technician(s) will perform the following test on each station:
 - 1. Make certain the discharge shut-off valve in the station is fully open.
 - 2. Turn ON the alarm power circuit and verify the alarm is functioning properly.
 - 3. Turn ON the pump power circuit. Initiate the pump operation to verify automatic "on/off" controls are operative. The pump should immediately turn ON.
 - 4. Consult the Manufacturer's Service Manual for detailed start-up procedures.
- D. Upon completion of the start-up and testing, the Manufacturer shall submit to the Engineer the start-up authorization form describing the results of the tests performed for each grinder pump station. Final acceptance of the system will not occur until authorization forms have been received for each pump station installed and any installation deficiencies corrected

PART 4 - EXECUTION

4.1 MANUALS

- A. The Manufacturer shall supply four copies of Operation and Maintenance Manuals to the Owner, and one copy of the same to the Engineer.

END OF SECTION

DIVISION 16 - ELECTRICAL

SECTION 16011

GENERAL ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. This section covers the requirements for furnishing and installing all electrical work.

1.2 WORK INCLUDED

- A. The Contractor under this Division shall provide all labor, materials, equipment, supervision, and services required for the construction of the electrical systems. The finished installations shall be complete, operable and shall include all work specified herein and shown on the Drawings.
- B. The work shall include complete testing of all equipment and wiring at the completion of the work and making any minor connection changes or adjustments necessary for the proper functioning of the system and equipment. All systems shall be properly adjusted and in working order at the time of final acceptance.
- C. All painting and other finishing work shall conform to the applicable requirements of the specifications as prescribed in appropriate sections.
- D. It is the intent of these Specifications and other Contract Documents to require an installation complete in every detail. Consequently, the Contractor will be responsible for minor details or for any special construction which may be found necessary to properly furnish, install, adjust, test, and place in successful and continuous operation, the entire electrical system, and the cost of same shall be included in the contract price.

1.3 DESCRIPTION OF WORK

- A. Work specified in this Division shall include, but not be limited to the following:
 - 1. Complete power connection for grinder pump, including circuit breaker, disconnect switch and wiring.

1.4 REFERENCES

- A. Comply with the applicable requirements of the following standards unless otherwise indicated:

1. Comply with local ordinances; National Electrical Code; applicable regulations of the National Board of Fire Underwriters; specifications of ANSI, NEMA, UL, and IPCEA; and regulations of the City and County of Honolulu and the State of Hawaii.
2. Comply with TIA/EIA-569-B Commercial Building Telecommunications Cabling Standard: "Pathways and Spaces" and TIA/EIA-568-B Commercial Building Telecommunications Cabling Standard.
3. In the event of conflict between pertinent codes and regulations, and the requirements of the referenced standards, or those indicated in Specifications and on drawings, the provision of the more stringent shall govern.

1.5 RELATED WORK

- A. Division 1 - General Requirements.

1.6 PERMITS AND INSPECTION

- A. All permits required by local ordinances shall be obtained and paid for by the Contractor.
- B. After completion of the work, the Contracting Officer shall be furnished a certificate of final inspection and approval from the electrical inspection department of the reviewing Building Department.

1.7 COORDINATION

- A. Refer to all project Drawings and to all Sections of the project Specifications. Coordinate and fit all work accordingly so that all electrical outlets and equipment will be properly located and readily accessible. The Drawings indicate the relation of wiring and connections and must not be scaled for exact locations. Verify all construction dimensions at the project and make changes necessary to conform to the building as constructed. Work improperly installed due to lack of construction verification shall be corrected at the Contractor's expense.
- B. Work shall be scheduled to avoid delays, interferences, and unnecessary work. If any conflicts occur necessitating departures from the Drawings and Specifications, details of departures and reasons therefore shall be submitted immediately for consideration by the Contracting Officer

1.8 SUBMITTALS

- A. Submit shop drawings and catalog cuts of the equipment and products identified in each Division 16 technical section for approval in accordance with SUBMITTALS section of these specifications. Each submittal shall be prepared with a summary sheet attached to each copy identifying all items included in the submittal. Incomplete submittals and those without summary sheets will be returned without review.

