

DIVISION OF STATE PARKS

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

BOARD OF LAND AND NATURAL RESOURCES

Suzanne D. Case
Chairperson

CONTRACT SPECIFICATIONS AND PLANS

Job No. F55C642D
WAIANAPANAPA STATE PARK, WALKWAY IMPROVEMENTS
HANA, MAUI, HAWAII

Civil Engineer: Fukumoto Engineering, Inc.

January 2016

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DEPARTMENT OF LAND AND NATURAL RESOURCES
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Honolulu, Hawaii

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HANA, MAUI, HAWAII

Approved: 
CURT A. COTTRELL
State Parks Administrator
Division of State Parks

Approved: 
CARTY S. CHANG, P.E.
Chief Engineer
Engineering Division

January 2016

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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. F55C642D, Waianapanapa State Park Walkway Improvements, Hana, Maui, Hawaii 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.

The project is located at Waianapanapa State Park, Hana, Maui, Hawaii.

The work shall generally consist of removing and replacing hard-surface paths, railings, and stairs.

Due to the nature of work contemplated, bidders must possess a valid State Contractor's license, classification "A".

A voluntary pre-bid conference will be held at the Department of Land and Natural Resources, Engineering Division Conference Room, located at 1151 Punchbowl Street, Room 221, Honolulu, Hawaii; and at the Maui Engineering Division Office (via telecom), located at 130 Mahalani Street, Wailuku, Maui, Hawaii, on January 19, 2016 at 9:00 a.m.

The estimated cost of construction is \$770,000.

As a condition of award of the contract and final payment, the vendor shall provide proof of compliance with the requirement of 103D-310(c) HRS. Proof of compliance/documentation is obtained through Hawaii Compliance Express (HCE). Vendors shall register in HCE, a program separate from HiePRO. The annual subscription fee to utilize the HCE service is currently \$12.00. Allow 2 weeks to obtain complete compliance status after initial registration. It is highly recommended that vendors subscribe to HCE prior to responding to a solicitation. The vendor is responsible for maintaining compliance. If the vendor does not maintain timely compliance in HCE, an offer otherwise deemed responsive and responsible may not be awarded. See HiePRO Buyer FAQ on the State Procurement Office website for more information.

Vendors are required to be compliant with all of the requirements of 103D-310(c) HRS at the specified response due date (bid opening). The proof of compliance/documentation will be verified through the Hawaii Compliance Express. Failure to be fully compliant at the specified response date shall deem the vendor's bid to be non-responsive and vendor's bid will be rejected.

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

This project is subject to preference to Hawaii Products established by Section 103D, Hawaii Revised Statutes. The Hawaii Product List may be examined at the State Procurement Office website.

Since the estimated 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.
- Y. 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
- Z. 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.

- AA. 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.
- BB. 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.

- CC. 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.
- DD. 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.
- EE. 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.
- FF. 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.

GG. 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.

PROPOSAL

FOR

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION
State of Hawaii

Job No. F55C642D
WAIANAPANAPA STATE PARK, WALKWAY IMPROVEMENTS
HANA, MAUI, 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 remove and replace hard-surface paths, stairs, and railings, and construct a new boardwalk , 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. F55C642D
WAIANAPANAPA STATE PARK, WALKWAY IMPROVEMENTS
HANA, MAUI, HAWAII

on file in the office of the Engineering Division for the TOTAL BASE BID (Items 1 to 20) of:

_____ Dollars (\$_____)

and will fully complete all work under this contract within 270 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.		L.S.	Erosion Control		\$
2.		L.S.	Demolition, Hauling and Disposal		\$
3.		L.S.	Clearing & Grubbing		\$
4.		L.S.	Grading		\$
5.		L.S.	Tree Root Removal, Root Barrier Installation		\$
6.		L.S.	Tree Removal		\$
7.	6,040	S.F.	Concrete Walkway	\$	\$
8.	1,070	S.F.	Concrete Stairs	\$	\$
9.	3	EA.	Concrete Bench	\$	\$
10.		L.S.	Retaining Wall		\$
11.		L.S.	Grassing		\$
12.		L.S.	Stainless Steel Pipe Railing		\$
13.		L.S.	Project Sign		\$
14.	895	L.F.	Three-Rail Barricade	\$	\$
15.		L.S.	Boardwalk		\$
16.		L.S.	Extend Cemetery Rock Wall		\$
17.		L.S.	Re-Build Rock Wall		\$
18.		L.S.	Project Sign		\$
19.	Allowance		Field Office		\$ 10,000.00
			Subtotal Base Bid (Items 1-19)		\$
20.		L.S.	Mobilization and Demobilization (not to exceed 10% of the Subtotal Base Bid)		\$
			Total Base Bid (Items 1-20)		\$

HAWAII PRODUCTS PREFERENCE AND/OR USE OF HAWAII PRODUCTS

In accordance with Act 175, SLH 2009, the Hawaii products preference is applicable to this solicitation. Bidders offering a Hawaii product (“HP”) shall identify the HP in the table below.

Persons desiring to qualify their product(s) not currently on the Hawaii Product List, shall complete Form SPO-38, *Certification for Hawaii Product Preference*, and submit the completed form no later than the deadline specified in the procurement notice and solicitation. The responsibility for certification and qualification shall rest upon the person requesting the preference. One form shall be completed and submitted for each product. Form SPO-38 is available at <http://hawaii.gov/spo/>.

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

In the event of any change that materially alters the bidder’s ability to supply the Hawaii product(s), the bidder shall immediately notify the procurement officer in writing and the parties shall enter into discussions for the purpose of revising the contract or terminating the contract for convenience.

Item No.	Pre-Approved Hawaii Product Description & Manufacturer	Class (I or II)	Quantity	Unit Measure	Unit Price	Total Price
1.	<i>[Product Description, Manufacturer Name]</i>	(I)				
2.						
3.						
4.						

RECYCLED PRODUCTS PREFERENCE

This project allows a 10% price preference for recycled products in accordance with HRS 103D-1005. Please indicate your 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 (e.g. Hawaii Products), 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 20) selected by the Board of Land and Natural Resources. Write the total of bid items 1 to 20 on page P-1.

In the event the low bid is below the available funds certified by the appropriate fiscal officer, the head of the purchasing agency responsible for the procurement in question is authorized to award Additives to the lowest bidder. The award of Additives may be in any order or combination such that the Base Bid plus Additives do not exceed the available funds.

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 sixty (60) 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 proposals are opened and read, the figures will be extended and/or totaled in accordance with the bid prices of the acceptable proposals and the totals will be compared. 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 Two Hundred and No/100 (\$ 200.00) 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 providing the work of a required specialty contractor, whose license is not automatically held pursuant to HAR 16-77-32, 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.

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.

Respectfully submitted,

Name of Company, Joint Venture
or Partnership

Contractor's License No.

By _____
Signature (*4)

Title _____

Print Name _____

Date _____

Address _____

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.ehawaii.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 “ninety (90)” 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 ninety (90) 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 deleting “180 days” and replacing with “one (1) year” in the last paragraph.

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 Procurement System on the SPO website: <http://hawaii.gov/spo2/>.

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. Insurance Requirements

1. Obligation of Contractor

The Contractor shall not commence any work until it obtains, at its own expense, all required 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 law to issue such insurance in the State of Hawaii.

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.

Certificate(s) of Insurance acceptable to the Department shall be filed with the Engineer prior to commencement of the work. These certificates shall contain a provision that coverages afforded under the policies will not be canceled or changed until at least thirty 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.

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.

All insurance described herein shall 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.

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.

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 full worker's compensation insurance coverage 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 Insurance and Automobile Insurance. Contractor's commercial general liability insurance and automobile liability insurance shall both be obtained in a combined, single limit of not less than \$1,000,000 per occurrence that 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 a single combined limit of not less than \$1,000,000 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.

