Division of State Parks

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

BOARD OF LAND AND NATURAL RESOURCES

Suzanne Case
Chairperson

CONTRACT SPECIFICATIONS AND PLANS

Job No. J00CF53C
Kalopa State Recreation Area ADA Improvements
Honokaa, Hawaii

Civil Engineer: Brown and Caldwell

Mechanical Engineer: InSynergy Engineering, Inc.

Architect: Suzuki-Morgan Architects, Ltd.

April 2018

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

CONTRACT SPECIFICATIONS AND PLANS

Job No. J00CF53C
Kalopa State Recreation Area ADA Improvements
Honokaa, Hawaii

Approved: _____

CURT A. COTTRELL
Administrator
Division of State Parks

Approved: _____

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

April 2018

NOTICE TO BIDDERS
(Chapter 103D, HRS)

COMPETITIVE SEALED BIDS for Job No. J00CF53C; Kalopa State Recreation Area ADA Improvements (Honokaa, Hawaii) shall be submitted to the Department of Land and Natural Resources, Engineering Division on the specified date and time through the State of Hawaii e-procurement system (HIePRO). HIePRO is accessible through the State Procurement Office website at www.hawaii.gov/spo.

The Department of Land and Natural Resources Interim General Conditions dated October 1994, is available on request or on the Department of Land and Natural Resources website at http://dlnreng.hawaii.gov/; and the General Conditions – AG008, latest revision shall be made a part of the contract specifications. Electronic copies of the General Conditions are available on the State Procurement Office website at www.hawaii.gov/spo.

The work shall generally consist of ADA improvements at Kalopa State Recreation Area, including mobilization, grading and drainage modifications, demolition of existing barbeque areas, construction of new barbeque pavilions, utility improvements, comfort station modifications, demobilization, and pollution control.

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

The estimated cost of construction is $300,000.

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.

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

Should there be any questions, please use the question and answer section of the HIePRO solicitation.

INFORMATION AND INSTRUCTIONS TO BIDDERS

CONTENTS

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 prior 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 pre-authorized by the Engineer.

O. PERMITS: The State will process permit applications whenever possible, and the Contractor shall procure the pre-approved permits and pay the required fees. If permit applications are not processed by the State, the Contractor shall complete and acquire appropriate regulatory agency approval for 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 protect State property and to prevent damage to existing facilities, structures, and improvements. The Contractor will be responsible for any and all 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 damage.

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. J00CF53C
KALOPA STATE RECREATION AREA ADA IMPROVEMENTS
HONOKAA, HAWAII

_____, 2018

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 perform grading and drainage modifications, demolish existing barbeque areas, construct new barbeque pavilions, implement utility improvements, construct comfort station modifications, and perform related miscellaneous work, 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. J00CF53C
KALOPA STATE RECREATION AREA ADA IMPROVEMENTS
HONOKAA, HAWAII

on file in the office of the Engineering Division for the TOTAL BASE BID (Items 1 to 27) of:

_____
_____ Dollars ($ _____)
and will fully complete all work under this contract within 365 consecutive calendar days from the date of written notice to proceed, including date of said order, and total sum being itemized on the following pages.

PROPOSAL
FOR
JOB NO. J00CF53C
KALOPA STATE RECREATION AREA ADA IMPROVEMENTS
HONOKAA, HAWAII

Item No.	Quantity	Unit	Description	Unit Price	Total
CAMPING PAVILIONS AREA – SITE WORK					
1.	1	LS	Selective demolition of barbeque grill inside camping pavilion, including hauling, disposal, and all other incidentals	Lump Sum	$_____
2.	10	LF	24" high CMU wall, including CMU blocks, grout, reinforcement, and all other incidentals in place complete	$_____	$_____
3.	8	SY	4" thick concrete pads and walkway, including concrete, base course, reinforcement, formwork, finishing, sealing, and all other incidentals in place complete	$_____	$_____
4.	1	EA	Sidewalk culvert, including wing wall construction, reinforcement, and all incidentals in place complete	$_____	$_____
5.	Allowance		Relocation of existing 1" water lateral, valves, and valve box, including excavation, pipe material, fittings, and all other incidentals in place complete	Allowance	$ 5,000.00
CAMPING PAVILIONS AREA – BARBEQUE SHELTER					
6.	1	LS	Barbeque shelter, including footings, structural supports, roofing, and all other incidentals in place complete	Lump Sum	$_____
7.	1	LS	Barbeque grill, including CMU walls, bond beams, slabs, concrete cap, grills, paint, and all incidentals in place complete	Lump Sum	$_____
CAMPING PAVILIONS AREA – COMFORT STATION					
8.	1	LS	Portable toilets for the public through the duration of construction at the comfort station, including one standard portable toilet, one ADA-compliant portable toilet, minimum 2 days weekly maintenance on Mon/Thurs or Tues/Fri, and all incidentals in place complete	Lump Sum	$_____
9.	1	LS	Selective demolition of existing fiberglass-lined showers in the men's and women's restrooms, including hauling, disposal, and all other incidentals	Lump Sum	$_____

PROPOSAL
FOR
JOB NO. J00CF53C
KALOPA STATE RECREATION AREA ADA IMPROVEMENTS
HONOKAA, HAWAII

Item No.	Quantity	Unit	Description	Unit Price	Total
10.	1	LS	Modifications to shower compartments in the men's and women's restrooms, including CMU course, grout, and all incidentals in place complete	Lump Sum	$_____
11.	75	SF	Ceramic tile in the men's and women's restrooms, including mortar, backing, and all incidentals in place complete	$_____	$_____
12.	1	LS	Shower fixture assembly in the men's and women's restrooms, including valves, unions, shower controllers, piping, shower heads, security box, and all incidentals in place complete	Lump Sum	$_____
13.	4	EA	Grab bar in the men's and women's restrooms, including all incidentals in place complete	$_____	$_____
14.	2	EA	Fixed robe hook in the men's and women's restrooms, including all incidentals in place complete	$_____	$_____
15.	2	EA	Soap dish in the men's and women's restrooms, including all incidentals in place complete	$_____	$_____
16.	3	EA	Toilet paper holders in the men's and women's restrooms, including all incidentals in place complete	$_____	$_____
17.	2	EA	Folding bench in the men's and women's restrooms, including all incidentals in place complete	$_____	$_____
PICNIC PAVILION AREA – SITE WORK					
18.	75	SY	4" thick concrete pads and walkway, including demolition of existing picnic table pad, concrete, base course, reinforcement, formwork, and all other incidentals in place complete	$_____	$_____
19.	2	EA	Accessible picnic table, including all incidentals in place complete	$_____	$_____
20.	1	EA	Sidewalk culvert, including wing wall construction, reinforcement, and all incidentals in place complete.	$_____	$_____
PICNIC PAVILION AREA – BARBEQUE SHELTER					
21.	1	LS	Barbeque shelter, including footings, structural supports, roofing, and all other incidentals in place complete	Lump Sum	$_____
22.	1	LS	Barbeque grill, including CMU walls, bond beams, slabs, concrete cap, grills, paint, and all incidentals in place complete	Lump Sum	$_____

PROPOSAL
FOR
JOB NO. J00CF53C
KALOPA STATE RECREATION AREA ADA IMPROVEMENTS
HONOKAA, HAWAII

Item No.	Quantity	Unit	Description	Unit Price	Total
GENERAL					
23.	1	LS	Grading of project area, including excavation, fill, swale construction, placement of topsoil, re-planting of disturbed areas, and all other incidentals in place complete	Lump Sum	$_____
24.	1	LS	General site work, including temporary erosion and sediment control, tree and plant removal, tree protection, site restoration, and all other incidentals in place complete	Lump Sum	$_____
25.	1	LS	Project sign, in place complete	Lump Sum	$_____
26.	Allowance		Field office	Allowance	$ 5,000.00

Subtotal Base Bid (Items 1 - 26) $ _____

Item No.	Quantity	Unit	Description	Unit Price	Total
GENERAL					
27.	1	LS	Mobilization and demobilization, not to exceed 10% of the sub-total base bid, excluding the bid price for mobilization and demobilization	Lump Sum	$_____

Total Bid (Items 1 - 27) $ _____

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. Bidder 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/goods-services-construction/preferences-103d-pt-x/hi-products/hawaii-product-preferences.

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.	**Aggregates:** Ameron International Corporation Delta Construction Corporation Goodfellow Bros., Inc. Grace Pacific Corporation Hawaiian Cement Sphere, LLC Tileco, Inc. West Oahu Aggregate Co. Inc.	I				

2.	**Cement and Concrete Products:** Aloha Precast, Inc. Ameron International Corporation BOMAT, Ltd. GPRM Prestress, LLC Hawaii Concrete Products, Inc. Hawaii Precast, Inc. Hawaiian Cement Island Ready Mix Concrete, Inc. Jensen Enterprises Pohaku Paa LLC Ramtek Fabrication Co., Inc. Tileco, Inc. Walker Hawaii Precast Walker Industries, Ltd.	I				
3.	**Compost Filter:** Envirotech BioSolutions Hawaii, Inc. Certified Erosion Control Hawaii LLC	I				

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.

DESCRIPTION	RECYCLED PRODUCT COST	NONRECYCLED PRODUCT COST
_____	$_____	$_____
_____	$_____	$_____
_____	$_____	$_____
_____	$_____	$_____

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 postconsumer 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 27) selected by the Board of Land and Natural Resources. Write the total of bid items 1 to 27 on page P-4.

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 One Hundred Fifty and No/100 Dollars ($150.00) for each and every calendar day in excess thereof prior to completion of the contract shall be withheld from payments due to the Contractor.

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

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

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

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

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

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

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

RECEIPT OF ADDENDA

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

Addendum	Date Received	Addendum	Date Received
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 § 16-7732).* The remaining work must be performed by appropriately licensed entities.

General Engineering "A" Contractors automatically have these "C" specialty contractor's licenses: C-3, C9, 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.

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

LOOK AT PREVIOUS PROPOSAL IF YOU HAVE ADDITIVES FOR THE BID PROPOSAL. EACH ADDITIVE SHOULD HAVE ITS OWN TABLE OF SUBCONTRACTORS.

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 "one hundred twenty (120)" in the first paragraph.

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

"If the contract is not awarded within the one hundred twenty (120) 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 HIePRO website.

Section 5 – Control of Work

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

Section 6 – Substitution of Materials and Equipment

ADD the following to Section 6.3 Sub-paragraph b:

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.

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 contact. 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.

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:

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

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.

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.

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

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

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

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DIVISION 07 – THERMAL AND MOISTURE PROTECTION

DIVISION 08 – DOORS AND WINDOWS *(NOT USED)*

DIVISION 09 – FINISHES

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DIVISION 11 – EQUIPMENT *(NOT USED)*

DIVISION 12 – FURNISHINGS *(NOT USED)*

DIVISION 13 – SPECIAL CONSTRUCTION *(NOT USED)*

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DIVISION 16 – ELECTRICAL *(NOT USED)*

DIVISION 17 – INSTRUMENTATION *(NOT USED)*

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 prearranged 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 site damage by the Contractor shall be restored as instructed by the Engineer at no cost to the State.

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

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

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

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

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

M. Responsibility:

1. The State will hold the Contractor liable for all the acts of Subcontractors and shall deal only with the prime Contractor in matters pertaining to other trades employed on the job. The Contractor shall be responsible for coordinating the work of all trades on the job.

2. Should the Contractor discover any discrepancy in the plans or specifications, the Contractor shall immediately notify the Engineer before proceeding any

further with the work, otherwise, the Contractor will be held responsible for any cost involved in correction of work placed due to such discrepancy.