1.9 DELIVERY, HANDLING AND STORAGE

- A. Deliver all materials of this Division in manufacturer's original unopened packages or containers with label intact and legible.
- B. Use means necessary to protect the materials of this section before, during and after installation; to protect the installed work and materials of all other trades; and to protect the original structure, work and materials of the State.
- C. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Contracting Officer and at no additional cost to the State.

1.10 WARRANTY

- A. Installation shall be complete in every detail as specified and ready for use. Furnish a one (1) year warranty against defects resulting from the use of defective or inferior materials, equipment, or workmanship. Such items shall be replaced by such new materials, apparatus or parts to make such defective portion of the complete system conform to the true intent and meaning of the drawings and specifications at no additional cost to the State. The warranty period shall commence from the project acceptance date.
- B. The warranty shall be countersigned by the Contractor.

PART 2 - PRODUCTS

2.1 MATERIALS AND WORKMANSHIP

- A. All materials shall conform to the latest issue of all applicable standards as established by NEMA, NFPA, ANSI, IEEE, ASTM and Underwriters' Laboratories, and shall bear the manufacturer's name, trade name and when available, the Underwriters' Label.
- B. Within twenty (20) days after the contract has been awarded, or as otherwise directed, forward to the Contracting Officer a complete list of all materials and equipment proposed for installation. The intent to use the exact makes specified does not eliminate the responsibility of submitting such a list. List shall include sufficient information to permit ready and complete identification. After the work is completed, Contractor shall provide drawings showing the as-built conditions.
- C. Neat appearances in the finished work will be required. Only experienced electrical workers shall be employed for the electrical installation.
- D. All work not installed and completed in accordance with the latest rules and regulations of the NEC, OSHA, NESC, and all local ordinances shall be removed and reinstalled correctly at the Contractor's expense.

PART 3 - EXECUTION

3.1 GENERAL

- A. Install all electrical materials and equipment in accordance with manufacturer's recommendations and as approved by the Contracting Officer.
- B. Cut, break, drill and patch as required to install electrical system. Repair any surface damaged or marred by notching, drilling or any other process necessary for installation of electrical work. Patch any damaged surfaces to match the adjacent surface.
- C. The Electrical Contractor shall coordinate his work with other trades on site to avoid conflicts.

3.2 JOB CONDITIONS

- A. These specifications are accompanied by construction drawings including plans showing locations of all wiring, outlets, devices, and other electrical equipment. The locations are approximate and before installing, study adjacent structural and architectural details and make installation in most logical manner. Any device may be relocated within 10 feet before installation at direction of the Contracting Officer without additional cost to the State.
- B. Before installing, verify all dimensions and sizes of equipment.
- C. Verify that electrical system may be installed in strict accordance with the original design, the Drawings and Specifications and the manufacturer's recommendations.
- D. In the event of discrepancy, immediately notify the Contracting Officer. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.3 DEMONSTRATION OF COMPLETE ELECTRICAL SYSTEMS

- A. Submit written certification that electrical systems are complete and operational. Submit certification with Contractor's request for final review.
- B. At the time of final review of electrical work, demonstrate the operation of electrical systems. Provide labor, apparatus and equipment for systems' demonstration. The various tests shall be under the direction and supervision of the Contracting Officer.
- C. The Contractor shall perform start-up and all tests as required to obtain final field acceptance from the State. All tests shall be conducted in the presence of the Contracting Officer or his representative.
- D. The Contractor shall be responsible for all tests. Testing shall be performed by and under the immediate supervision of the Contractor.

- E. A visual inspection of all electrical equipment, to check for foreign material, tightness or wiring and connection, proper grounding, matching nameplate charts with specification, etc., shall be made prior to actual testing.

END OF SECTION

SECTION 16400

ELECTRICAL WORK

PART 1 - GENERAL

1.1 SUMMARY

- A. Furnish all labor and materials required to complete all electrical work indicated on the drawings and/or as specified.
- B. In general, the following work is included:
 - 1. Complete power connection for grinder pump, including circuit breaker, disconnect switch and wiring.
- C. The term "wiring" shall include raceway, conductors, equipment, and wiring.
- D. The term provide shall mean furnish and install.
- E. Test complete installation and correct all defects and malfunctions of material and workmanship at no additional charge to the State.