- (c) 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 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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SECTION 01019

GENERAL SPECIFICATIONS

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

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 in both hard copy and electronic copy in Adobe PDF format on CD ROM.
 - 4) 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 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
AITC	American Institute of Timber Construction

<u>Abbreviation</u>	<u>Company</u>
	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

<u>Abbreviation</u>	<u>Company</u>
ASHRAE	American Society of Heating, Refrigeration and Air Conditioning Engineers United Engineering Center 345 East 47th Street New York, NY 10017
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 - OEICI) 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

<u>Abbreviation</u>	<u>Company</u>
	122 East 42nd Street New York, NY 10017
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

<u>Abbreviation</u>	<u>Company</u>
HEI	Heat Exchange Institute 122 East 42nd Street New York, NY 10017
HI	Hydraulic Institute 1230 Keith Building Cleveland, OH 44115
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

<u>Abbreviation</u>	<u>Company</u>
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
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

<u>Abbreviation</u>	<u>Company</u>
	2 Pennsylvania Street New York, NY 10001
SAMA	Scientific Apparatus Makers Association One Thomas Circle Washington, DC 20005
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

Abbreviation

Company

Portland, CA 97204

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

Standard References
01090-8

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.

END OF SECTION

SECTION 01300

SUBMITTALS

PART 1 - GENERAL

1.1 SUBMITTALS

A. Shop drawings shall be required for:

1. Handrails.
2. Any others as called for in the plans, specifications or by the Engineer.

B. Other required submittals shall include:

1. Manufacturer's Data.
2. Certificates of Warranty.
3. 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

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 temporary 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. Lumber: Lumber for rails, frames and braces shall be dry, sound, undamaged, well seasoned, and free from any defect which may impair their strength and durability.
- B. Hardware: Nails shall be galvanized wire nails. As many and as large a size as is practicable shall be used.
- C. Paints: Paints shall be exterior enamel paint of the best grade or first line as made by approved manufacturers.
- D. 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".
- E. 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 semi-permanent 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 suspensions.
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

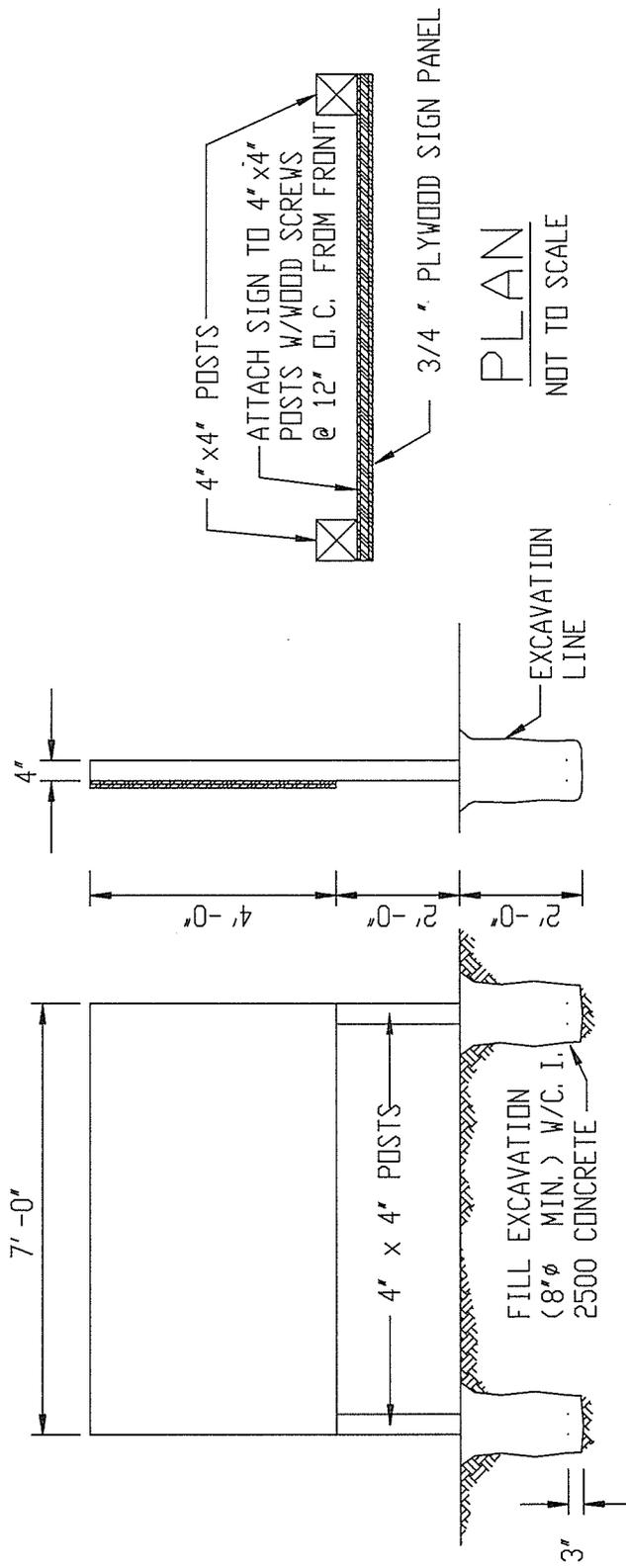
- A. The Project Sign shall be constructed with new materials as specified above.
- B. The Project sign shall be installed at the location indicated on the drawings or as designated by the Engineer. The project sign shall be erected upon commencement of work.

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

Project Sign
01581-2



PLAN
NOT TO SCALE

SIDE ELEVATION
NOT TO SCALE

FRONT ELEVATION
NOT TO SCALE

SECTION 02230

SITE CLEARING

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. Work includes but is not necessarily limited to clearing and grubbing.

1.2 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with applicable portions of codes and regulations of governmental agencies having jurisdiction.
- B. Qualifications: Use skilled workers who are thoroughly trained and experienced with the specified requirements and methods to perform and complete the Scope of Work under Contract.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Provide materials, not specifically described but required for proper completion of the work of this Section.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 PROTECTION

- A. Protect existing utilities and improvements indicated or made known.
- B. Protection of Persons and Property:
 - 1. Barricade open depressions and holes occurring as part of this Work, and post warning lights on property adjacent to or within public access.
 - 2. Operate warning lights during hours from dusk to dawn each day and as otherwise required.

3. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by operations under this Section.
 - C. Use means necessary to prevent dust, runoff, and erosion from becoming a nuisance to the public, to neighbors, and to other work being performed on or near the site. Implement and maintain construction best management practices.
 - D. Maintain access to the site at all times.
 - E. Immediately repair or replace existing improvements damaged during this Work.
- 3.3 SALVAGING MATERIAL
- A. Carefully remove and properly store materials scheduled to be reused in the new construction.
- 3.4 CLEARING
- A. Clear out roots 1" in diameter and larger to a depth of at least 12" below the existing ground surface or subgrade of new graded surface, whichever is lower. Treat roots remaining in the soil with an approved weed killer.
 - B. Remove surface improvements such as slabs and pavements in areas to receive fill.
- 3.5 DISPOSAL
- A. General:
 1. Remove brush, grass, roots, trash, and other materials from clearing operations.
 2. Dispose of away from the site in a legal manner.
 3. Do not store or permit debris to accumulate on the job site.
 - B. Do not burn debris.

END OF SECTION

SECTION 02300

EARTHWORK

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. Work includes but is not necessarily limited to excavating, backfilling, compacting, and grading the site.

1.2 REFERENCE SPECIFICATIONS

- A. Conform with the applicable sections of the *HAWAII STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2005* as revised, except as amended in the Plans and Specifications herewith. (Paragraphs concerning Measurement and Payment are not applicable to this project.)