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

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

P. Drawings and Specifications:

1. The Contractor shall not make alterations in the drawings and specifications. In the event the Contractor discovers any errors or discrepancies, the Contractor shall immediately notify the Engineer in accordance with the General Conditions.

2. Where devices, or items, or parts thereof are referred to in the singular, it is intended that such reference shall apply to as many such devices, items or parts as are required to properly complete the work.

3. Specifications and drawings are prepared in abbreviated form and include incomplete sentences. Omission of words or phrases such as "the Contractor shall", "as shown on the drawings", "a", "an", and "the" are intentional. Omitted words and phrases shall be provided by inference to form complete sentences.

Q. Required Submittals:

1. Required submittals as specified in the Technical Sections of these Specifications include one or more of the following: shop drawings; color samples; material samples; technical data; schedules of materials; schedules of operations; guarantees; operating and maintenance manuals; and as-built drawings.

2. The Contractor shall make a comprehensive list of the required submittals, by Specification Section, and submit this list to the Engineer within 15 days after notice to proceed.

3. As-Built Drawings: When as-built drawings are required for submittal, the following shall apply:

a. As-built drawings, the intent of which is to record the actual in-place

construction so that any future renovations or tie-ins can be anticipated accurately, shall be required.

b. All deviations from alignments, elevations and dimensions which are stipulated on the plans shall be recorded in red on the as-built drawings.

c. The following procedure shall be followed:

1) Immediately after these changes are constructed in place, the Contractor shall record them on the field office plans.

2) Within two weeks after final inspection of the project, the Contractor shall transfer the changes marked on the field office plans onto a clean copy of plans using a red pencil. Any deletions shall be so noted and redrawn as necessary. The Contractor shall stamp or mark the tracings "AS-BUILT", and also sign and date each drawing so marked.

3) The Contractor shall submit the as-built drawings to the Engineer for review and approval. After the Engineer approves the as-built drawings, the Contractor shall submit an electronic copy in Adobe PDF format on CD ROM.

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.

PART 2 – PRODUCTS *(NOT USED)*

PART 3 – EXECUTION *(NOT USED)*

- END OF SECTION -

SECTION 01090

STANDARD REFERENCES

PART 1 - GENERAL

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

Abbreviation	Company
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

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

Abbreviation	Company
ASME	American Society of Mechanical Engineers 345 East 47th Street New York, NY 10017
ASTM	American Society for Testing and Materials 1916 Race Street Philadelphia, PA 19103
AWPA	American Wood Preservers Association 1625 Eye Street Washington, DC 20006
AWS	American Welding Society 2501 N.W. 7th Street Miami, FL 33125
AWWA	American Water Works Association 6666 West Quincy Avenue Denver, CO 80235
CBM	Certified Ballast Manufacturers 2120 Keith Building Cleveland, OH 44115
CMAA	Crane Manufacturers Association of America, Inc. (Formerly called: Overhead Electrical Crane Institute - OECI) 1326 Freeport Road Pittsburgh, PA 15238
CRSI	Concrete Reinforcing Steel Institute 180 North La Salle Street Chicago, IL 60601
CSA	Canadian Standards Association 178 Rexdale Boulevard Rexdale, Ontario, M9W IR3, Canada
DEMA	Diesel Engine Manufacturer's Association 122 East 42nd Street New York, NY 10017
DIS	Division of Industrial Safety California Department of Industrial Relations 2422 Arden Way Sacramento, CA 95825

Abbreviation	Company
EEI	Edison Electric Institute 90 Park Avenue New York, NY 10016
EIA	Electronic Industries Association 2001 Eye Street N.W. Washington, DC 20006
EJMA	Expansion Joint Manufacturer's Association 331 Madison Avenue New York, NY 10017
ESO	Electrical Safety Orders, California Administrative Code, Title 8, Chap. 4, Subarticle 5 Office of Procurement, Publications Section P.O. Box 20191 8141 Elder Creek Road Sacramento, CA 95820
FEDSPEC	Federal Specifications General Services Administration Specification and Consumer Information Distribution Branch Washington Navy Yard, Bldg. 197 Washington, DC 20407
FEDSTDS	Federal Standards (see FEDSPECS)
FM	Factory Mutual Research 1151 Boston-Providence Turnpike Norwood, MA 02062
HEI	Heat Exchange Institute 122 East 42nd Street New York, NY 10017
HI	Hydraulic Institute 1230 Keith Building Cleveland, OH 44115
IAPMO	International Association of Plumbing and Mechanical Officials 5032 Alhambra Avenue Los Angeles, CA 90032

Abbreviation	Company
ICBO	International Conference of Building Officials 5360 South Workman Mill Road Whittier, CA 90601
ICEA	Insulated Cable Engineers Association P.O. Box P South Yarmouth, MA 02664
IEEE	Institute of Electrical and Electronics Engineers, Inc. 345 East 47th Street New York, NY 10017
IES	Illuminating Engineering Society C/O United Engineering Center 345 East 47th Street New York, NY 10017
ISA	Instrument Society of America 400 Stanwix Street Pittsburgh, PA 15222
JIC	Joint Industrial Council 7901 Westpark Drive McLean, VA 22101
MILSPEC	Military Specifications Naval Publications and Forms Center 5801 Tabor Avenue Philadelphia, PA 19120
MSS	Manufacturers Standardization Society of the Valve and Fittings Industry, Inc. 127 Park Street, N.E. Vienna, VA 22180
NAAMM	National Association of Architectural Metal Manufacturers 100 South Marion Street Oak Park, IL 60302
NACE	National Association of Corrosion Engineers P.O. Box 986 Katy, TX 77450

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

Abbreviation	Company
SSPWC	Standard Specifications for Public Works Construction Building News, Inc. 3055 Overland Avenue Los Angeles, CA 90034
TEMA	Tubular Exchanger Manufacturer's Association 331 Madison Avenue New York, NY 10017
UBC	Uniform Building Code Published by ICBO
UL	Underwriters Laboratories Inc. 207 East Ohio Street Chicago, IL 60611
UMC	Uniform Mechanical Code Published by ICBO
UPC	Uniform Plumbing Code Published by IAPMO
USBR	Bureau of Reclamation U.S. Department of Interior Engineering and Research Center Denver Federal Center, Building 67 Denver, CO 80225
WWPA	Western Wood Products Association (Formerly called: West Coast Lumberman's Association - WCLA) Yeon Building Portland, CA 97204

PART 2 - PRODUCTS *(NOT USED)*

PART 3 - EXECUTION *(NOT USED)*

- END OF SECTION -

SECTION 01100

ARCHAEOLOGICAL PROTECTION

PART 1 – GENERAL

1.1 This section covers the requirements for the protection and preservation of historical sites and properties in the unlikely event they are encountered.

PART 2 – PRODUCTS *(NOT USED)*

PART 3 – EXECUTION

3.1 CONSTRUCTION METHOD: Representatives of the State will occasionally examine the project area as construction work progresses. If suspected and unanticipated historical features are discovered, all work in the vicinity of the find shall cease and the Contractor shall notify the State and State Historic Preservation Division in order for them to examine further. If the find appears to be human remains, the Contractor shall also notify the police department. Further work in the vicinity of the find may proceed only upon approval by the State.

- END OF SECTION -

SECTION 01300

SUBMITTALS

PART 1 – GENERAL

1.1 SUBMITTALS

A. Shop drawings shall be required if called for in the plans or 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 or 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 shall be completed and 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/her 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/her 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. Temporary erosion, sediment, and dust control measures shall be completely installed and fully functional prior to mobilization.

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. Permanent best management practices shall be completely installed, established, and functional prior to the commencement of demobilization. Additionally, temporary erosion, sediment, and dust control measures shall be fully installed, functional, and maintained until their removal as the last activity of demobilization.

PART 2 – PRODUCTS *(NOT USED)*

PART 3 – EXECUTION

3.1 GUIDELINES: If the Contractor utilizes private lands other than the sites provided by the State 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.

3.2 MEASUREMENT AND PAYMENT

Mobilization and demobilization, including materials, labor, equipment, and all other incidentals shall be paid for as specified in the Proposal Schedule.

- END OF SECTION -

SECTION 01530

BARRICADES

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

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

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

PART 2 – PRODUCTS

2.1 MATERIALS

A. Lumber: Lumber for rails, frames, braces, and form/falsework shall be dry, sound, undamaged, well seasoned, and free from any defect which may impair their strength and durability.

B. Hardware: Nails shall be type 316 stainless steel or galvanized wire nails. As many and as large a size as is practicable and appropriate shall be used.

C. Paints: Finish and top coat paints shall be exterior alkyd (oil-based) enamel paint of the best grade or first line as made by approved manufacturers. Primers shall also be exterior alkyd paint of the highest grade that water seals and stain blocks. Paints and primers shall be of the color and finish (flat, semigloss, gloss, etc.) as directed by the Engineer and applied as per their manufacturer’s recommendations. Paints for walking surfaces shall be of flat or low-luster finish.

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 as amended.

Sand bags or other approved weights shall be provided where required to secure barricades in place 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 herein may be used for construction phasing, or other temporary construction work.

Upon completion of the construction work, barricades shall be 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 alkyd enamel paint. Rail faces to be reflectorized may be left unpainted unless otherwise specified or directed; but, at a minimum, water-sealed and treated to deter wood rot/decay and termite damage with HWT Clear-Bore F.T. or approved equal.

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.

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.

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 alternating orange- and white-colored stripes sloping downward toward the traveled way at an angle of 45 degrees. These barricades shall be used in the following conditions:

1. Construction work.
2. Maintenance work.

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.

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 dirt/debris, which could generate airborne dust nuisance from floors or other paved areas. Vacuuming, wet mopping, or wet/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 minimize dust generation 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 may possibly include the use of water, chemicals, covers/mats, screens, mulch/hydromulch, 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 a Community Noise Permit from the State Department of Health if the construction equipment or other devices are anticipated to emit noise at levels exceeding allowable limits.

2. All internal combustion engine-powered equipment shall have mufflers and shall be properly maintained to keep noise within acceptable levels.

3. Start-up of construction equipment, regardless if they are anticipated to meet allowable noise limits, shall not occur prior to 7:00 a.m. without prior approval of the Engineer.

D. EROSION:

1. During interim grading operations, the grade shall be maintained to preclude any nuisance or damage to adjoining property from surface water runoff 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. Wastewater 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 jobsite.

4. Except for rinsing of the hopper and delivery chute, and for wheel washing where required, concrete trucks shall not be cleaned on the jobsite.

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/she 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

3.1 MEASUREMENT AND PAYMENT

Pollution control, including all equipment, labor, and materials shall be paid for as specified in the Proposal Schedule.

- 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 shall 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 page 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 as specified in Section 03300.