1.2 SUBMITTALS

- A. Submit in accordance with SECTION 01330 - SUBMITTAL PROCEDURES.
- B. Product Data: Submit six (6) sets of manufacturer's product data of the following equipment and resubmit until approval is received before placing order:
 - 1. Circuit Breakers.
 - 2. Disconnect Switches.
 - 3. Raceways.
 - 4. Cables and wires.
 - 5. Junction boxes, cabinets, and outlet boxes.
 - 6. Any built-to-order equipment.
- C. Substitute Materials: Submit shop drawings and catalog cuts for substitute materials. Substitute materials shall clearly specify compliance with and/or deviation from specified material. Approval of shop drawings and catalog cuts shall not release Contractor from complying with intent of specifications and drawings. Any deviations from approved shop drawings shall have prior approval by the Contracting Officer.

- D. Guarantee: Submit guarantee as noted under item entitled "GUARANTEE" hereinbelow.
- E. As-Built Drawings: Submit as-built drawings as noted under item entitled "DRAWINGS" hereinbelow.

1.3 RULES AND PERMITS

- A. The entire installation to be made in strict accordance with applicable provisions of 2020 edition of the National Electrical Code, Local Ordinances, and rules and regulations of the City and County of Honolulu and the State of Hawaii.
- B. Contractor shall obtain and pay for electrical permit(s) as required by local rules and regulations. Contractor shall arrange for periodic inspections by local authorities as work progresses so that certificates of completion and inspections may be turned over to the Contracting Officer as stipulated in GENERAL CONDITIONS.

1.4 GUARANTEE

- A. All work and material executed under this Section shall be guaranteed to be free from defects of materials and workmanship for one (1) year from date of final acceptance of a project as a whole. All work of repair and replacement required, including other work damaged by this work's defects shall be performed without cost to the State of Hawaii.

1.5 DRAWINGS

- A. Specifications are accompanied by drawings of site plans, and diagrammatic electrical plans showing locations of feeders, pullboxes, switchboards, panelboards, and other electrical equipment. Locations are approximate. Before installing, study applicable construction details and make installation in most logical manner. Any device or equipment may be relocated within 10'-0" before installation at direction of the Contracting Officer without additional charge to the State.
- B. Before installing, verify all dimensions and sizes of equipment and devices at the jobsite. Circuit and conduit routing is typical and may be field altered in a logical manner; however, all alterations to the design shall be approved by the Contracting Officer and shown on "field posted as-built" drawings. See Section 01770 - CLOSEOUT PROCEDURES for "Field Posted As-Built" drawing requirements.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. All materials shall be new and of the best quality available in their respective kinds, free from all defects and shall conform to standards of Underwriters' Laboratories,

Inc., NEMA, ANSI, ASTM, and IEEE. Materials and equipment listed by Underwriters' Laboratories shall bear "UL" label of approval. Brand names, manufacturer's names, and catalog numbers indicate standards of design and quality required. Substitute materials other than those listed in each paragraph will not be solicited unless indicated with "or approved equal". Substitute materials may be used by written permission from the Contracting Officer. List of substitute material together with qualifying data shall be submitted for approval and acceptance as provided in Section 00700 - GENERAL CONDITIONS.

Example:

<u>Item</u>	<u>Manufacturer and Catalog No. Specified</u>	<u>Substitute Manufacturer and Catalog Number</u>
Cable	Joe Doe - No. 3200	King - No. 2200

Qualifying data shall include cuts, drawings, and specifications to show equality with materials specified herein and in drawings.

B. Raceways:

1. Rigid Steel: Hot dipped galvanized inside and outside, round bore, 3/4 inch diameter, except as noted. Exterior use and interior use below 8'-0".
2. Electrical Metallic Tubing (EMT): Thin walled steel tubing, zinc-coated, 3/4 inch minimum diameter. Interior use concealed in walls and exposed above 8'-0".
3. Flexible Conduits: Flexible steel, zinc-coated, 1/2 inch minimum, and used with factory approved fittings. In wet locations, use liquid-tight type jacketed with polyethylene.