1.3 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with applicable portions of Codes and regulations of governmental agencies having jurisdiction.
- B. Qualifications: Use skilled workers who are thoroughly trained and experienced with the specified requirements and methods to perform and complete the Scope of Work under Contract.
- C. Use equipment adequate in size, capacity, and numbers to accomplish the work in a timely manner.
- D. Testing: All sampling and testing shall be performed by an independent testing agency and all test results submitted to the Engineer for approval. All cost of sampling and testing shall be borne by the contractor.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. Unclassified Excavation: All excavation materials are unclassified regardless of composition, whether earth, solid rock, boulders, coral, asphalt pavement, concrete, rubbish, or other material.
- B. Satisfactory Excavated Material: On-site material classified by ASTM D 2487 as CL, ML, SC, SM, GW, GP, and SW, and combinations thereof such as CL-ML are satisfactory for backfill; however, the material must be free of roots and other organic matter, trash, stones larger than 3 inches, and other deleterious material.

- C. Unsatisfactory Excavated Material: Material that does not comply with the requirements for satisfactory excavated materials. Unsatisfactory excavated materials include but are not limited to those materials containing roots and other organic matter, trash, stones larger than 3 inches, other deleterious material and materials classified in ASTM D 2487, as CH, MH, PT, OH, and OL. Unsatisfactory excavated materials also include man-made fills, refuse, or backfills from previous construction.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 PROCEDURES

- A. Utilities:

1. Unless shown to be removed, protect active utility lines shown on the Drawings or otherwise made known to the Contractor prior to excavating. If damaged, repair or replace at no additional cost to the State.
2. If active utility lines are encountered, and are not shown on the Drawings or otherwise made known to the Contractor, promptly take necessary steps to assure that service is not interrupted.
3. If service is interrupted as a result of work under this Section, immediately restore service by repairing the damaged utility at no additional cost to the State.
4. If existing utilities are found to interfere with the permanent facilities being constructed under this Section, immediately notify the Engineer and secure his instructions.
5. Do not proceed with permanent relocation of utilities until written instructions are received from the Engineer.

- B. Protection of Persons and Property:

1. Barricade open holes and depressions occurring as part of this Work, and post warning lights on property adjacent to or with public access.
2. Operate warning lights during hours from dusk to dawn each day and as otherwise required.
3. Protect structures, utilities, sidewalks, pavements, and other facilities from damage

caused by settlement, lateral movement, washout, and other hazards created by operations under this Section.

4. Use proper safety precautions in accordance with applicable government regulations during construction, especially near neighboring buildings, due to the susceptibility of excavations caving in near groundwater level.

C. Dewatering:

1. Remove all water, including rain water, encountered during trench and substructure work to an approved location by pumps, drains, and other approved methods.
2. Keep excavations and site construction area free from water.

D. Use means necessary to prevent dust from becoming a nuisance to the public, to neighbors, and to other work being performed on or near the site.

E. Maintain access to adjacent areas at all times.

3.3 EXCAVATING

A. Perform excavating of every type of material encountered within the limits of the Work to the lines, grades, and elevations indicated and specified herein.

B. Satisfactory Excavated Materials: Transport to, and place in, fill or embankment areas within the limits of the Work.

C. Unsatisfactory Excavated Materials:

1. Excavate to a distance below grade as directed by the Engineer, and replace with satisfactory materials.
2. Include excavation of unsatisfactory materials, and replacement by satisfactory materials, as parts of the work of this Section.

D. Surplus Materials: Dispose of unsatisfactory excavated materials, and surplus satisfactory excavated materials, away from the site at disposal areas arranged and paid for by the Contractor.

E. Excavate and backfill in a manner and sequence that will provide proper drainage at all times.

F. Unauthorized Excavation:

1. Unauthorized excavation consists of removal of materials beyond indicated

subgrade elevations or dimensions without specific instructions from the Engineer.

2. Under footings, foundations, or retaining walls:
 - a. Fill unauthorized excavation by extending the indicated bottom elevation of the footing or base to the excavation bottom, without required top elevation.
 - b. When acceptable, lean concrete fill may be used to bring bottom elevations to proper position.
3. Elsewhere, backfill and compact unauthorized excavations as specified for authorized excavations, unless otherwise directed.

G. Stability of Excavations:

1. Slope sides of excavation to 1:1 or flatter, unless otherwise directed by the Engineer.
2. Shore and brace where sloping is not possible because of space restrictions or stability of the materials being excavated.
3. Maintain sides and slopes of excavations in a safe condition until completion of backfilling.

H. Shoring and Bracing:

1. Provide materials for shoring and bracing as may be necessary for safety of personnel, protection of work, and compliance with requirements of governmental agencies having jurisdiction.
2. Maintain shoring and bracing in excavations regardless of the time period excavations will be open.
3. Carry shoring and bracing down as excavation progresses.

3.4 FILLING AND BACKFILLING

A. Backfill excavations as promptly as progress of the Work permits, but not until:

1. Acceptance of construction below finish grade;
2. Inspecting, testing, approving, and recording locations of underground utilities;
3. Concrete formwork is removed;

4. Shoring and bracing are removed, and voids have been backfilled with satisfactory materials;
5. Trash and debris have been removed; and
6. Horizontal bracing is in place on horizontally supported walls.

B. Ground Surface Preparation:

1. Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from the ground surface prior to placement of fills.
2. Plow, strip, or break up surfaces steeper than five horizontal to one vertical, so that fill material will bond with existing surface.
3. When existing ground surface has a density less than that specified under "compacting" for the particular area, break up the ground surface, pulverize, moisture condition to near optimum moisture content, and compact to required depth and percentage of maximum density.
4. Scarify to a minimum depth of 6", moisture condition to near optimum moisture content as determined by ASTM D1557-91 test procedure, and recompact to provide at least 95 percent of the maximum dry density.

C. Placing and Compacting:

1. Place backfill and fill materials in layers not more than 8" in loose depth.
2. Before compacting, moisten or aerate each layer to near optimum moisture content as determined by ASTM D1557-91 test procedure.
3. Compact each layer to required percentage of maximum density for the area.
4. Do not place backfill or fill material on surfaces that are muddy.
5. Place backfill and fill materials evenly adjacent to structures to required elevations.
6. Take care to prevent wedging action of backfill against structures by carrying the material uniformly around the structures to approximately the same elevation in each lift.
7. If loose or soft areas are encountered, remove soft material, excavate to firm ground, and fill with compacted imported granular structural fill.

3.5 GRADING

A. General:

1. Uniformly grade the areas within limits of grading under this Section, including adjacent transition areas.
2. Smooth the finished surfaces within specified tolerance.
3. Compact with uniform levels or slopes between points where elevations are shown on the Drawings, or between such points and existing grades.
4. Where a change of slope is indicated on the Drawings, construct a rolled transition section having a minimum radius of approximately 8'-0", unless adjacent construction will not permit such a transition, or if such a transition defeats positive control of drainage.

B. Grading Outside Building Lines:

1. Grade areas adjacent to buildings to achieve drainage away from the structures, and to prevent ponding.
2. Finish the surfaces to be free from irregular surface changes, and:
 - a. Shape the surface of areas scheduled to be under walks to line, grade, and cross-section, with finished surface not more than 0.10 ft. above or below the required subgrade elevation.
 - b. Shape the surface of areas scheduled to be under pavement to line, grade, and cross-section, with finished surface not more than 0.05 ft. above or below the required subgrade elevation.

C. Grade landscape planting areas with allowance for layer of topsoil where specified by the landscape architect.

3.6 COMPACTING

- A. Control soil compaction during construction to provide at least 95 percent of the maximum dry density as determined by ASTM D1557-91 test procedure.
- B. Compact the bottom of all footing excavations to provide at least 95 percent of the maximum dry density as determined by ASTM D1557-91 before constructing the footing. Remove any material which cannot be properly compacted at the bottom of the excavation and replace with properly compacted structural fill.
- C. Moisture Control:

1. Where subgrade or layer of soil material must be moisture-conditioned before

compacting, uniformly apply water to surface of subgrade or layer of soil material to prevent free water appearing on surface during or subsequent to compacting operations.