PART 3 – EXECUTION

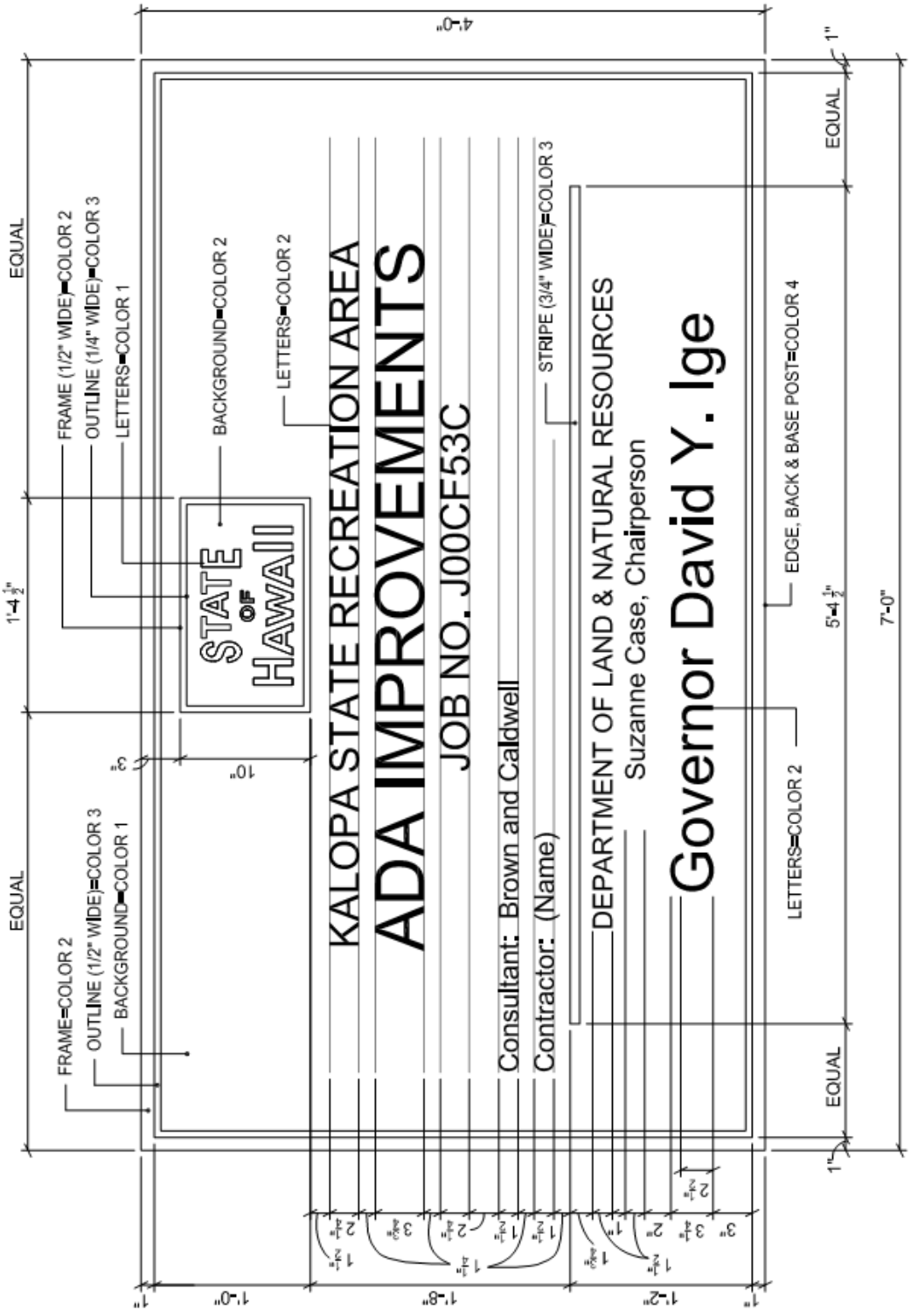
3.1 GENERAL

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 MEASUREMENT AND PAYMENT

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



NOTE: Number of signs required 1

- END OF SECTION -

SECTION 02050

DEMOLITION

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS: The work includes demolition and removal as indicated in the plans or specified herein. All materials resulting from demolition work, except as indicated or specified otherwise, shall become the property of the Contractor and shall be removed from the limits of Government property. Remove rubbish and debris from the job site daily, unless otherwise directed. Store materials which cannot be removed daily in areas specified by the Engineer. The Contractor shall pay for all necessary permits and certificates that may be required in connection with this work.

1.2 SUBMITTALS: Submit proposed demolition and removal procedures to the Engineer for approval before work is started. Procedures shall provide for coordination with other work in progress and a detailed description of methods and equipment to be used for each operation, and sequence of operations.

1.3 DUST CONTROL: Take appropriate action to check the spread of dust to the surrounding area and to avoid the creation of a nuisance in the surrounding area. Do not use water if it results in hazardous conditions, such as flooding or pollution. Comply with all dust regulations imposed by local air pollution agencies.

1.4 PROTECTION

A. Existing Improvements: Protect existing improvements that are to remain in place, reused, or remain property of the Engineer by installing appropriate temporary covers, shoring, bracing, and supports. Repair items damaged during performance of the work or replace with new comparable items to the satisfaction of the Engineer. Do not overload structural elements. Provide new supports or reinforcement for existing structures and features weakened by demolition, removal, and relocation work. Construction equipment and vehicles shall be neither permitted nor stored on existing improvements that are to remain.

B. Trees: Protect trees within the project site which may be damaged during construction and its demolition work.

C. Public Safety: Where pedestrian and driver safety is a concern in areas of work and storage , traffic barricades with flashing lights shall be used and the Engineer shall be notified prior to beginning any such work. The Contractor shall conduct operations with minimum interference to streets, driveways, sidewalks, and passageways, etc. as much as practical.

D. Explosives: Use of explosives are not permitted.

E. Any historic or archaeologic properties shall be protected at all times in accordance with Section 01100. The Contractor shall notify the Engineer a minimum of ten (10) working days prior to any demolition or excavation work to allow time to schedule a State Representative to be on site to observe the work.

PART 2 – PRODUCTS *(NOT USED)*

PART 3 – EXECUTION

3.1 EXISTING FACILITIES

A. Demolish and remove existing facilities neatly and completely to the lines and extents indicated on the drawings.

B. The existing slabs-on-grade and buried utilities to be abandoned shall be secured (capped) and remain in place. Seal and cap utility lines where necessary as required by regulations and requirements of the authority having jurisdiction of the affected items.

C. Existing utility lines in the area of the project site are shown on the plans based on a best search of available record plans. The Contractor shall not assume that where utilities are not shown, they do not exist. If any unmarked utilities are encountered, the Contractor shall coordinate with the Engineer to determine the appropriate course of action. No existing utility lines shall be disconnected without authorization from the Engineer. Authorization for extra work shall be issued by the Engineer only as he/she deems necessary.

3.2 SAFETY

A. Work shall be done in accordance with safety provisions of the "Manual of Accident Prevention in Construction," published by the Associated General Contractors of America.

3.3 DISPOSITION OF MATERIALS

A. Title to Materials: Title to all removed materials and equipment, unless as specified otherwise, is vested in the Contractor upon receipt of notice to proceed. The Engineer will not be responsible for the condition or loss of, or damage to, such property after notice to proceed. Materials and equipment shall not be viewed by prospective purchasers or sold on the site. Burning or burying of materials on site will not be permitted.

B. When removing demolition and waste materials from the property, the materials shall

be contained and adequately secured within the limits of the hauling vehicles and trimmed, handled, and loaded into them appropriately to prevent spillage.

3.4 CLEANUP

A. Debris and Rubbish: Remove and transport debris and rubbish in a manner that will prevent spillage. Appropriately and completely clean up any spillage from adjacent areas, storm drain systems, and surface waters. The Contractor shall leave the premises clean, neat, and orderly.

B. Regulations: Comply with all Federal, State, and local hauling and disposal regulations. Any and all fees and fines shall be paid for by the Contractor.

C. The Contractor shall take special note of new requirements implemented by the County of Hawaii, Department of Environmental Management, Solid Waste Division as of March 1, 2016. Each load of construction and demolition debris or grading and grubbing material being disposed of by a commercial hauler at the East and West Hawaii Sanitary Landfill will require a Notice of Authorization.

3.5 MEASUREMENT AND PAYMENT

Demolition, including equipment, materials, labor, hauling, disposal, and all other incidentals shall be paid for as specified in the respective line items in the Proposal Schedule.

- END OF SECTION -

SECTION 02100

SITE PREPARATION

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

A. The work to be performed under this section shall include clearing the premises of all obstacles and obstructions. The removal of these items will be necessary for the proper reception, construction, execution and completion of the other work included in this Contract.

1.2 COORDINATION WITH OTHER SECTIONS

A. Earthwork is specified in Section 02200 - EARTHWORK.

PART 2 – PRODUCTS *(NOT USED)*

PART 3 – EXECUTION

3.1 GENERAL

A. Maintenance of Traffic: The Contractor shall conduct operations with minimum interference to streets, driveways, walkways, passageways, parking areas, parking entry and exit ways, etc.

When necessary, the Contractor shall provide and erect barriers with special attention to protection of personnel.

The Contractor shall strictly adhere to and abide by all Federal, State, and County traffic and pedestrian control regulations and requirements as applicable and appropriate. The Contractor is responsible for all necessary coordination and notification of all regulating and permitting agencies.

B. Protection: Throughout the progress of the work protection shall be provided for all property and equipment, and temporary barricades shall be provided as necessary and appropriate. Work shall be done in accordance with the safety provisions of the "Manual of Accident Prevention in Construction," published by the Associated General Contractors of America, and the State of Hawaii's Occupational Safety and Health Standards, Rules and Regulations.

C. Fires: No burning of fires of any kind will be allowed.

D. Reference Points: Benchmarks, etc., shall be carefully maintained, but if disturbed or destroyed, shall be replaced as directed, at the Contractor's expense and to the approval and acceptance of all authorities having jurisdiction of the benchmark or monument.

E. Disposal: All materials resulting from operations under this Section shall become the property of the Contractor and shall be removed properly and promptly from the site. The materials shall be contained and adequately secured within the limits of the hauling vehicles and trimmed, handled, and loaded into them appropriately to prevent spillage.

3.2 EXISTING UTILITY LINES

A. Existing utility lines in the area of the project site are shown on the plans based on a best search of available record plans. The Contractor shall not assume that where utilities are not shown, they do not exist. If any unmarked utilities are encountered, the Contractor shall coordinate with the Engineer to determine the appropriate course of action. No existing utility lines shall be disconnected without authorization from the Engineer. Authorization for extra work shall be issued by the Engineer only as he/she deems necessary.

3.3 CLEARING AND GRUBBING

A. The Contractor shall stakeout and flag the project limits properly by a land surveyor licensed in the State of Hawaii before clearing the premises of all obstacles and obstructions per Section 02050 as applicable, the removal of which will be necessary for the proper reception, construction, execution and completion of other work included in this contract. Signs that need to be temporarily removed will be stored and relocated at the discretion of the Engineer.

B. After clearing has been completed, the entire area of the project site that will involve ground disturbance shall be scarified to a minimum depth of 6 inches from the existing surface. Remove trees and roots to a minimum of 3 feet below existing ground level. Remove all large roots in excess of 2 inches in diameter, and backfill and compact the resulting depression. All debris accumulated from this operation shall be completely removed from the premises by the Contractor.

C. Unless specified otherwise, the Contractor shall protect all surrounding trees, plants, etc. to remain from injury and damage and shall leave them in healthy or unchanged conditions. Any damage to existing structures and improvements shall be repaired or replaced by the Contractor to the satisfaction of the Engineer.

D. An arborist consultation report by Steve Nimz and Associated (December 2016) has been prepared and provides guidance related to protection and/or removal of existing vegetation on site. The Contractor shall follow any applicable recommendations listed in the report.

3.4 CLEAN UP OF PREMISES

A. Clean up and remove all debris accumulated from construction operations regularly or as directed by the Engineer. Upon completion of the construction work and before final acceptance of the contract work, remove all surplus materials, equipment, scaffoldings, etc., and leave entire job site raked clean and neat to the satisfaction of the Engineer.

B. Disposal of construction debris shall conform to the requirements of Section 02050.

3.5 MEASUREMENT AND PAYMENT

Site preparation, including materials, labor, equipment, and all other incidentals shall be paid for as specified in the Proposal Schedule.

- END OF SECTION -

SECTION 02200

EARTHWORK

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

This section covers the requirements for earthwork.

A. It shall be the responsibility of the Contractor to examine the project site and determine for himself the existing conditions. Site visits to examine the project site shall be coordinated with the Engineer.