C. Outlet Boxes: Surface boxes shall be from die-cast aluminum with threaded hubs for conduit connections.

D. Wires and Cables:

1. Conductors in interior locations shall be copper, 600 volts, No 12 AWG minimum (No. 14 minimum, fire alarm system). Conductors in wet, damp moist or exterior locations shall be NEC Type XHHW, RHW or THWN. Conductors No. 10 and smaller, solid and round. Conductors No. 8 and larger, 7 or 19 strands. Conductors No. 8 and smaller shall be NEC Type THHN and THWN. Conductors No. 6 and larger shall be NEC Type THHN or XHHW. Wiring fixtures and fixture wiring channels shall be Type RHH or THHN.
2. Color Coding

120/240V

Black	insulation material - Phase "A"
Red	insulation material - Phase "B"
White	insulation material - Neutral
Green	insulation material - Ground

Color coding shall be maintained throughout entire system.

- E. Conduit Accessories: Couplings, spacers, plugs, and accessories shall be as recommended by the manufacturer of conduits.
- F. Outdoor Exposed Raceways: Raceways shall be hot dipped galvanized inside and outside, round bore, 3/4" diameter, except as noted.
- G. Junction Boxes: Junction boxes, unless otherwise specified, shall be NEMA 1 for interior locations and NEMA 4X for exterior locations exposed to rain and splashing water. NEMA 1 junction boxes shall be fabricated from galvanized steel. NEMA 4X junction boxes shall be fabricated from a fiberglass reinforced material with latches and hinges made of the same material. Prime paint and enamel finish according to NEMA specifications. Manufacture and install according to NEC Article 370.
- H. Equipment Connection: Power connection to equipment from nearest box, disconnect or controller with watertight flexible conduit and locknut type or threaded connector.
- I. Individual Circuit Breaker: Molded plastic case circuit breaker with toggle operated mechanism thermal-magnetic overload trips. Interchangeable trip shall be provided when available. Toggle positions "ON", "TRIPPED", and "OFF", engraved on body or toggle. Manufacture and install according to NEC Article 240. Where specified for use in existing panels, circuit breakers shall be compatible with panel.
- J. Hardware, Support, Backing, etc.: Provide all hardware, supports, backing, and other accessories necessary to install electrical equipment. Wood materials shall be termite treated, iron or steel materials shall be galvanized for corrosion protection, and non-ferrous materials shall be brass or bronze. All wood screws shall be brass or galvanized steel.
- K. Equipment Disconnect and Fused Switches: Heavy-duty, fusible or non-fusible safety switch. Horsepower rated when used as motor disconnect. Contacts shall be lever operated, spring loaded and enclosed in NEMA 1 enclosures for interior locations and NEMA 3R enclosures for exterior locations. When for use with fuses of current limiting type, clips shall be rejection type. Manufacture and install according to NEC Articles 240, 380, and 430. Provide 3 spare fuses of each ampere rating. Siemens, Schneider, General Electric and Eaton equals.
- L. Conduit and Duct Accessories: Couplings, spacers, plugs, and accessories shall be as recommended by the manufacturer of conduits and ducts.

M. Cable Markers:

1. Rectangular, commercially available polyethylene cable tags with pre-punched holes at each corner for the attachment with self-locking ties.
2. Minimum 0.0035-inch thick.
3. Average Tensile Strength: 4500 pounds p.s.i.
4. Non-corrosive, non-conductive, resistant to acids, alkalis, organic solvents, salt water and distortion-resistant in temperatures up to 300 degrees F.
5. White or yellow and machine printed with the phase Building Feeder Building “__”, in black block letters 1/8 inch or larger in vertical height. Handwritten markers are not acceptable.
 - a. The preprinting shall be permanent and shall not fade or dissolve.
 - b. The tags shall be suitable for marking with black permanent markers. There shall also be space available for additional notes (for Maintenance/Service Contractor use only).