2. Remove and replace, or scarify and air dry, soil material that is too wet to permit compacting to the specified density.
3. Soil material that has been removed because it is too wet to permit compacting may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing, or pulverizing until moisture content is reduced to a satisfactory value as determined by moisture-density relation tests.

3.7 MAINTENANCE

A. Protection of Newly Graded Areas:

1. Protect newly graded areas from traffic and erosion, and keep free from trash and weeds;
2. Repair and reestablish grades in settled, eroded, and rutted areas to the specified tolerances.

- B. Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify the surface, reshape, and compact to the required density prior to further construction.

END OF SECTION

SECTION 02920

LAWNS AND GRASSES

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. Work includes, but is not necessarily limited to providing imported screened soil, soil preparation, fine grading, planting, maintenance, and other items for a complete installation.

1.2 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.3 PRODUCT HANDLING, STORAGE, AND PROTECTION

- A. Use all means necessary to store, handle and protect the materials of this Section, before, during and after installation, from any damage.

PART 2 - PRODUCTS

2.1 IMPORTED SCREENED SOIL

- A. Natural, fertile, friable soil, free from stones, noxious seeds, weeds (especially nut grass), roots, subsoil or other material detrimental to normal plant growth, and screened to pass through a ¼-inch screen.
- B. Red humic soils or types known as Palolo Clay or Lualualei Clay or similar materials will not be accepted.
- C. Use topsoil planting mixture as specified in Section 02250 Grading.

2.2 PRE-PLANTING HERBICIDE

- A. Round-up or approved equal.

2.3 PLANT MATERIAL

- A. Provide sufficient quantities of plant materials need to complete the work. Plant material will be "St. Augustine" grass in sod form.

2.4 GRASS SEEDS (NOT USED)

2.5 STOLONS (NOT USED)

2.6 HYDROMULCH (NOT USED)

2.7 FERTILIZER

- A. Fertilizer will be pelleted and will consist of the following percentages by weight of active ingredients:

NITROGEN 16%

PHOSPHATE 16%

POTASH 16%

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.
- B. Clear all planting areas of existing vegetation not intended to remain, and any other debris and foreign material considered a hindrance to the work or unsightly in appearance.

3.2 PRE-PLANTING WEED CONTROL

- A. Apply pre-planting herbicide to all visible weeds, before and after soil placement, to all areas which will not be seeded.
- B. Protect all existing plants intended to remain from damage.

3.3 IMPORTED SCREENED SOIL

- A. Scarify the existing sub-grade to receive topsoil planting mixture. All planting areas will be graded to 2-inches below the finish grade.
- B. Place and spread a uniform layer of 2-inches of approved topsoil planting mixture throughout all planting areas.

3.4 FINE GRADING

- A. Adjust all finish grading with imported screened soil, as necessary. Grades should be smooth and even on a uniform plane with no abrupt changes or pockets, and slope away from buildings. Verify the surface drainage of all planting areas and notify Owner of any discrepancies, obstructions or other conditions detrimental to proper execution of the work.

- B. Landscape work will relate to existing conditions and controls such as trees and landscape features, utility lines, pavements and curbs, sidewalks, retaining walls, etc. Finished grades will bear proper relationship to controls. Adjust all new work as necessary and as directed to meet the existing conditions and fulfill the intention of the drawings.
- C. After initial settlement, the finish grade will be lower than adjacent walks, curbs, headers, and other features as follows:

Bermuda and other fine grasses: ¼" to ½".
Shrubs and ground covers: 1" to 1 ½".
- D. Immediately prior to planting operations, all planting areas will be cleaned of weeds, debris, and rocks over 1/4" in diameter, and clumps of earth that will not break-up.

3.5 GRASS SPRIGS (NOT USED)

3.6 MAINTENANCE

- A. Maintain all planted areas in optimum growing condition and appearance.
- B. Maintenance will coincide with the delivery of the plant materials to the site, and will continue for a period of 60 calendar days after commencement of the formal maintenance period, or final inspection approval, whichever is later.
- C. Maintenance includes, but is not limited to:
 - 1. Erect barricades in areas susceptible to traffic after planting.
 - 2. Irrigate planted areas to insure active growth, keeping areas moist but not saturated. Regulate irrigation to avoid erosion and developing gullies.
 - 3. Fertilize as needed in accordance with the manufacturer's recommendations, and five days prior to final inspection. Take measures to avoid plant burn.
 - 4. Keep planting areas free of weeds and undesirable grasses.
 - 5. Inspect all planting for disease or insect damage weekly. Treat affected material immediately.
 - 6. Mow grassed areas to a 1-inch height whenever average height exceeds 1-1/2 inches. Remove clippings.
 - 7. Replant immediately the areas where lawns have not uniformly filled in with the same plant material for 90% coverage of healthy, actively growing grass at final inspection.

8. Level undulations and irregularities in the lawn surface. Top dress low or depressed areas with topsoil planting mixture.

END OF SECTION

SECTION 03200

CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Provide reinforcing steel bars for concrete work and furnish only reinforcing steel bars for masonry.

1.2 SUBMITTAL

- A. Submit shop drawings for approval.
- B. Submit Mill certificates of tests on bar steel conforming to ASTM A615 for approval.

1.3 CODES AND STANDARDS

- A. All reinforcing steel work unless specified otherwise herein shall be in accordance with all of the provisions of the ACI 301 - (latest edition), "Specifications for Structural Concrete for Buildings," ACI 318 - (latest edition), "Building Code Requirements for Reinforced Concrete," and Concrete Reinforcing Steel Institute, "Manual of Standard Practice."

1.4 SPECIAL INSPECTION REQUIREMENTS

- A. Special Inspection is required for the following items:
 - 1. Installation of all rebars in the footing and the slab prior to pouring of the concrete.

PART 2 - PRODUCTS

- 2.1 Reinforcing steel shall be deformed billet bars conforming to ASTM A775, Grade 60. All rebars shall be 3M "SCOTCHKOTE" fusion bonded epoxy coating 413 including all tie wires or approved equal. Scotchkote 413 is one-part, heat curable. Thermosetting epoxy coating designed for corrosion protection of reinforcing steel. The epoxy is applied to preheated reinforcing steel as a dry powder which melts and cures to uniform coating thickness. Any damaged rebars and exposed end cuts must be coated with 3M Scotchkote 413 patching compound.
- 2.2 Metal accessories such as spacers, chairs, ties, and other devices necessary for properly placing, supporting and fastening reinforcement in place shall be provided. Chairs shall be coated with 3M Scotchkote 413 unless noted otherwise.

PART 3 - EXECUTION

- 3.1 Unless otherwise noted, cleaning, bending and placing of reinforcement shall be done in accordance with the standard practice of the Concrete Reinforcing Steel Institute.
- 3.2 Bars shall be bent cold to the shapes shown on the drawings. Bends shall be made around a pin having a diameter not less than 6 times the bar diameter except that for bars of larger than #8, the pin diameter shall be 8 times the bar diameter.
- 3.3 Splicing of bars, except where shown, will not be permitted without the approval of the Engineer. Splices where permitted shall be staggered as far as possible, wired together in such a manner as to maintain a clearance of not less than the minimum clear distance to other bars or to the surface of concrete and shall be lapped in lengths as specified on the plans.
- 3.4 Reinforcement shall not be bent after being partially embedded in hardened concrete.
- 3.5 All reinforcement shall be observed by the Engineer and/or his consultant before placing of any concrete. This observation, however, shall not be construed to relieve the Contractor of his responsibility to place all reinforcement in accordance with the contract drawings.
- 3.6 It is absolutely critical that minimum distances from forms and earth be maintained.