B. Conditions of the site existing on the date of the bid opening shall be accepted as part of the work, even though they may not be clearly indicated on the drawings and/or described herein or may vary therefrom.

C. All debris of any kind accumulated from project clearing shall be disposed of from the site, and the project area left clean at the end of the project. The Contractor shall be required to make all necessary arrangements for the proposed place of disposal and pay for any and all associated fees.

1.2 REMOVAL AND REPAIR WORK

The Contractor shall exercise every precaution to preserve and protect all structures, walkways, or utility improvements which are to remain or be relocated. Portions of walkway, slabs, and pavement which are to remain shall be saw cut neat and true to line. Restore all pavement and curbs upon completion of the work to the approval and acceptance of the Engineer.

1.3 SEQUENCE OF WORK

All sequence of work shall be subject to the approval of the Engineer.

1.4 PROTECTION

A. Barricade: Erect temporary barricades and signage to prevent people from entering the project work areas, to the extent as approved by the Engineer. Such barricades shall be as defined in Section 01530 - BARRICADES. The extent and details of the barricades may be adjusted as necessary with the approval of the Engineer.

B. Take all precautions and safety measures as required to protect the State free and harmless from liability of any kind. Conduct operations with minimum interference to streets, driveways, sidewalks, passages, etc.

C. Adequate precautions shall be taken before commencing and during the course of the work to ensure the protection of life, limb, and property.

D. The Contractor shall protect from damage all surrounding structures, trees, plants, grass, walks, pavements, etc. Any damage will be repaired or replaced by the Contractor to the satisfaction of the Engineer.

1.5 PERMITS

The Contractor shall obtain and pay for necessary permits prior to the commencement of work.

1.6 MAINTAINING TRAFFIC

A. The Contractor shall conduct operations with minimum interference to streets, driveways, sidewalks, public parking areas, entry and exit ways, traffic activities, etc.

B. When necessary, the Contractor shall provide, erect, and maintain signage, lights, barriers, etc., as required by traffic and safety regulations with special attention to protection of life.

1.7 CONSTRUCTION LINES, LEVELS AND GRADES

A. The Contractor shall verify all lines, levels and elevations indicated on the drawings before any clearing, excavation or construction begins. Any discrepancy shall be immediately brought to the attention of the Engineer and any adjustments shall be made in accordance with his/her instructions. No adjustments shall be made without the prior approval of the Engineer. The Contractor shall not be entitled to additional payment if he/she fails to report the discrepancies before proceeding with any work whether within the area affected or not.

B. The laying out of base lines, establishment of grades and staking out the entire work shall be done by a licensed Surveyor, registered in the State of Hawaii. He/she shall be solely responsible for their accuracy. Erect and maintain substantial batter boards showing construction lines and levels.

1.8 CLEANUP

The Contractor shall clean up and remove all debris accumulated from construction operations regularly or as directed by the Engineer. Upon completion of the construction work and before final acceptance of work, the Contractor shall remove all surplus materials, equipment, etc. and leave entire jobsite clean and neat.

PART 2 – PRODUCTS

2.1 MATERIALS

A. YARD FILL: Fill materials shall be soil with expansion value not greater than 3%, free from debris, perishable or combustible materials, sod and stones larger than 6" in maximum dimension. Rock or broken masonry shall be well distributed in earth or other fine material with voids filled and shall be placed within three feet of finish grades.

B. STRUCTURAL FILL: New structural fill below interior and exterior concrete slabs or paving, with allowance for depth of cushion fill, shall be select borrow material. This material shall be granular with an expansion value not greater than 3% non-adobe and with a plasticity index less than ten. Decayed rubbish, debris, or rocks greater than 3" in diameter shall not be allowed as fill material. Certificate of compliance shall be submitted to the Engineer for approval prior to filling.

C. TOPSOIL: Imported, fertile, friable soil of loamy character having normal amounts of natural humus, free from subsoil, clay, refuse roots, weeds, noxious seeds, nematodes or other deleterious matter, and free from toxic amounts of either acid or alkaline elements and capable of sustaining healthy plant life. Stones and earth lumps shall not be greater than one inch in largest dimension. Red humic latosol soils, or types known as "Palolo clay" or Lualualei clay" are unacceptable. Topsoil is subject to approval by Engineer.

PART 3 – EXECUTION

3.1 EXCAVATION

A. PROTECTIVE MEASURES:

1. All excavation shall be protected and guarded against danger to life, limb, and property.

2. Shoring and cribbing as required to safely preserve the excavations and earth banks free from damages resulting from the work, shall be provided and installed by the Contractor.

3. All excavations shall be kept free from standing water. The Contractor shall do all pumping and draining that may be necessary to remove water to the extent required in successfully carrying on and completing the work in accordance with the plans and specifications. Grading shall be controlled so that the ground surface is properly sloped to prevent water runoff into structural foundations and open trenching excavations.

4. Existing utility lines in the area of the project site are shown on the plans based on a best search of available record plans. The Contractor shall not assume that where utilities are not shown, they do not exist. If any unmarked utilities are encountered, the Contractor shall coordinate with the Engineer to determine the appropriate course of action. No existing utility lines shall be disconnected without authorization from the Engineer. Authorization for extra work shall be issued by the Engineer only as he/she deems necessary.

B. GENERAL:

1. Excavation shall be done to the lines and grades indicated on the drawings. Portions of concrete slabs, concrete curbs, asphaltic concrete pavement, etc., indicated on the plans to be removed shall be removed or broken up into pieces of sizes permitted in other paragraphs of this section. When incorporated in fill, broken up pieces shall be well mixed with finer materials filling all spaces between the pieces.

2. Excavation for footings, foundation, etc., shall have level beds on unfilled, undisturbed, firm bearing, with stepped level where necessary. Small soft spots shall be compacted to unyielding firmness.

   If soil conditions are suitable and approved by the Engineer, footing cuts may be made to exact size of footing.

3. Structural excavations carried below specified level shall be filled with concrete to the proper level at the expense of the Contractor.

4. Excavated materials declared unusable by Engineer shall be removed from the site at the Contractor's expense.

3.2 BACKFILL

A. YARD AREA:

1. Yard fill where no concrete slab occurs shall be in 6" layers (compacted thickness) compacted to 95% of maximum density as determined by ASTM Test, Method D-1557.

2. Areas not covered by asphalt paving or concrete slab shall be graded to conform to finish contours, with allowance for depth of topsoil indicated on the drawings. Rough grading shall prevent the drainage of water into construction areas.

B. STRUCTURAL FILL:

1. In advance of preparing the subgrade or depositing a specified layer of

material, existing material within the area where such materials is to be placed, which in the opinion of the Engineer is unsuitable as a subgrade foundation, shall be removed and the resulting space filled with approved material and compacted.

2. Backfilling shall progress so that excessive unbalanced load is not introduced against any structure.

3. New structural fill material shall be placed in layers not to exceed 6" per compacted layer and compacted to a compaction of 95% as determined by ASTM Test, Method D-1557.

4. Materials and compaction of all yard and structural fill shall be tested by an independent testing agency approved by the Engineer. All compaction test results shall be submitted to the Engineer for approval. All cost of testing shall be borne by the Contractor. Testing shall be made throughout the area for each 6" compacted layer as directed by the Engineer. All test results must be approved before proceeding with placing of topsoil, cushion fill or base course. Any fill tested to not meet compaction requirements shall be recompacted or removed and reinstalled to the extents as directed by the Engineer at no additional cost to the State.

5. In the event insufficient amount of structural fill or yard fill is derived from earthwork operations, the Contractor shall import the necessary materials without any additional cost to the State. Such imported material shall meet the requirements as specified for each category of materials.

6. The ground shall be scarified to 6" below existing grade and compacted to a minimum 90% relative compaction.

7. Under interior and exterior slabs the cushion fill as specified shall be compacted to a level surface to a minimum 95% relative compaction as determined by the modified Proctor Test, ASTM Test Method, D-1557.

C. GRADING:

1. Rough Grading: The areas not covered by asphalt paving or concrete slab up to the contract zone limit shall be graded to topsoil. Contractor shall take the necessary precautions to prevent the drainage of water into construction area.

2. Finish Grading: Outdoor areas shall be graded to finish grade and contours with allowance for a 4" layer of topsoil as required. Grading shall conform with the ordinances of the applicable County issuing the Grading Permit and as amended. Areas to be topsoiled shall be compacted to a minimum of 85% of maximum dry density before placing topsoil. Topsoil shall be spread evenly, compacted lightly and raked to a uniform place at required contours and grades.

3.3 GRASSING

A. Replant graded and damaged areas with native grass similar to adjacent areas.

B. Grass shall be maintained by the Contractor. Maintenance shall include watering, weeding, mowing, repairing, regrassing and protection, and be performed until the entire project is accepted but in any event for a period not less than 60 days after planting of grass. At the time of acceptance, the grass shall be well-established and be given a final weeding and mowing to a height of 1 inch. If the maintenance period has expired before acceptance of the entire project, the Contractor shall continue to maintain the grass until acceptance of the entire project. If the maintenance period should extend beyond acceptance of the entire project, the Contractor shall continue to maintain the grass until the end of the specified period of time required for maintenance.

3.4 MEASUREMENT AND PAYMENT

Earthwork, including materials, labor, equipment, and all other incidentals shall be paid for as specified in the respective line items in the Proposal Schedule.

- END OF SECTION -

SECTION 02230

AGGREGATE BASE COURSE

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

A. Description: This work shall consist of furnishing and placing one or more courses of aggregate base on a prepared surface in accordance with the requirements of the contract.

PART 2 – PRODUCTS

2.1 MATERIALS

Materials shall meet the requirements specified in the following Subsections of Division 700 of the "Standard Specifications for Road and Bridge Construction."

Aggregate	703.06
Water	712.01

PART 3 - EXECUTION

3.1 CONSTRUCTION REQUIREMENTS

A. Placing:

1. Base course shall be placed on its underlying prepared surface without segregation. Segregated materials shall be remixed until a uniform distribution is obtained. Base course shall not be dumped in piles on its underlying prepared surface.

2. Depositing and spreading of base course shall commence at the part of the work farthest from the point of loading the material and shall progress continuously without breaks, unless otherwise directed by the Engineer.

3. If the required compacted depth of the base course exceeds 6 inches, the base shall be constructed on 2 or more layers of approximately equal thickness. The maximum compacted thickness of any one layer shall not exceed 6 inches.

4. If the Contractor uses a vibratory roller weighing 9 tons or more, the lift thickness may be increased to 7 inches.

5. Binder material shall not be spread over the surface of the compacted base. Additional base course, if required, shall be incorporated uniformly throughout the thickness of the compacted material by scarifying and blading. The combined material shall meet all quality requirements as specified.

B. Shaping and Compacting:

1. The Contractor shall perform shaping work as necessary such that the finish base shall conform to the required grade and cross-section. The finish base where not controlled by adjacent structures or features shall not vary more than 0.04 foot above or below the designed grade.

2. Compaction of each layer shall continue until a density of not less than 95 percent of the maximum dry density, determined in accordance with the requirements of Subsection 106.09 - Special Test Methods, of the "Standard Specifications for Road and Bridge Construction" has been achieved. Field density determination will be made in accordance with Hawaii Test Method HWY-TC 1. The surface of each layer shall be maintained during the compaction operations in such a manner that a uniform texture is produced and the aggregates firmly keyed. Water shall be uniformly applied over the base materials during compaction in the quantity necessary for proper consolidation. All cost of testing shall be borne by the Contractor.

3. Should high or low spots develop during rolling operations, such spots shall be smoothed out by blading with a self-propelled and pneumatic-tired motor grader having a wheel base not less than 15 feet long and a blade not less than 10 feet long.