PART 3 - EXECUTION

3.1 CONSTRUCTION METHODS

- A. Comply with local ordinances and regulations of the County of Maui. Workmanship subject to the approval of the Contracting Officer who shall be afforded every opportunity to determine skill and competency. Concealed work reopened at random during formal inspection by the Contracting Officer without additional charge to the State.
- B. Construction shall conform to construction practices as recommended by American Electricians Handbook by Croft (latest edition), National Electrical Code, National Electrical Safety Code, and applicable instructions of manufacturers of equipment and materials for this project.

3.2 OUTLET BOXES

- A. Provide outlet boxes where called for in drawings.

3.3 CONDUIT FILL IN RACEWAY

- A. Conform to NEC Appendix C unless otherwise indicated on the drawings.

3.4 WIRE PULLING

Anuenue Fisheries Research Center
Annex Facility Improvements–Phase 1B (Sewer Improvements)
Job No. C00BO91C

Electrical Work
16400-5

- A. Mechanical means for pulling shall be torque-limiting type and not used for No. 2 AWG and smaller wires. Pulling tension shall not exceed wire manufacturer's recommendations. Where necessary, soapstone may be used as a lubricant for drawing wires through conduit. Other means of lubricating allowed with written approval of the Contracting Officer.

3.5 WIRE SPLICING AND TERMINATION

- A. Form wires neatly in enclosures and boxes.
- B. Splice in accordance with NEC Article 110.
- C. Conductors No. 10 and smaller with solderless-tapeless connectors, "Ideal Wire Nuts" or equal. Splice conductors No. 8 through No. 4/0 with high pressure compression (indent) copper sleeve connectors. Do not use bolt-on connectors. Reinsulate splices and make waterproof.
- D. Reinsulate splices according to wire manufacturer's instructions. Splice insulation shall be 150 percent in thickness of original wire insulation and of same electrical and mechanical characteristics.

3.6 RACEWAYS

- A. All conduits within building line shall be surface metal raceway (for existing buildings only) or electrical metallic tubing. Electrical metallic tubing may be used only above ground level slab. Rigid steel raceways shall be used in exposed locations below 8'-0" indoors. All conduits below exterior finished grade shall be encased in minimum 3 inches thick concrete. Provide No. 14 galvanized steel pull wire or nylon cord in all empty conduits.
- B. Cut raceways square and ream inner edges. Butt together evenly in couplings.
- C. Make bends and offsets with hickey or conduit bending machine; do not use vise or pipe tee. Make bends so that interior cross-sectional area will not be reduced. Radius of curve of inner edge of field bend not less than 10 times internal diameter of raceway. Use of running threads not permitted. Where raceways cannot be joined by standard threaded couplings, use approved watertight raceway unions.
- D. Provide raceway expansion joints for exposed and concealed raceways and underground ducts with necessary bonding conductor at building expansion joints and between buildings or structures and where required to compensate for raceway or building thermal expansion and contraction. Provide expansion fittings every 200 feet on outdoor underground ducts. Verify locations of expansion joints and other critical locations with Structural drawings.
- E. Cap raceways during construction with plastic or metal-capped bushings to prevent entrance of dirt or moisture. Swab all raceways out and dry before wires or cables

are pulled in.

- F. Mount raceways free from other piping, valves or mechanical equipment.
- G. Fish wires, cords, strings, chains, or the like shall not be placed or inserted in the conduit system during installation.
- H. Install insulating bushings and 2 locknuts on each end of every run of conduit at enclosures and boxes. Provide grounding bushings as required to grounding receptacles and connect conduits to service ground, per NEC Article 250.
- I. Project adequate number of conduit threads through box for bushings.
- J. Run exposed conduit or raceway parallel with, or at right angles to, structural or architectural elements.
- K. Securely fasten conduits with galvanized pipe straps with screws or bolts spaced not more than 7 feet apart, or with approved beam clamps, or approved single or gang pipe hangers spaced not more than 7 feet apart, as conditions require. Vertical runs supported at intervals not exceeding 5 feet by approved clamp hangers. Conduit runs with one 90 degree bend or equivalent, 150 feet maximum without pullbox. Conduit runs with two 90 degree bends or equivalent, 100 feet maximum without pullbox.