Concrete cover to reinforcing steel shall be as follows:

Poured against forms	2"
Poured against dirt	3"

END OF SECTION

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 DESCRIPTION

The work under this Section of the specifications includes all labor, materials, equipment, and services necessary to complete cast-in-place concrete as shown on the drawings and herein specified including but not limited to the following:

- A. Supplying, placing, finishing and curing of all plain and reinforced concrete work shown on the drawings or specified herein, including cutting and patching of concrete work.
- B. Installation of all inserts such as anchor bolts and pipe sleeves supplied by other contractors.
- C. Slabs, stairs, walkways, ramps, curbs and miscellaneous uses as shown on civil and structural drawings.

1.2 REFERENCE CODES AND STANDARDS

- A. All concrete work unless specified otherwise herein shall be in accordance with all of the provisions of the ACI 301, (latest edition) "Specifications for Structural Concrete for Building" and ACI 318, (latest edition) "Building Code Requirements for Reinforced Concrete," and Standard Specifications, and its amendments for Public Works Construction, County of Maui (latest edition).
- B. Conform to the applicable sections of the 2005 edition of the *HAWAII STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION*, except as amended in the plans and/or specifications herewith. (Paragraphs concerning Measurement and Payment are not applicable to this project.)

1.3 DESIGN OF CONCRETE MIXES

- A. Refer to plans for concrete strength requirements.
- B. Unless otherwise noted on the plans or specified herein, Class 3,000 concrete for sidewalks, footings, and other uses. Provide a minimum of 5.0 sacks of cement per cubic yard for all 3,000 psi concrete.
- C. Concrete shall be composed of Portland cement, fine and coarse aggregates, admixture, coloring agent, and water.
- D. Concrete shall be designed in accordance with the current issue of ACI Standard "Recommended Practice for Selecting Proportions for Concrete" (ACI 211.1) for normal

weight concrete to produce the strength for each class of concrete. Concrete shall also be designed so that the concrete materials will not segregate nor cause excessive bleeding.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300 – SUBMITTALS
- B. Submit the following :
 - 1. Concrete Mix Design
 - 2. Color admixture
 - 3. Dry-shake color hardener

1.5 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with applicable portions of Codes and regulations of governmental agencies having jurisdiction.
- B. Qualifications: Use skilled workers who are thoroughly trained and experienced with the specified requirements and methods to perform and complete the Scope of Work under Contract.
- C. Provide mock-up panels for acceptance of color and final texture by the Engineer.

PART 2 - PRODUCTS

- 2.1 Fiber Reinforcement for Sidewalks - Synthetic Fiber: Fibrillated or monofilament polypropylene fibers engineered and designed for use in concrete, complying with ASTM C 1116, Type III, 1/2 to 1-1/2 inches long.
- 2.2 Portland cement shall conform to the requirements of ASTM C150, Type I or II, for all concrete work.
- 2.3 Concrete aggregates shall conform to ASTM C33, Inland sand only; the use of beach sand or coral aggregate shall not be permitted.
- 2.4 Water used in mixing concrete shall be potable.
- 2.5 EXPANSION JOINT FILLER

A pre-molded material of 1/2" thickness, unless otherwise noted, composed of fiberboard impregnated with asphalt as indicated on drawings or indicated herein.
- 2.6 Non-Slip Grit shall be an abrasive aggregate of silicon carbide or aluminum oxide.

2.7 ADMIXTURES

An approved combination type admixture shall be used and shall conform to ASTM C494. Admixtures shall be Type D. Type D is a water-reducing and retarding admixture. When used, it reduces the quantity of mixing water required to produce concrete of a given consistency and retards the setting of concrete.

2.8 CURING MATERIAL

No curing compound shall be used unless specifically approved by the Engineer.

2.9 COLORING MATERIAL

- A. General: Materials shall be accepted by the Engineer. Color for horizontal surfaces and trail shall be integral and dark grey. The Contractor must receive notification from the Engineer that the coloring proposed at each work site is acceptable prior to performance of the concrete work.
- B. Color Admixture: Colored, water-reducing, admixture containing no calcium chloride with coloring agents that are limeproof and ultra-violet resistant. Admixture shall conformed to the requirements of ACI 303.1, ASTM C979, ASTM C494 and AASHTO M194
- C. Coloring Agent: Dry shake color hardener consisting of quartz-silica mixture of finely-graded, non-metallic aggregates, plasticizer, and cements binder for producing color effect as accepted. Agent shall be factory proportioned, mixed, and packaged, ready-to-use surface hardener, as recommended by the color admixture manufacturer.
- D. Curing Compounds: Color to match concrete in accepted mock-up panel. Compounds shall comply with ASTM C309 and be of the same manufacturer as the admixture and agent for the use with integrally colored concrete having an applied hardener.

- 2.10 Non-Shrink Grout shall be factory prepared and packaged. Material delivered in labeled, unopened packages.

PART 3 - EXECUTION

3.1 STORAGE OF MATERIALS

Cement and aggregates shall be stored in a manner as to prevent their deterioration or the intrusion of foreign matter. Any material which has deteriorated or which has been damaged shall not be used for concrete and shall be promptly removed from the site.

3.2 MIXING CONCRETE

- A. All concrete throughout shall be machine mixed. Plant-mixed and Mixed-in-Transit Concrete shall be mixed to conform to the provisions of ASTM Designation C-94 and as follows:
1. The plant shall have sufficient capacity and transportation equipment to deliver concrete at the rate desired. The interval between batches for a pour shall not exceed 30 minutes.
 2. The time elapsed between the introduction of the mixing water to the cement and aggregates or the cement to the aggregates, and the placing of concrete in its final position shall not exceed 90 minutes.
- B. Concrete shall be mixed only in such quantity as is required for immediate use. No retempering will be permitted and concrete that has started to harden shall be discarded and promptly removed from the job. Excessive over-mixing requiring additions of water in order to preserve the required consistency will not be permitted.

3.3 MEASURING

- A. The method of measuring water and aggregates shall be such as to secure specified proportion in each batch and in a manner that proportion of water to cement can be closely controlled and easily checked at any time.
- B. The fine and coarse aggregates shall be weighed separately.
- C. The device for measuring water shall show accurately the quantity in pounds or gallons and shall be so designed that the water supply will be automatically cut off while water is being discharged into the mixer.
- D. Powdered admixture shall be measured by weight, and paste or liquid admixture by weight or volume, within a limit of accuracy of 3% and shall retard the initial set for 2 hours.

3.4 JOINTS

- A. Control joints shall be provided per locations indicated on the drawings. See drawings for construction joints or weakened plane joints locations.
1. See details for construction joint on Structural Drawings. All reinforcing steel and mesh shall be terminated at construction joints. Keys and/or smooth dowels shall be provided as required. Longitudinal keys at least 1½" deep shall be provided in all construction joints. If pre-molded metal keys are used keep the top of the key ¼" below top of the slab. All such keys shall be left in the slab. Tool the joint over keys for straight lines.

3.5 INSERTS, FASTENING DEVICES AND CONDUITS EMBEDDED IN CONCRETE

- A. Install inserts, reglet strips, hangers, metal ties, anchors, bolts, nailing strips, blocking, grounds and other fastening devices furnished by others required for attachment of other work.
- B. Electrical conduits and other pipes whose embedment is allowed by the Architect shall not, with their fittings, displace more than 4% of the area of the cross section of a column. Embedded pipes or conduits shall not be larger in outside diameter than the thickness of the slab, wall or beam in which they are embedded nor shall they be spaced closer than 3 diameters on center nor so located as to impair unduly the strength of the construction. Water and waste pipes shall not be imbedded in concrete.
- C. Furnish and install galvanized steel, filled type, dovetail slots and anchors vertically in all concrete to which concrete block masonry walls abut, and elsewhere as shown on the drawings.

3.6 SCREEDS FOR SLABS

- A. Screeds shall be accurately set and maintained to the required grade or elevations of slabs after steel has been placed but before starting to place concrete.