4. Each layer shall be compacted initially by rolling with three-wheel rollers followed by intermediate rolling with pneumatic-tired rollers. Final rolling shall be done with three-wheel rollers.

C. Equipment: Three-wheel rollers and pneumatic-tired rollers shall conform to the requirements specified in Subsection 401.03(B)(4) - Rollers.

3.2 MEASUREMENT AND PAYMENT

Aggregate base course, including materials, labor, equipment, and all other incidentals shall be paid for as specified in the respective line items in the Proposal Schedule.

- END OF SECTION -

SECTION 03100

CONCRETE FORMWORK

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

This section covers the requirements for furnishing and placing of concrete formwork.

PART 2 – PRODUCTS

2.1 MATERIALS:

A. Plywood shall be new commercial-standard APA Plywood. Forms for concrete surfaces exposed to view, use APA High Density Overlay (HDO) Plyform Class I Exterior 48" X 96" X 3/4". Forms for other concrete surfaces, use APA Douglas Fir B-B Plyform Class 1 Exterior 48” X 96” X 3/4-inch.

B. Metal forms may be used if they will produce surfaces equal to those specified for wood forms.

C. Forms of other materials shall not be used unless approved by the Engineer.

D. Commercially fabricated metal clamps and form ties shall be used. Form ties for exposed concrete shall be removable either completely or to a minimum depth of 1 inch from the face of the concrete.

E. Coat form surfaces in contact with concrete using non-staining, non-residual, water based, bond-breaking form coating.

PART 3 – EXECUTION

3.1 TOLERANCES

A. Forms shall be constructed so that the concrete surfaces do not deviate from established lines, grades, and dimensions in excess of industry accepted tolerances.

3.2 INSERTS AND FASTENING DEVICES

A. Install inserts, reglet strips, hangers, metal ties, anchors, bolts, nailing strips, blocking grounds and other fastening devices as required for attachment of other work. Properly locate all embedded items in cooperation with other trades and secure in

position before concrete is placed.

B. The Contractor shall coordinate the installation of all embedded items and penetrations. Cost of any added reinforcement required at embedment shall be borne by the Contractor.

3.3 CONSTRUCTION OF FORMS

A. All concrete forms shall be placed with metal clamps and ties. Locate ties level and plumb in horizontal rows and vertical tiers.

B. Where soil conditions will permit excavation to accurate sizes without bracing, side forms for footings may be omitted only if approved by the Engineer.

C. Temporary access openings to forms for cleaning prior to depositing of concrete shall be provided.

D. Unless otherwise called for on the plans, all exposed concrete surfaces and/or all surfaces designated as “Architectural Concrete” on the plans shall be formed with plywood. The arrangement of the plywood sheets shall be orderly and symmetrical and shall be of 4’ x 8’ size wherever practical.

Only new or unmarred plywood shall be used. A 3/4" by 3/4” chamber shall be provided at external corners of exposed concrete beams, girders, columns, and pilasters unless otherwise indicated on the plans. Metal forms may be used if they will produce surfaces equal to those specified for wood forms.

E. Rough concrete finish may be used for all unexposed concrete surfaces as indicated in Section 03300 or on the plans. Rough concrete finish shall be obtained by using clean, straight lumber or metal forms.

F. Forms for architectural concrete surfaces or on exposed surfaces which are to receive a finishing material shall be either wetted thoroughly immediately before placing concrete or coated with a bond-breaking material compatible with the finishing material and/or its adhesive prior to the placement of reinforcing steel. Forms for unexposed surfaces may be coated with form oil. However, any surplus oil on the form surfaces and any oil on the reinforcing steel shall be removed by wiping with dry rags.

G. Forms which cannot be removed shall be of material other than wood and must be approved by the Engineer.

H. All forms other than for the non-removable form described under the preceding subparagraph shall be constructed so that they can be removed without hammering or prying against the concrete.

I. Forms shall not be removed before the expiration of the minimum lapsed time from

concrete pour shown below unless information and/or data justifying a request for a shorter period is submitted to and approved by the Engineer. Even with such approval, however, the Contractor shall be fully responsible to repair any damages which may result from the early removal.

1. Footing side forms 24 hours

No construction loads exceeding the structural design live loads shall be supported upon any unshored portion of the structure under construction. No construction load shall be supported upon, nor any shoring removed from any part of the structure under construction until the portion of the structure has attained sufficient strength to support safely its weight and the loads placed thereon. This strength may be demonstrated by job-cured test specimens and by a structural analysis considering the proposed loads in relation to this test strength. Such analysis and test data shall be furnished by the Contractor to the Engineer.

J. To maintain the tolerances specified in Paragraph 3.1, the formwork shall be cambered to compensate for anticipated deflections in the formwork prior to hardening of the concrete.

K. SCREEDS FOR SLABS:

1. Edge forms and intermediate screed strips shall be set accurately to produce the designated elevations and contours of the finished surface, and shall be sufficiently strong to support vibrating screeds or roller pipe screeds if the nature of the finish requires the use of such equipment.

   The concrete surface shall be aligned to the contours of screed strips by the use of strike-off templates or approved compacting type screeds. Screeds shall be set adjacent to all walls and in parallel rows not to exceed 8 feet on center. Penetrations of the moisture barrier shall be held to a minimum.

2. At walks, screeds shall be set at the sides to serve as forms and additional screeds, if required, shall be spaced not exceeding 8 feet on center.

3.4 MEASUREMENT AND PAYMENT

Concrete formwork shall not be paid for directly, but shall be considered incidental and included in the bids for the respective items in the Proposal Schedule.

- END OF SECTION -

SECTION 03210

REINFORCING STEEL

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

This section covers the requirements for furnishing and placing of deformed steel bars or welded wire fabric as reinforcement in concrete. The quality, type, size, and dimensions shall be as called for in these specifications and as shown on the plans.

1.2 REFERENCES:

The references listed below are a part of this section. Where a referenced document contains references to other standards, those documents are included as references under this section as if referenced directly. In the event of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

Reference	Title
ACI 117	Specification for Tolerances for Concrete Construction and Materials
ACI 315	Details and Detailing of Concrete Reinforcement
ACI 318	Building Code Requirements for Structural Concrete
ACI SP-66	ACI Detailing Manual
ASTM A615	Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
ASTM A775	Epoxy-Coated Steel Reinforcing Bars
ASTM A884	Epoxy-Coated Steel Wire and Welded Wire Reinforcement
ASTM A1064	Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
CRSI-PRB	Placing Reinforcing Bars
CRSI-MSP	Manual of Standard Practice

1.2 SUBMITTALS:

Reinforcing steel shop drawings showing reinforcing steel bar quantities, sizes, spacing, dimensions, configurations, locations, mark numbers, lap splice lengths and locations, concrete cover and reinforcing steel supports. Reinforcing steel shop drawings shall be of sufficient detail to permit installation of reinforcing steel without reference to the contract drawings. Placement drawings shall be in accordance with ACI 315. Reinforcing details shall be in accordance with ACI SP-66.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Bar reinforcement shall be of grade 60, billet steel deformed type bars made by the open hearth process and shall conform to the requirements of ASTM Designation A615.

B. Welded wire mesh reinforcement shall be galvanized steel, electric welded type and shall conform to the requirements of ASTM Designation A1064. The gauge of the wire and dimensions of the mesh shall be given in these specifications or as shown on the plans.

C. Smooth dowel bars shall conform to ASTM A615, Grade 60, with a metal end cap at the greased or sliding end to allow longitudinal movement.

D. The tie wire shall be minimum 16 gage annealed steel conforming to FEDSPEC QQ W 461H

2.2 EPOXY COATING

A. Epoxy coating for the reinforcing steel shall be applied by the electrostatic spray method conforming to ASTM A-775 and ASTM A884.

B. Epoxy coated reinforcing steel bar patching material shall be compatible with coating material, inert in concrete, obtained from manufacturer of the epoxy resin used to coat the reinforcing steel bars and meet the requirements of ASTM A775.

2.2 BAR SUPPORTS

A. Bar supports coming into contact with forms shall be CRSI Class 1 plastic protected or Class 2 stainless steel protected and shall be located in accordance with CRSI-MSP and placed in accordance with CRSI-PRB.

B. Provide manufactured concrete block supports with embedded tie wires (wire dobies) for footing and slabs on grade. Do not use brick, broken concrete masonry units, spalls, rocks, construction debris, or similar material for supporting reinforcing steel.

2.2 FABRICATION:

A. Fabricate reinforcing steel bars in accordance with ACI 315.

PART 3 – EXECUTION

3.1 CONSTRUCTION

Unless otherwise specified, the installation of reinforcing steel shall conform to the requirements of "ACI 318 and CRSI PRB."

A. Protection of Material: Steel reinforcement shall be protected at all times from damage. When placed in the work, all reinforcing steel shall be new, free from dirt, detrimental scale, paint, oil, or other foreign substances. No material cleaned by sandblasting will be allowed. In the absence of manufacturer's quality mark, the Engineer may require standard ASTM tests be made on representative samples before acceptance. All costs incurred in connection with these tests shall be borne by the Contractor.

B. Bending Diagrams and Order Lists: Two copies of all reinforcing steel order lists and bending diagrams shall be furnished directly to the Engineer and at the site for his use in administering the contract.

Furnishing such lists and diagrams to the Engineer shall not be construed to mean that the lists and diagrams will be reviewed for accuracy. The Contractor shall be wholly and completely responsible for the accuracy of the lists and diagrams and for furnishing and placing all bar reinforcing steel in accordance with the details shown on the plans as specified.

C. Bending: Bends for stirrups and ties shall be in accordance with ACI 318. All bars shall be bent cold before placing in forms.

D. Placing: Reinforcement shall be accurately placed, supported, aligned, and secured against movement. Bars shall be tied at all intersections except where the spacing is less than one foot in each direction, in which case alternate intersections shall be tied.

Distance from forms and between layers of reinforcing shall be maintained by means of approved commercial chairs, stays, blocks, ties, hangers, or other approved supports. The use of pebbles, pieces of broken stone or brick, metal pipe, or wooden blocks shall not be permitted.

No concrete shall be placed prior to the inspection and approval of the size and placement of all reinforcement by the Engineer.

E. Splicing: End laps of bars at splices shall be Class B splice lengths in accordance with ACI 318 for all reinforcing steel bars unless shown otherwise on the drawings and shall be staggered unless otherwise shown. Bars shall be installed in as long lengths as practicable and splices reduced to a minimum unless otherwise shown on the plans.

F. Wire Mesh: Wire mesh shall be rolled out flat and firmly held in place to the lines and grade as shown on the plans before placing concrete. Splices shall be made by lapping not less than one mesh plus 2 inches and securely tied.

G. Coverage: Unless otherwise specified on the plans, the minimum clear thickness of concrete covering reinforcement shall be 2 inches when concrete is placed against form, 3 inches when concrete is placed against ground, and 1-1/2 inches from tops of slabs or unformed surfaces.

H. Epoxy coating damage need not be repaired in cases where the damaged area is 0.1 square inch or smaller. Repair all damaged areas larger than 0.1 square inch in conformance with ASTM A775.

3.2 MEASUREMENT AND PAYMENT

Reinforcing steel shall not be paid for directly, but shall be considered incidental and included in the respective line items in the Proposal Schedule.

- END OF SECTION -

SECTION 03300

CONCRETE

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

This specification covers the requirements for furnishing, hauling, mixing, placing, and curing of concrete.