3.7 GROUNDING

- A. Conform to applicable requirements in National Electrical Code, National Electrical Safety Code, and to requirements herein.
- B. Provide grounding for entire electrical installation as indicated and specified herein. Following are included as requiring grounding:
 - 1. Conduits, other conductor enclosures, electric panels, disconnect switches and loadcenters.
 - 2. Neutral or identified conductor of interior wiring system.
 - 3. Non-current carrying metal parts of fixed equipment, such as motors, starter and controller cabinets, lighting fixtures, etc.
 - 4. Grounding conductor in non-metallic conduits as required by NEC.
- C. Grounding Electrodes: Where underground water piping is available, ground connection shall be made to it at a point which will be accessible for future inspection, it shall serve as grounding electrode. Make connection to such water piping inside buildings on street side of main shut-off valve. In addition, connection to copper clad ground rods. Resistance to ground shall be 25 ohms maximum. Ground rods shall be 3/4" x 10 feet minimum. Bond ground rods with #1/0 bare copper wires.

- D. Manner of Grounding: Sizes and types of ground conductors, ground clamps, bonding jumpers, conduit, fittings, also methods of securing same to obtain electric continuity and effective grounding, when not indicated; as per NEC Article 250.

3.8 CONDUCTOR IDENTIFICATION SYSTEM

A. Underground conductor markers:

1. Provide markers at both ends of the conductors and at all intermediate locations where the conductors are accessible and visible.
2. Each marker shall be secured with 2 nylon ties.

3.9 CLEANING AND REPAIRING

- A. During the process of work, all rubbish, waste lumber, displaced materials, etc. shall be removed as soon as possible and upon completion of work, Contractor shall remove from State's property and from all public and private property, at his own expense, all temporary structures, rubbish, and waste material resulting from his operations.
- B. The Contractor shall restore all removed or damaged pavement, gutters, curbs, sidewalks, sign posts, trees, and landscape damaged by his operations to their original condition or better and to the acceptance of the Contracting Officer.

3.10 FINISHING

- A. Patch, repair, and restore all structural and architectural elements cut or drilled for installation of electrical system. Drilling, cutting, patching, repairing, and restoring shall be subject to approval of the Contracting Officer.
- B. Attach electrical equipment to wood by wood screws, and attach to concrete by embedded or expansion inserts and bolts. Use powder-driven charge with approval only. Close unused knockouts on boxes or enclosures with metal cap.
- C. Wipe clean all exposed raceways and enclosures with rag and approved solvent. Prime paint and finish all exposed raceways and enclosures to match adjoining wall finish. Factory finished enclosures shall not be painted unless called for in drawings.
- D. Identify electric panels and loadcenters by nameplates on door, including voltage and designation. Provide nameplates on front of disconnect switches and junction boxes where wires are terminated for connection to equipment. Designate equipment served, voltage, and phase.
- E. Complete all panel directories with typewriter or computer. Handwritten panel

directories are not acceptable.

- F. Nameplates: Laminated plastic, black/white, engraved with 3/16-inch high commercial letters to expose white. Screw mounted. Impression type adhesive tapes not acceptable.

3.11 TESTS

- A. Operating Test: After installation has been completed, and at such time as the Contracting Officer may direct, Contractor shall conduct an operating test for approval. Equipment shall be demonstrated to operate in accordance with requirements of this section of specifications. Test shall be performed in the presence of the Contracting Officer. Contractor shall furnish necessary instruments and personnel required for test. Balance loading on each feeder and test ground fault circuit breakers. The ground fault setting of the main and branch circuit breakers shall be set to 5mA.
- B. Ground Resistance Measurements: Take ground resistance measurements of each ground rod and certify results to Engineer. Contractor shall submit in writing to Engineer upon completion of project, measured ground resistance of each ground rod and grounding system, as well resistance and soil conditions at time measurements were made. Ground resistance measurements shall be made in normally dry weather, not less than 48 hours after rainfall, and with ground under test isolated from other grounds.

END OF SECTION