3.7 PLACING CONCRETE

- A. General:

No concrete shall be placed before approval has been given by the Engineer or his representative who shall be given two days advance notice of exact starting time of concrete pour. Place no concrete until foundation, forms, steel, pipes, conduits, sleeves, hangers, anchors, inserts, waterproofing, termite treatment and other work required to be built into or placed ahead of concrete pouring have been inspected and approved.

- B. Preparation:

1. Concrete shall be placed upon clean, damp surfaces, free from standing water, or upon properly compacted fills but never upon soft mud or dry, porous earth.
2. Before depositing new concrete on or against concrete which has set, all accumulations of mortar splashed upon reinforcing steel and the surfaces of forms shall be removed and the forms shall be retightened. The surfaces of previously set concrete shall be thoroughly roughened and cleaned of all foreign matter and substance and saturated with water.

C. Conveying:

1. Concrete shall be conveyed from mixer to forms as rapidly as practicable by methods that will prevent segregation.
2. Concrete shall be deposited as nearly as practicable in its final position. Extensive spading as a means of transportation shall be avoided and in no case shall vibrators be used to transport concrete inside the forms.
3. The concrete shall not be allowed to drop freely more than 5 feet. When placing operations involve dropping concrete more than 5 feet, it shall be through pipes of approved design. As far as practicable, the pipes shall be kept buried in the newly placed concrete.
4. All chutes, troughs, pipes and other means of conveyances shall be kept clean and free from coatings of hardened cement or concrete by thoroughly cleaning with water and chipping after each pour. Water used for flushing shall be discharged away from the vicinity of the concrete forms already in place.

D. Depositing:

1. Concrete shall be placed so as to avoid segregation of the materials and the displacement of the reinforcing.

Formed concrete shall be deposited in horizontal layers not deeper than 2 feet avoiding inclined layers and inclined construction joints.

E. Compaction:

1. During and immediately after depositing, concrete shall be thoroughly compacted with high frequency internal vibrator of an approved type.
2. Frequency of vibrator shall be not less than 7000 impulses per minute. The Contractor shall provide a sufficient number of vibrators to properly compact all concrete immediately after placing.
3. Vibrators shall be manipulated so as to thoroughly work the concrete around the reinforcement, embedded fixtures and into all corners and angles of the forms. Vibration shall be of sufficient duration and intensity to thoroughly compact the concrete but shall not be continued so as to cause segregation or the formation of localized areas of grout.

F. Color Hardener:

1. Apply hardener to freshly floated concrete surface in accordance with the manufacturer's instructions to create the coloring of the accepted mock-up panel.

Bleed water shall not be present during or following application shake. Distribute evenly by hand mechanic spreader designed for hardener application. Do not throw. Do not sprinkle otherwise add water to surface during construction

2. As soon as dry-shake material has absorbed moisture, mechanically float concrete surface a second time to bring moisture from base slab through dry-shake color hardener. Do not trowel surface between hardener applications. Apply additional hardener as required to meet the appearance of the accepted mock-up panel. If applied by hand, broadcast in opposite direction of first application for a more uniform coverage. Mechanically float concrete once dry-shake material has absorbed moisture. Do not water the surface.
3. Make a third application as necessary to achieve the appearance of the accepted mock-up panel or as directed by the Engineer.

3.8 REPAIR OF SURFACE DEFECTS

- A. After forms have been removed, any concrete which is not formed as shown on the drawings, or which is out of alignment or level beyond required tolerances or which shows a defective surface which cannot be properly repaired or patched shall be removed.
- B. All protruding surfaces, off-sets, etc., shall be ground flat.
- C. Defective Areas: (Concrete not exposed to view)
 1. All honeycombed and other defective concrete shall be removed to sound concrete but in no case to a depth of less than 1". The area to be patched and an area at least 6" wide surrounding it shall be dampened to prevent absorption of water from the patching mortar. A bond coat batch of neat Portland cement and water shall be mixed to the consistency of thick cream and shall then be well brushed into the surface. In lieu of cement paste, the Architect may, at his discretion, require the use of an approved bonding agent to patch a large defective area.
 2. The patching mixture shall be made of the same material and approximately of the same proportions as used for the concrete except that the coarse aggregate shall be omitted and the mortar shall consist of not more than 1 part cement to 2½ parts sand by damp loose volume. White Portland cement shall be substituted for a part of the gray Portland cement on exposed concrete in order to produce a color matching the color of the surrounding concrete. "Hard wall" or any drying agent shall not be used in the patching mixture!
 3. After surface water has evaporated from the area to be patched, the bond coat shall be well brushed into the surface. When the bond coat begins to loose the water sheen, the premixed patching mortar shall be applied.

3.9 CURING AND PROTECTION

- A. All concrete shall be cured for a period of not less than 28 days by one of the approved methods listed below. During this curing period, the concrete shall be maintained without drying at a relatively constant temperature. During the curing period, the rate of moisture-loss shall be kept as low as possible. Fresh concrete shall be protected from heavy rains, flowing water, mechanical injury, and direct sun exposure. Curing method selected shall be compatible with the finish of the concrete. Curing shall immediately follow the finishing operation.
1. Water Curing - Concrete shall be kept wet by mechanical sprinklers, by ponding, or by any other approved method which will keep the surfaces continuously wet.
 2. Saturated Sand Curing - Surfaces cured with sand shall be covered with a minimum of 1" thickness of sand which shall be kept uniformly distributed and continuously saturated during the entire curing period.
 3. Curing Compounds - Curing compounds may only be used when approved by the Engineer. Curing compounds shall not be used on concrete surfaces that are to receive paint finish or resilient flooring, except those that are recommended by the manufacturer to be compatible with the applied finish. Application shall be in accordance with the manufacturer's recommendations. If curing, sealing or other compounds are used which are incompatible with applied finish, such compound shall be thoroughly removed by grinding with a terrazzo grinder.
 4. Waterproof Paper - Waterproof paper conforming to ASTM C171 or opaque polyethylene film may be used. The paper or film shall be anchored securely and all edges sealed or applied in such a manner as to prevent moisture escaping from the concrete.
 5. Steel forms heated by the sun and all wood forms in contact with the concrete during the curing period shall be kept wet. If forms are to be removed during the curing period, one of the above curing methods shall be employed immediately. Such curing shall be continued for the remainder of the curing period.

3.10 FINISH TYPES

- A. Finish A – Smooth Trowelled Finish. The surface shall be finished first with impact power floats, then with power trowels and finally with steel hand trowels. The first trowelling after power floating shall be done by a power trowel and shall produce a smooth surface which is relatively free of defects but which may still contain some trowel marks.

Additional troweling shall be done by hand after the surface has hardened sufficiently. The final trowelling shall be done to a point when a ringing sound is produced as the trowel is moved over the surface. The finished surface shall be free of any trowel marks and shall be uniform in texture and appearance. On surfaces intended to support floor coverings, any

defects of sufficient magnitude to show through the floor covering shall be removed by grinding.

- B. Finish B – Medium Broom Finish. The concrete slab shall be given a coarse transverse scored texture by drawing a broom across the surface. The operation shall follow immediately after steel-trowelling performed under Finish A above.

3.11 SCHEDULE OF FINISHES

- A. Sidewalks: Finish B.