1.2 REFERENCES:

A. The references listed below are a part of this section. Where a referenced document contains references to other standards, those documents are included as references under this section as if referenced directly. In the event of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

Reference	Title
ACI 117	Tolerances for Concrete Construction and Materials
ACI 211.1	Selecting Proportions for Normal, Heavy Weight and Mass Concrete
ACI 301	Specifications for Structural Concrete
ACI 305.1	Specification for Hot Weather Concreting
ACI 214R	Guide to Evaluation of Strength Test Results in Concrete
ACI 318	Building Code Requirements for Structural Concrete
ACI 614	Recommended Practice for Measuring, Mixing, and Placing
ASTM C31	Making and Curing Concrete Test Specimens in the Field
ASTM C33	Concrete Aggregates
ASTM C39	Compressive Strength of Cylindrical Concrete Specimens
ASTM C94	Ready-Mixed Concrete
ASTM C136	Sieve Analysis of Fine and Coarse Aggregates
ASTM C143	Slump of Hydraulic Cement Concrete
ASTM C150	Portland Cement
ASTM C172	Sampling Freshly Mixed Concrete
ASTM C192	Making and Curing Concrete Test Specimens in the Laboratory
ASTM C309	Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C494	Chemical Admixtures for Concrete
ASTM C618	Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
ASTM C1059	Latex Agents for Bonding Fresh to Hardened Concrete

Reference	Title
ASTM C1260	Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)
ASTM C1315	Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete
ASTM C1567	Potential Alkali-Silica Reactivity of Combinations of Cementitious Materials and Aggregate (Accelerated Mortar Bar Method)
ASTM C1602	Mixing Water Used in the Production of Hydraulic Cement Concrete
ASTM D75	Sampling Aggregates
ASTM D2419	Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate
ASTM E329	Agencies Engaged in Construction Inspection and/or Testing
HIDOT	Hawaii Department of Transportation 2005 Standard Specifications for Road and Bridge Construction, Section 634
IBC	International Building Code with local amendments

1.3 SUBMITTALS

A. The Contractor shall submit concrete mix design for approval showing expected strength at 28 days, corresponding slump before and after the introduction of high-range water-reducing admixtures, water/cement ratios, and aggregate gradation.

B. Product literature, technical data and dosage of all proposed admixtures.

C. Curing program description in sufficient detail to demonstrate acceptable strength, finish and crack control as specified.

D. Product literature and technical data for, curing and sealing compounds, bonding compounds, and retardant.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Portland cement shall conform to the requirements of ASTM C150, Type I/II, low alkali, containing less than 0.60 percent alkalis for all concrete work.

B. Aggregates:

1. Fine aggregates shall be calcareous or basalt sands, or a combination thereof. They shall meet the grading requirements of ASTM C33 unless the concrete producer can provide past data that show that a proposed non-conforming gradation will produce concrete with the required strength and suitable workability.

If manufactured sands are used in the concrete mix, the Contractor may select and use a water-reducing and/or an air-entraining admixture as specified hereinafter to provide satisfactory workability in the concrete. The cement content of a mix shall be as specified hereinafter, and the use of an admixture shall in no way result in the reduction of the cement factor.

2. Coarse aggregates shall be crushed close-grained, blue lava rock meeting the grading requirements ASTM D448. The maximum size of aggregate shall not be larger than 1/5 of the narrowest dimensions between sides of the forms of the member for which the concrete is to be used not larger than 3/4 of the minimum clear spacing between individual reinforcing bars or bundles of bars.

C. Water used in mixing concrete shall be potable.

D. Non-slip grit shall be an abrasive aggregate of silicon carbide or aluminum oxide.

E. Admixture shall conform to ASTM C494 or ASTM C260 and shall be mixed in proper amount in accordance with directions of manufacturer.

F. Curing compound shall conform to ASTM C309.

2.2 CONCRETE CHARACTERISTICS

A. Concrete shall be normal weight concrete composed of specified cement, pozzolan, admixtures, aggregates and water proportioned and mixed to produce a workable, strong, dense, and impermeable concrete. Water-cementitious material (w/cm) ratio is based on the combined contents of cement and pozzolan in a given mix proportion.

B. Provide concrete in accordance with the following:

Concrete class	ASTM coarse aggregate size	Maximum water-cementitious materials (w/cm) ratio	Minimum Cementitious Materials Content (pounds/CY)	Pozzolan, percent by weight of cementitious materials	Air content (percent)	Minimum 28-day compressive strength, psi	Slump Range (inches)
B[a]	57 or 67	0.45	560	15-20	4-6	3000[b]	3-5

a Non-structural concrete (temporary working slabs, sidewalks, curbs, gutters, pavers, thrust blocks, manhole channels, pipe bedding, pipe encasement, etc.) and fill concrete.

b Determine compressive strength at the end of 28 days based on test cylinders made and tested in accordance with ASTM C39.

C. Unless specified otherwise, concrete shall have a broom finish. Details shall be coordinate with the Engineer during Construction.

PART 3 – EXECUTION

3.1 GENERAL

A. All concrete throughout shall be either job or plant mixture in an approved type of power operated mixer that will insure uniformity and homogeneity of the concrete produced.

B. Mixing at jobsite shall be done in accordance with ACI 614.

C. Ready-mixed and mixed-in-transit concrete shall be mixed to conform to the provisions of ASTM C94.

D. 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.

3.2 PLACING CONCRETE

A. No concrete shall be placed in the absence of the Engineer or his representative, who shall be given at least one (1) week advanced notice of starting time of concrete pour.

B. Preparation:

1. Concrete shall be placed upon clean, damp surfaces with no free water, and upon properly compacted fills. Do not place concrete on soft mud dry soil, or porous earth.

2. Before depositing new concrete on or against concrete which has set, all accumulation or 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 laitance, saturated with water and slushed with a coat of cement grout. New concrete shall be placed before the grout has attained its initial set.

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 forms.

3. Open troughs and chutes shall have a slope not to exceed 1 vertical to 2

horizontal and not less than 1 vertical to 3 horizontal. Chutes more than 20 feet long and chutes not meeting the slope requirements may be used provided they discharge into a hopper before distribution.

4. The concrete shall not be allowed to drop freely more than six (6) feet except where specifically authorized by the Engineer. When placing operations would involve the dropping of concrete from a height of more than six feet it shall be conveyed through pipes or flexible drop chutes.

5. If any appreciable segregation occurs through the conveying methods employed, their use shall be ordered discontinued by the Engineer and some other satisfactory method of placing concrete shall be used.

6. All chutes, troughs, pipes and other means of conveyance 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 or forms already in place.

D. Depositing:

1. Unless adequate protection is provided, concrete shall not be placed during rain. Rainwater shall not be allowed to increase the mixing water nor to damage the surface finish. Fresh concrete that has been deposited but has not attained its initial set shall be protected in the event of rain.

2. Placing of the concrete shall be started at the far end of work so that each batch will be dumped against previously placed concrete, not away from it.

E. Compaction:

1. All concrete shall be consolidated by vibration so that the concrete is thoroughly worked around the reinforcement, around embedded items, and into corners of forms, eliminating all air or stone pockets which may cause honey-combing, pitting, or planes of weakness. All compaction shall be done by use of high frequency internal vibrators. Where the vibrator cannot be inserted into the concrete, compaction shall be done by spading, rodding, or forking.

2. Frequency of vibrator shall be not less than 7,000 impulses per minute. The Contractor shall provide a sufficient number of vibrators to properly consolidate all concrete immediately after placing. At least one (1) standby vibrator shall be on hand at all times during placement of the concrete.

3.3 FINISHING OF SLABS

A. Finish for Slabs: The concrete slabs shall be given a coarse transverse scored texture

by drawing a broom across the surface. The operation shall follow immediately after steel troweling.

3.4 REPAIR OF DEFECTS

A. After forms have been removed, any concrete which is not constructed as shown on the plans or is out of alignment or level beyond required tolerances or which shows a defective surface which in the opinion of the Engineer cannot be properly repaired or patched shall be removed.

B. Where concrete which is exposed to view requires repairing or patching, the texture of the surface of such repair or patch shall closely match that of the surrounding surface.

3.5 CURING AND PROTECTION

A. All concrete shall be cured for a period of not less than seven (7) days by one of the methods listed below. During this curing period, the concrete shall be maintained with minimal moisture loss at a relatively constant temperature. Fresh concrete shall be protected from heavy rains, flowing water, mechanical injury, and injurious action of the sun. Curing method selected must be compatible with the finish to be applied to the concrete.

Curing shall immediately follow the finishing operation.

B. Water Curing: If cured with water, concrete shall be kept wet by mechanical sprinklers, by ponding, or by any other method which will keep the surfaces continuously wet.

C. Saturated Sand Curing: Surfaces cured with sand shall be covered with a minimum of one inch thickness of sand which shall be kept uniformly distributed and continuously saturated during the entire curing period.

D. Curing Compounds: Curing compounds shall not be used on concrete surfaces that are to receive paint finish, acid stain or resilient flooring, except those that are recommended by the manufacturer to be compatible with the applied finish. The Contractor shall submit to the Engineer a letter certifying that the curing compound is 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 terrazo grinder.

E. Waterproof Paper: Waterproof paper or opaque polyethylene film conforming to ASTM C171 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.

3.6 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 C 39: 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 test results submitted to the Engineer for approval. All cost of sampling and testing shall be borne by the contractor.

3.7 MEASUREMENT AND PAYMENT

Concrete, including materials, labor, equipment, and all other incidentals shall be paid for as specified in the respective line items in the Proposal Schedule.

- END OF SECTION -

SECTION 03500

CONCRETE SIDEWALKS AND PADS

PART 1 – GENERAL

1.1 DESCRIPTION OF WORK

Provide concrete sidewalks and pads complete as indicated on the drawings and as specified herein.

1.2 GENERAL REQUIREMENTS

A. Where requirements of this Section conflict with requirements of other sections, the more stringent requirement shall apply. Coordinate with the Engineer for clarification on any conflicting requirements.

B. The State of Hawaii, Department of Transportation, Highways Division, "Hawaii Standard Specifications for Road and Bridge Construction," 2005, including all revisions, shall govern all work except for subsections on Measurement and Payment which shall not be applicable. This publication shall be referred to as State DOT Standard Specifications hereinafter.

C. County of Hawaii, "Standard Specifications for Public Works Construction," dated September 1986, and "Standard Details for Public Works Construction," dated September 1984, as revised, except as amended in the plans and/or specifications herewith. Paragraphs concerning Measurements and Payments in the sections are not applicable to this project.

1.3 SUBMITTALS

A. PROCEDURES: See Section 01300.

B. SUBMITTAL ITEMS:

1. Concrete additive color sample.

2. All sampling and testing results specified in this Section.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Materials for concrete sidewalks and pads shall be constructed in accordance with the below-listed sections of the State DOT and City and County, DPW Standard Specifications.

Base Course	Section 304
Portland Cement	Section 601
Reinforcing Steel	Section 602

B. Unless specified otherwise, concrete sidewalks shall be colored with dark grey additive. Contractor shall provide a color sample to the Engineer for approval.

PART 3 – EXECUTION

3.1 INSTALLATION

A. The Contractor shall stake out area of new sidewalks and pads using wooden stakes on which final finish elevations, base course and subgrade elevations are clearly marked. All such stakes and elevations shall be approved by the Engineer before any work is done.

B. The Contractor shall construct a sample section for approval by the Engineer prior to commencing with the slab/sidewalk work. The sample section may be part of the permanent work; however, if the sample is rejected, the Contractor shall remove the section at no additional cost to the State. The sample section will be considered incidental and will not be paid separately.

C. Apply weed killer on prepared subgrade prior to pouring concrete. The Contractor shall notify Engineer 24 hours prior to application of weed killer.

D. Concrete Sidewalk and Pads: Installation shall be in accordance with the applicable sections noted hereinbefore and as shown on the drawings.