3.12 SAMPLING AND TESTING

- A. Sampling - ASTM C 172: Collect samples of fresh concrete to perform tests specified. ASTM C 31 for making test specimens.
- B. Slump Tests - ASTM C 143: Take concrete samples during concrete placement. The maximum slump may be increased as specified with the addition of an approved admixture provided that the water-cement ratio is not exceeded. Perform tests at commencement of concrete placement, when test cylinders are made, and for each batch (minimum) or every 10 cubic yards (maximum) of concrete.
- C. Compressive Strength Tests - ASTM C39: Make four test cylinders for each set of tests in accordance with ASTM C 31. Test one cylinder at 7 days, two cylinders at 28 days, and hold one cylinder in reserve. Provide concrete cylinders for compression tests not less than once a day, nor less than once for each 100 cubic yards of concrete, nor less than once for each 5,000 square feet of surface for slabs or walls. If the average strength of the 28-day test cylinders is less than f_c and a maximum of one single cylinder is less than f_c minus 300 psi, take three ASTM C 42 core samples and test. If the average strength of the 28-day test cylinders is less than f_c and two or more cylinders are less than f_c minus 300 psi, take six core samples and test. Concrete represented by core tests shall be considered structurally adequate if the average of the three cores is equal to at least 85 percent of f_c and if no single core is less than 80 percent of f_c . Locations represented by erratic core strengths shall be retested. Remove concrete not meeting strength criteria and provide new, acceptable concrete at no additional cost to the State. Repair core holes with nonshrink grout. Match color and finish of adjacent concrete.
- D. Testing: All sampling and testing shall be performed by an independent testing agency and all testing shall be borne by the contractor.

END OF SECTION

SECTION 05500

MISCELLANEOUS METAL FABRICATIONS

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. Work includes, but is not necessarily limited to providing gates, metal posts, handrails, and other items for a complete installation.

1.2 SUBMITTALS

- A. Submit under provisions of Section 01300 – SUBMITTALS
- B. Submit the following:
 - 1. Materials lists of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.

1.3 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.4 PROJECT CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Obtain accurate field measurements before fabrication and show measurements on shop drawings. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

1.5 PRODUCT HANDLING, STORAGE, AND PROTECTION

- A. Use all means necessary to store, handle and protect the materials of this Section, before, during and after installation, from damage affecting either operation or finish.
- B. In the event of damage, immediately make all repairs and replacements necessary at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 GENERAL MATERIAL SPECIFICATIONS

- A. Asbestos Prohibition: No asbestos containing materials or equipment shall be used under this section. The Contractor shall ensure that all materials and equipment incorporated in the project are asbestos free.
- B. Lead Prohibition: No lead containing materials shall be used under this Section. The Contractor shall ensure that all materials incorporated in the project are lead-free unless specifically approved in writing by the Contracting Officer.
- C. Stainless steel bolts, nuts, anchor bolts, rods: ASTM A307.
- D. Structural Steel: ASTM A36.
- E. Steel Pipe: ASTM A120, standard weight, hot-dipped galvanized, welded and seamless steel pipe.
- F. Stainless Steel Pipe: ASTM A312, schedule 40 standard weight, Type 316, welded and seamless stainless steel pipe.

2.2 GATES, POST, HANDRAILS, AND RELATED ITEMS

- A. Gates, Posts, Rails, and Braces: Use standard weight, Type 316, welded and seamless stainless steel pipes conforming with ASTM A-53-89a, schedule 40 unless otherwise indicated on the drawings. Hydrostatic test are not required.

2.3 GALVANIZED MATERIAL

- A. Galvanize materials in accordance with ASTM A123, or A386, as applicable. Hot-dipped galvanize items after fabrication, except parts to be bolted together which shall be galvanized before final assembly.

2.4 FASTENERS

- A. Stainless steel, unless otherwise indicated.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

- A. Prior to work of this Section, carefully inspect the installed work of other trades and verify that such work is complete to the point where the work of this Section may properly commence. Verify that miscellaneous metals may be fabricated and installed in strict accordance with the original design and approved shop drawings.

- B. Make required measurements in the field to ensure proper and adequate fit of miscellaneous metal items.
- C. Report incomplete work and other discrepancies to the Owner. Do not begin work in areas of discrepancy until all such discrepancies have been fully resolved.

3.2 ELECTROLYTIC PROTECTION

- A. Where materials dissimilar in galvanic range are in contact, or aluminum is in contact with concrete, paint contact surfaces with primer and body coats of bituminous paint, such as Koppers Bitumastic 505. Paint shall be compatible with other coatings and materials in direct contact. Allow paint to dry thoroughly before install metalwork.

3.3 FABRICATION

- A. Field verify all dimensions prior to fabrication.
- B. Make all work square, plumb, straight, and true. Corners shall be mitered and all welds ground smooth prior to galvanizing and priming.
- C. Grind all welds smooth. For materials that are galvanized, paint with two coats of "Galvalloy," "Galvicon," or equivalent.
- D. Attach hardware with rivets or by other means which will provide security against removal and breakage
- E. Assemble handrails by welding with special malleable or pressed steel fittings for rigid connections. Make all joints and intersections of metals tightly fitting and securely fastened.
- F. Insofar as possible, prefabricate all items in the shop, complete and ready for erection.
- G. Install gates plumb, level, and secure for full opening without interference. Lubricate and adjust the hardware for smooth operation.

3.4 INSTALLATION

- A. Install metalwork in strict accordance with the original design and approved shop drawings. Install commercially manufactured products in accordance with the manufacturer's recommendations. Installed work shall be fastened securely and neatly.

END OF SECTION

SECTION 10100

STRUCTURAL PLASTIC LUMBER

PART 1 - GENERAL

- 1.1 GENERAL: This section covers the furnishing and installation of structural plastic lumber as indicated on the plans.
- 1.2 SHOP DRAWINGS: The Contractor shall submit six (6) sets of complete manufacturer's specifications, layout and drawings showing hole locations and size and type of hardware to be used to secure the lumber to the concrete.
- 1.3 CERTIFICATION
 - A. Submit certified test reports and certificates of conformance or compliance furnished by the manufacturer's testing laboratory or independent testing agency attesting that each product or material furnished under this specification meets the requirements herein.
 - B. Certified test reports and certificates shall be furnished for:
 - 1. Structural Plastic Lumber
 - 2. Lumber Hardware - Bolts, anchor bolts, washers, and embedments.

PART 2 - MATERIALS

- 2.1 MATERIALS: (TRIMAX OR FIBERFORCE OR APPROVED EQUAL)
 - A. Structural Plastic Lumber shall be made of recycled mix plastic waste as manufactured by Trimax Plastic Lumber (Address 2076 Fifth Avenue, Ronkonkoma, New York, 11779, Telephone (516) 471-7777, Facsimile (516) 471-7862) or FiberForce Plastic Lumber as manufactured by Bedford Technologies, LLC. FiberForce is distributed by Lee Composites, Inc. (Address P.O. Box 11286, Spring TX 77391-1286, Telephone (281) 376-6146, Facsimile (281) 251-8461) or approved equal. The structural plastic lumber shall have the following material allowable design properties:

PROPERTY (all units are PSI)

Design Rupture Load (MOR) (Extreme Fiber Stress in Bending)	1,470
Modulus of Elasticity	450,000
Compression Parallel to Grain	870
Compression Perpendicular to Grain	347
Shear Parallel to Grain (Horizontal Shear)	370
Tension Parallel to Grain	625
Abrasion Resistance	1000%- 2000%

B. Structural plastic lumber mechanical physical properties shall be as follows:

MECHANICAL PROPERTIES OF PLASTIC LUMBER

	<u>AVERAGE</u>	<u>STANDARD DEVIATION</u>
Moisture Condition	Not Applicable	Not Applicable
Specific Gravity	0.75	.05
Modulus of Rupture (maximum fiber stress)	2960 psi- (1480 psi design)	145 psi
Modulus of Elasticity	450000 psi	0.15 million psi
Work to Maximum Load (in pounds per cubic inch)	2.66	.60
Compression Parallel to Grain	1740 psi	100 psi
Compression Perpendicular to Grain	690 psi	60 psi
Shear Parallel to Grain	740 psi	30 psi
Impact Bending	7500 psi	800 psi
Tension Parallel to Grain	1250 psi	110 psi

PHYSICAL PROPERTIES

Moisture Content: Negligible
 Shrinkage/Swelling Due to Moisture: Negligible
 Coefficient of Thermal Expansion: 3.4 x 10-5 in in/F
 Density: 44 lbs. -50 lbs. per cubic foot
 Friction: Friction coefficient against rubber & leather soles

<u>Rubber</u>	<u>Leather</u>			
	<u>Wet</u>	<u>Dry</u>	<u>Wet</u>	<u>Dry</u>
Lumber Surface (worn)	.92	.71	.28	.31
Lumber Surface (fresh)	.62	1.77	.22	.15
Simulated by grit blasting				

FIBERFORCE PLASTIC LUMBER

TECHNICAL DATA FOR FIBERFORCE PLASTIC LUMBER

<u>Test Methods</u>					
<u>Test</u>	<u>ASTM Test</u>	<u>English Units</u>		<u>Metric Units</u>	
		<u>Value</u>	<u>Units</u>	<u>Value</u>	<u>Units</u>
Flexural Strength	D6109-97	2750	PSI	193	Kg/cm ²
Flexural Modulus	D6109-97	306080	PSI	2150	Kg/cm ²
Compression Strength	D6108-97	2340	PSI	165	Kg/cm ²
Compression Modulus	D6108-97	114900	PSI	8077	Kg/cm ²
Specific Gravity	D6111-97	0.93	g/cc	0.93	g/cc
Flash Point		644	Deg F	340	Deg C
Moisture Absorption		0.06	% by Weight	0.06	% by Weight
Thermal Expansion	D6341-98	0.000033	Inch/Inch/Deg F		
Average Nail Pull Out	D6117-97	504	Lbs	229	Kg

Test Methods - continued

<u>Test</u>	<u>ASTM Test</u>	<u>English Units</u>		<u>Metric Units</u>	
		<u>Value</u>	<u>Units</u>	<u>Value</u>	<u>Units</u>
Static Coefficient of Friction - Dry	D2394-83(99)	.53			
Static Coefficient of Friction - Wet	D2394-83(99)	.51			
Sliding Coefficient of Friction - Dry	D2394-83(99)	.23			
Sliding Coefficient of Friction - Wet	D2394-83(99)	.51			
Flame Spread	E84(03a)	62			
Flame Spread Classification	E84(03)a	60			
Smoke Developed	E84(03a)	230			
Smoke Developed Classification	E84(03a)	250			
Spontaneous Ignition	D-1929	824	Deg F	440	Deg C

The technical data on this page represents only average values and not minimum values. Safety factors must be added into the design.

- C. Color shall be steel gray from the manufacturer's standard colors.
- D. **HARDWARE:** All plates, washers, nuts, anchor bolts, inserts and other necessary hardware shall be stainless steel Type 316 (ASTM A167-99), allowable tensile stress of 20,000 psi, and allowable shear stress of 1150 psi. Bolts shall conform to ASTM F593 and nuts and washers shall conform to ASTM F594.

PART 3 - EXECUTION

- 3.1 **INSTALLATION:** The structural plastic lumber shall be installed as shown on the plans with final adjustments (if any) required to fit snugly against the concrete supports. Adjustment shall be made by the Contractor at his expense and to the satisfaction of the Engineer. All adjustments shall be made prior to the final acceptance of the contract by the Engineer.

All the surface bolts and nuts shall be recessed from the lumber outside face. Structural plastic lumber shall be trimmed square and smooth on both ends to uniform lengths. Handle plastic lumber as per manufacturer's recommendations. All bolts to secure lumber to concrete supports shall be cast-in-place. Field drilling of concrete will not be permitted.

- 3.2 PAYMENT: Structural Plastic Lumber will not be measured nor paid for directly, but shall be considered incidental to the various contract items in the Proposal Schedule and no payment will be made therefor.

END OF SECTION

SECTION 10120

WOOD-POLYMER COMPOSITE LUMBER

PART 1 - GENERAL

- 1.1 GENERAL: This section covers the furnishing and installation of wood-polymer composite lumber as shown on the reference plan.
- 1.2 SHOP DRAWINGS: The Contractor shall submit (6) sets of complete manufacturer's specifications, decking layout and drawings showing the anchor bolt location and size and type of hardware to be used to secure the decking onto the concrete cap for the pier bulkhead.
- 1.3 CERTIFICATION
 - A. Submit certified test reports and certificates of conformance or compliance furnished by the manufacturer's testing laboratory or independent testing agency attesting that each product or material furnished under this specification meets the requirements herein.
 - B. Certified test reports and certificates shall be furnished for:
 - 1. Wood-polymer composite lumber decking.

PART 2 - MATERIALS

- 2.1 MATERIALS: (TREX OR APPROVED EQUAL)
 - A. Fasteners shall be stainless steel ASTM A167-99, Type 316. Deck screws and self tapping screws shall be used and recessed at the finished surfaces. Pre-drill holes as required to facilitate fastening.
 - B. Wood-polymer composite lumber shall be made of reclaimed plastic and waste wood with a homogenous blend of approximately 50 percent wood fiber and 50 percent polyethylene as manufactured by Trex Company, LLC, 20 South Cameron Street, Winchester, VA 22601, product Trex Transcend or Trex Enhance Decking Boards, or approved equal. Honsador Lumber Corporation, 250 Lalo Street, Kahului, HI 96732, (Telephone (808) 877-5045) distributes Trex Lumber (or approved). All substitution for Trex must be approved by the owner during the bidding process. No substitution will be approved during construction. The wood-polymer composite lumber shall have the following material allowable design properties:

PHYSICAL AND MECHANICAL PROPERTIES OF TREX LUMBER:

	<u>Test Method</u>	<u>Value</u>
Abrasion Resistance	ASTM D2394	.01" wear/ 1000 revs
Hardness	ASTM D143	1124 lbs
Self Ignition Temperature	ASTM D1929	743 Degrees F
Flash Ignition Temperature	ASTM D1929	698 Degrees F
Flame Spread (g)	ASTM E84	80
Coefficient of Thermal Expansion (d)	ASTM E228	15.1 x 10 ⁻⁶ Degrees F
Nail Withdraw (b)	ASTM D1761	163 lbs/in
Screw Withdraw (b)	ASTM D1761	558 lbs/in
Static Coef. of Friction-Dry, Unweathered/Weathered (c)	ASTM D2047	0.53/0.55
Static Coef. of Friction-Wet, Unweathered/Weathered (c)	ASTM D2047	0.74/0.70
Fungus Resistance (White Rot and Brown Rot)	ASTM D1413	rating = No Decay
Termite Resistance (e)	AWPA E1-72	rating = 9.6
Specific Gravity (Typical)	ASTM D2395	0.96
Modulus of Rupture (a)	ASTM D4761	1423 psi
Modulus of Elasticity (a)	ASTM D4761	175,000 psi
Compression Parallel (a) (h)	ASTM D198	1806 psi
Compression Perpendicular (a) (I)	ASTM D143	1944 psi
Ultimate Tensile Strength (a)	ASTM D198	854 psi

	<u>Test Method</u>	<u>Value</u>
Ultimate Shear Strength (a)	ASTM D143	561 psi
Thermal Conductivity	ASTM C177	1.57 Btu-in/hr-ft @ 85 Degrees F
Leachate (f)	TCLP-EPA 1311	pass
Water Absorption (sanded surface)	ASTM D1037	4.3%
Water Absorption (unsanded surface)	ASTM D1037	1.7%

- C. Wood-polymer composite lumber shall be splinter free, have excellent traction even when wet and no need for stains or sealants.
- D. Color shall be pebble grey or clam shell from the manufacturer's standard colors.

PART 3 - EXECUTION

- 3.1 **INSTALLATION:** The composite lumber shall be installed in accordance and conformance with the manufacturer's recommendations. Lumber shall be trimmed square and smooth on both ends to uniform lengths. Pre-drilling of lumber shall be as recommended by the manufacturer.
- 3.2 **MEASUREMENTS AND PAYMENT:** Wood-polymer composite lumber will not be measured nor paid for directly, but shall be considered incidental to the various contract items in the Proposal Schedule and no payment will be made therefor.

END OF SECTION