E. Any existing concrete sidewalks and/or pavement that have been damaged by construction activities shall be repaired to the original condition and to the satisfaction of the Engineer.

3.2 SAMPLING AND TESTING

A. Sampling – ASTM C172. Collect samples of fresh concrete to perform tests specified. ASTM C31 for making test specimens.

B. Slump Tests – ASTM C143. 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 (4) test cylinders for each set of tests in accordance with ASTM C31. Test one cylinder at seven (7) days, two (2) cylinders at 28 days, and hold one (1) 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. 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 (3)

ASTM C42 core samples and test. If the average strength of the 28-day test cylinders is less than f'c minus 300 psi, and two or more cylinders are less than f'c minus 300 psi, take six (6) 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 test results submitted to the Engineer for approval. All cost of sampling and testing shall be borne by the Contractor

E. No concrete shall be placed in the absence of the Engineer or his representative who shall be given two (2)-day advance notice of starting time of concrete pour.

3.3 FINAL INSPECTION

At the time of final inspection of the work performed under the Contract, the work covered by this section shall be complete in every respect and operating as designed. All surplus materials of every character, resulting from the work of this section, shall have been removed. Any defects discovered in the work, subsequent to this inspection, shall be corrected prior to final acceptance.

3.4 MEASUREMENT AND PAYMENT

Concrete sidewalks and pads, including labor, materials, and all other incidentals shall be paid for as specified in the Proposal Schedule.

- END OF SECTION -

SECTION 04220

CONCRETE MASONRY UNIT

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS: This section covers the requirements for furnishing and installing concrete masonry units; for furnishing, hauling, mixing, placing and curing concrete; and the furnishing and placing of all reinforcing required as shown on the Plans or directed by the Engineer.

1.2 SUBMITTALS

A. Certificates: A signed certification that the masonry units comply with ASTM C90 and the curing requirements specified herein shall be submitted by the masonry manufacturer to the Engineer upon request.

B. Reinforcing Steel: Detail bending and placement of masonry reinforcing bars. Comply with ACI SP-66

1.3 STORAGE AND HANDLING

A. MASONRY UNITS: Shall be carefully stacked prior to use and shall be protected from physical damage. All units shall be handled with reasonable care to prevent marring or damaging of faces, edges, corners of units. In no case shall dumping of units from hand trucks or wheelbarrows be permitted. Where used in exposed wall construction, any unit with exposed face or faces having chips, cracks, or other imperfections more than 1-inch in dimension shall be rejected.

B. MORTAR AND GROUT MATERIALS: Portland cement, masonry cement, lime and admixtures shall be stored in such a manner as to prevent deterioration or contamination with foreign matter. Cement which has become caked, partially set or otherwise deteriorated, or any material which becomes damaged or contaminated, shall be rejected.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Hollow concrete masonry units shall be load-bearing units and shall conform to the requirements of ASTM C90, "Hollow Load-Bearing Concrete Masonry Units," Grade N-11. Units shall be 8" nominal height, length and thickness as indicated on the Plans. Units for jamb, corner, sill, lintel and other special shapes shall be provided as required. All units shall be sound, free of cracks, straight and true. They shall be either

steam cured or cured under atmospheric conditions for a minimum of 30 days. Color shall be standard with manufacturer.

B. PORTLAND CEMENT: Shall conform to ASTM C150, Type I/II or Type II, low alkali

C. HYDRATED LIME: Shall conform to ASTM C207, Type S.

D. MORTAR AGGREGATE: Shall conform to ASTM C144.

E. GROUT AGGREGATE: Shall conform to ASTM C404, with grading in accordance with ASTM D448, No. 10.

F. Water used in mixing mortar or grout shall be potable.

G. Admixture, if used, shall conform to ASTM C494 and shall be mixed in proper amount in accordance with directions of manufacturer.

H. Horizontal reinforcement shall be trussed or ladder design with #9 gauge, deformed side rods and welded #12 gauge or larger cross rods, ("Dur-O-Wal", "Wal-Lok", "Blok-Mesh", or approved equal), or as otherwise indicated on the Plans.

I. Vertical reinforcement shall be as specified in Section 03210.

J. Premixed Mortar shall be ASTM C270 Type S. Acceptable products are: Supermortar" by Cyprus Hawaiian Cement Corp., "Kaiser Mortar" by Kaiser Cement & Gypsum Corp., or approved equal.

PART 3 – EXECUTION

3.1 PLACING REINFORCEMENT

A. Reinforcement shall be free from scale, loose flaky rust or other coatings that will destroy bond. It shall be straight except for bends around corners or where bends or hooks are detailed. Size and spacing shall be as indicated on the Plans.

B. Vertical reinforcement, where positioned by dimension on a drawing section, shall be accurately placed and tied at top and bottom and at intervals not to exceed 192 diameters of the reinforcement (8' for #4 bars; 10' for #5 bars). Dowels and splices shall be lapped as indicated but not less than 40 diameters or 24" whichever is longer. At corners and ends of walls, including those abutting concrete, one #5 bar shall be installed in the end cell and that cell shall be filled with grout. Bars adjacent to corners and ends of walls shall extend the full height of walls.

C. At intersections, corners and splices, horizontal reinforcing shall be placed, bent and lapped. Ends laps shall be at least 40 diameters.

3.2 MORTAR AND GROUT MIX

A. The proportioning of materials for mortar and grout shall be by volume and done in such manner that the specified proportions can be controlled and accurately maintained. Fine aggregate shall be measured in a damp loose condition. Mixing shall be by a mechanical batch mixer for at least 3 minutes for mortar and 5 minutes for grout. Hand mixing shall be permitted only for small batches of 3 cubic feet or less.

B. Mortar shall be freshly prepared and uniformly mixed in one of the following proportions:

1. 1 part Portland cement
   1/4 part hydrated lime
   2-1/4 to 3 parts sand or aggregate

2. 1 part masonry cement
   1 part Portland cement
   4-1/2 to 6 parts sand or aggregate

3. 1 part masonry cement
   2-1/2 parts sand or aggregate

Admixture may be added in accordance with manufacturer's specifications. Sufficient water shall be used to provide a workable consistency. Mortar shall be used and placed in final position within 2-1/2 hours after mixing.

C. Grout shall be freshly prepared and uniformly mixed in the following proportion:

1 part Portland cement
2 parts sand and 2 part gravel OR
1-1/4 parts to 3 parts aggregate

Not more than 1/10 part lime to 1 part Portland cement may be added. Sufficient water shall be used to produce a consistency just fluid enough for pouring without segregation. Grout shall be used and placed in final position within 90 minutes after mixing, but shall in no case be used after initial set has occurred. In any event, the grout shall attain not less than 2,000 psi 28-day compressive strength.

3.3 LAYING

A. General: All masonry units shall be handled so that edges and faces will not be chipped, spalled, or cracked. All beds on which masonry is to be laid shall be cleaned. All work shall be built plumb, level, and true, within the tolerances specified below, and shall be laid up with whole units except at closures. Masonry units in walls shall be laid so that one face of the wall is a true flat plane. Unless otherwise indicated on

the Plans, this shall be on the inside face. All cutting and fitting as may be required for and necessary to accommodate other trades shall be done neatly using a power driven carborundum saw. It shall be the responsibility of the Contractor to control any dust pollution caused by the cutting operations. All drilling and cutting of small holes shall be neatly done. Bolts, anchors, ties, conduits, and similar items for the installation of work under other Sections of these specifications shall, as far as practicable, be placed as the work progresses.

B. Tolerances: Shall be as follows:

1. PLUMB: Maximum allowed variation from plumb shall be as follows:

Use	Tolerance
Partitions, columns, end walls, and baffle walls	1/4" in 5’ 3/8” in 10’ 1/2" in 20’ 3/4" in 40’

Note: “Plumb tolerances” shall apply to open ends as well as to faces of walls.

2. LEVEL: Maximum allowed variations from level shall be 3/8" in 20'.

3. TOOLS: The following tools and methods shall be the minimum or acceptable type:

a. Plumb and level shall be determined by level and/or pull string method.

b. Leveling for runs shall be minimum 4' length, though a shorter level may be used for cross-leveling of units.

C. Masonry units shall not be wet before being used, and wet units shall be dried to a moisture content less than 30% by weight before being laid. Where no bond pattern is shown, the wall shall be laid up in straight uniform course with regular running bond.

D. Masonry units in first course shall be laid with shell mortar beds not exceeding 3/4" in thickness. Webs adjoining cells containing reinforcement shall also be bedded in mortar to prevent escape of grout. Vertical head joints shall be buttered well for a thickness equal to the face shell of the block and these joints shall be shoved tightly so that the mortar bonds well to both blocks. Joints shall be solidly filled from the face of the block to the depth of the face shell.

E. If it is necessary to move a block so as to open a joint, the block shall be removed from the wall, cleaned and set in fresh mortar.

F. Mortar joints shall be straight, clean and in thickness of 3/8". All exposed horizontal

and vertical joints shall be tooled with a 1/2" to 5/8" round bar at least 14" long to produce a dense, slightly concave surface well bonded to the block at the edges. Tooling shall compact the mortar, pressing the excess mortar out of the joint rather than gouging it out. Use a 3/8" diameter half-round molding to simulate a concave horizontal joint between a concrete bond beam and the hollow tile wall below. Where walls are to receive plaster or where unexposed such as below finish grade (and where special glazed finish in indicated) the joints shall be struck flush.

G. All hollow masonry units shall be built to preserve the unobstructed vertical continuity of the cells to be filled. Walls and cross webs forming such cells to be filled shall be full-bounded in mortar to prevent leakage of grout.

H. All cells containing reinforcement shall be filled solidly with grout in lifts not exceeding 8' unless otherwise shown on the Plans. Other cells, where indicated to be solid for anchors or such items, shall also be filled. When grouting is stopped for one hour or longer, horizontal construction joints shall be formed by stopping the pour of grout 1-1/2" below the top of the uppermost unit.

I. Care shall be taken to prevent mortar splotches. All forms shall be made tight and concrete or grout spilled on the wall shall be washed off immediately before it can set up. Walls shall be protected against stains and excess mortar shall be wiped off the surface as the work progresses. After the wall is constructed it shall not be saturated with water for curing, cleaning, etc.

3.4 CLEANING

At the completion of the work, all holes defective mortar joints in exposed masonry shall be pointed and where necessary defective joints shall be cut out and repointed. All exposed masonry shall be thoroughly cleaned of mortar drippings, sand and splotches during the course of the work. No smoothing of a wall surface which produces a "bright spot" when painted will be accepted. All adjoining work subject to damage shall be carefully protected. Upon completion of work, all surplus, waste materials, rubbish and debris shall be removed from premises, leaving same in clean and satisfactory condition.

3.5 MEASUREMENT AND PAYMENT

Concrete masonry units shall not be paid for directly, but shall be considered incidental and included in the respective bid items in the Proposal Schedule.

- END OF SECTION -

SECTION 05500

MISCELLANEOUS METAL FABRICATIONS

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

A. This section covers the requirements for furnishing and installing miscellaneous metal fabrications. All miscellaneous metal fabrications shall be type 316/316L stainless steel unless otherwise specified.

B. Miscellaneous metal fabrications shall confirm to HDOT-HWY Standard Specifications 501 (Steel Structures), 602 (Reinforcing Steel), and 713 (Structural Steel and Related Materials). If there are conflicts between the aforementioned standards and this Section, the most stringent requirement shall apply.

1.2 QUALITY ASSURANCE

A. The use of salvaged, reprocessed or scrap metals will not be permitted.

B. Welding work shall conform to American Welding Society (AWS) B 3.0 for welding processes and welding operations.

C. Comply with codes, specifications and standards, referred to in this specification, except where provisions in this specification or drawings exceed such requirements.

1.3 SUBMITTALS

A. PROCEDURES: Section 01300.

B. SUBMITTAL ITEMS:

1. Shop drawings for each fabricated items showing fabrication, assembly and erection details, sizes of members, fastening, supports, anchors, clearances, and necessary connections to work of other trades.

2. Welding procedures and welder certificates and qualifications for the work being performed.

1.4 PRODUCT HANDLING

A. Transport and store material with adequate and appropriate protection against heat and damage as per manufacturer recommendations. Store items in an enclosed area free from contact with soil and weather.

B. Remove and replace damaged items with new items.

PART 2 – PRODUCTS

2.1 MATERIALS

A. All miscellaneous metal fabrications shall be type 316/316L stainless steel unless otherwise specified. Materials for miscellaneous metal fabrications are specified in Table A.

Table A – Materials for Miscellaneous Metal Fabrications

Material	Specification
Stainless Steel	
Sheets and plates	ASTM A240, Type 316 or 316L
Shapes, bars, and similar items	ASTM A276, Type 316 or 316L
Bolts	ASTM F593 Group 2 Type 316 SS CW
Nuts	ASTM F594 Group 2 Type 316 SS CW

2.2 FABRICATION

A. GENERAL

1. Shop and field welding shall conform to the requirements of the American Institute of Steel Construction (AISC) Manual of Steel Construction, the Aluminum Association Design Manual, and applicable AWS procedures and specifications as required by the material being welded.

2. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt, tight, flush, and hairline. Remove all burrs and weld splatter. Ease exposed edges to small uniform radius.

3. Holes shall be punched 1/16 inch larger than the nominal size of the bolts, unless otherwise specified. Whenever needed because of the thickness of the metal, holes shall be subpunched and reamed; or, shall be drilled.

4. Fabrication including cutting, drilling, punching, threading and tapping required for miscellaneous metal or adjacent work shall be performed prior to hot-dip galvanizing.

B. MISCELLANEOUS STEEL METALWORK: Miscellaneous steel metalwork including embedded and non-embedded steel metalwork, hangers and inserts shall be as specified on the drawings and shall be stainless steel unless otherwise noted.

2.3 FABRICATION FINISHES

A. SHOP PAINTING:

1. Prepare surface by cleaning and then blasting surfaces.

2. Steel to be embedded in concrete shall be free of dirt and grease. Do not paint bearing surfaces, including contact surfaces within slip critical joints, but coat with rust preventative product in accordance with manufacturer recommendations. On surfaces concealed in the finished construction or not accessible for finish painting, apply an additional prime coat.

B. Stainless steel shall be cleaned, descaled, and passivated after fabrication in accordance with ASTM A380. Passivation shall be done to remove iron compounds from the surface of the stainless steel.

PART 3 - EXECUTION

3.1 EXAMINATION AND PREPARATION

A. Verify measurements at the site and include field dimensions in shop drawings.

B. Verify that field conditions are acceptable and are ready to receive work. Should any condition be found unsuitable, no work shall be done until unsuitable conditions have been corrected and are acceptable to Contractor. Proceeding with work will imply acceptance of the conditions by Contractor.

C. Make provisions for erection loads with temporary bracing. Keep work in alignment.

D. Supply items required to be cast into concrete or embedded in masonry with setting templates.

3.2 INSTALLATION OF METAL FABRICATIONS

A. Install items plumb, level and square, accurately fitted, and free from distortion or defects. Install rigid, substantial and neat in appearance.

B. Allow for erection loads and provide temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

C. Protect encased or embedded dissimilar metals (both metals must be encased or embedded) from galvanic corrosion by means of pressure tapes, coatings or isolators.

D. Place metalwork to be embedded in concrete accurately and hold in correct position

while the concrete is placed or, if indicated, form recesses or blockouts in the concrete. Thoroughly clean the surfaces of metalwork in contact with or embedded in concrete. If accepted, recesses may be neatly cored in the concrete after it has attained its design strength and the metalwork grouted in place.

E. Seat angles, supports and guides: Set seat angles for grating and supports for floor and shower plumbing access plates so that they maintain the grating and plates flush with the floor or wall.

3.3 FIELD REPAIR OF COATINGS

A. PAINTED: After installation, clean and touch up damaged areas with the same materials used for the shop coat in accordance with manufacturer recommendations.

3.4 STAINLESS STEEL

A. During handling and installation, take necessary precautions to prevent carbon impregnation of stainless steel members.

B. After installation, visually inspect stainless steel surfaces for evidence of iron rust, oil, paint and other forms of contamination.

C. Remove contamination in accordance with requirements of ASTM A380.

D. Brushes used to remove foreign substances shall utilize only stainless steel or nonmetallic bristles.

3.5 FASTENER SCHEDULE

A. Provide fasteners as follows:

Service Use and Location	Product
1. Connections for Steel Fabrications and Wood Components	
Exterior and interior wet and dry areas	Stainless steel (type 316/316L) bolted connections
2. All Others	
Exterior and interior wet and dry areas	Stainless steel (type 316/316L) fasteners

B. FASTENER COATINGS: Stainless steel nuts shall be provided with Tripac 2000 Blue coating, or approved equal.

3.5 MEASUREMENT AND PAYMENT

A. Metal fabrications shall not be paid for directly, but shall be considered incidental and included in the respective line items in the Proposal Schedule.

- END OF SECTION -

SECTION 06100

ROUGH CARPENTRY

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

This section covers the requirements for furnishing and installing rough carpentry.

1.2 SUBMITTALS

A. PROCEDURES: Section 01300.

B. SUBMITTAL ITEMS:

1. Certificates of Grade: Attesting that products meet the grade requirements specified in lieu of grade markings where appearance is important and grade marks will deface material.

1.3 DELIVERY AND STORAGE

A. Deliver materials to the site in an undamaged condition. Carefully store materials off the ground to provide proper ventilation, drainage, and protection against dampness. Remove defective and damaged materials and provide new materials.

1.4 GRADING AND MARKING

A. Mark each piece of framing and board lumber or each bundle of small pieces of lumber with the grade mark of a recognized association or independent inspection agency. Such association or agency shall be certified by the Board of Review, American Lumber Standards Committee, to grade the species used. All Douglas fir, western hemlock, western red cedar, white fir and sitka spruce shall be graded and dressed in accordance with the latest applicable West Coast Lumber Inspection Bureau or Western Wood Products Association "Standard Grading Rules" and its revisions.

1.5 SIZES AND SURFACING

A. PS 20 for dressed sizes of yard and structural lumber. Lumber shall be surfaced four sides. Size references, unless otherwise specified, are nominal sizes, and actual sizes shall be within manufacturing tolerances allowed by the standard under which the product was produced.

1.6 MOISTURE CONTENT

A. Air-dry or kiln-dry lumber. Kiln-dry treated lumber after treatment. Maximum moisture content of wood products shall be as follows at the time of delivery to the job site:

1. Framing lumber and boards - 19 percent maximum

2. Timbers five inches and thicker - 25 percent maximum
3. Materials other than lumber - Moisture content shall be in accordance with standard under which the product was produced.

PART 2 – PRODUCTS

2.1 MATERIALS

A. LUMBER, NEW:

1. New lumber shall conform to the following grades:

a. Concealed lumber shall be "construction" grade, S4S.

b. Exposed lumber shall be "select structural" grade, S4S.

2. Unless specified otherwise, all lumber shall be treated with termite preservative treatment in accordance with Section 06310.

B. PLYWOOD:

1. Roof Sheathing: Shall be CDX 1/2" thick exterior grade, Douglas Fir, conforming to American Plywood Association Specifications.

C. NAILS, SCREWS, BOLTS, AND ROUGH HARDWARE:

1. Commercial standard of sizes indicated or required. For finish work, brass screws (chrome plated, nickel plated or plain brass as required). Otherwise, nails, screws and bolts shall be hot-dip galvanized. Exposed fasteners to be 316 SS.

2. Light gauge metal pre-fabricated joist and beam hangers, angle clips, etc., shall be as manufactured by "Silver," "Simpson," "Teco," or equal. All hangers shall be hot-dipped galvanized after fabrication.

D. DAMP-PROOFING: Apply a continuous strip of 40-pound asphalt saturated felt under wood members bearing on concrete or masonry and 15 pounds in other non-bearing concrete areas.

E. METAL FRAMING ANCHORS: Construct anchors to the configuration shown using hot dip zinc-coated steel conforming to ASTM A 525, coating designation G90. Steel shall be not lighter than 18 gauge. Special nails supplied by the manufacturer shall be used for all nailing.

PART 3 – EXECUTION

3.1 WORKMANSHIP

A. All work shall be done by experienced and skilled workers that are familiar with the type of work required to the best practices of this trade.

3.2 INSTALLATION

A. Fit framing lumber and other rough carpentry, set accurately to the required lines and levels, and secure in place in a rigid manner. Do not splice framing members between bearing points. Spiking and nailing not indicated or specified otherwise shall be in accordance with the Nailing Schedule contained in UBC; perform bolting in an approved manner. Spikes, nails, and bolts shall be drawn up tight.

B. Wherever it is necessary to end cut or penetrate into (such as by drilling or notching) treated wood on the job, all such cuts and penetrations shall be treated in accordance with AWPA Standard M4-84 using two heavy brush coats of a treating solution as specified therein or of the same solution used in the initial treatment of the wood.

C. Holes for bolts generally are to be for "drive" fit.

D. Screws driven with a hammer or overly tightened so as to lose tension shall be removed and replaced with next larger size and/or longer.

E. All finish work shall be free from hammer marks, undesirable scratches and/or dents and crushed edges.

F. A continuous strip of 40 lbs. asphalt felt shall be installed under wood members bearing on concrete or masonry, and in other non-bearing contact areas use 15 lbs. asphalt felt.

G. Opening Frames: Wood frames for doors, etc., shall be constructed as per drawings. Head shall be dadoed and housed into jamb with waterproof glue and nailed together securely. Wipe off all excess glue. Frames shall be set plumb and true, solidly blocked and rigidly secured to structural backing at not more than 18" o.c. Coordinate with other trade for anchoring.

H. For Interior and Exterior Running Trims, Including Door Stops: Use long lengths of finish lumber, keeping splice to minimum. All trims shall be installed straight and level and with mitered splices nailed together. Splices will not be permitted in vertical trims.

I. Finish Hardware, shall be carefully fitted and installed in accordance with the manufacturer's directions and shall be adjusted for perfect working order to the satisfaction of the Engineer with further adjustment if necessary within one (1) year after acceptance of the project.

3.3 CLEAN-UP AND PROTECTION

A. Protect all installed finish work, millwork, etc., from being defaced or marred by workmen of other trades. Replace or repair any damaged work as instructed by the Engineer at no cost to the State.

B. At the completion of this work, remove from the premises all rubbish, debris, etc., accumulated during the progress of this work.

3.4 MEASUREMENT AND PAYMENT

A. Rough carpentry shall not be paid for directly, but shall be considered incidental and included in the bids for the respective items in the Proposal Schedule.

- END OF SECTION -

SECTION 06310

PRESERVATIVE TREATED LUMBER

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

This Section covers the requirements for furnishing and installing of preservative treatment.

1.2 SUBMITTALS

A. PROCEDURES: Section 01300.

B. SUBMITTAL ITEMS:

1. A Certificate of Treatment shall be issued to the Engineer showing compliance with these specifications, both as to kiln drying and type of treatment performed, including dip treatment.

2. A written statement that guarantees replacement of all treated wood which is attacked by subterranean termites during the first two (2) years or is attacked by dry rot during the first two (2) years after project acceptance.

PART 2 – PRODUCTS

2.1 GENERAL

A. All wood treated with oil-borne preservatives shall be kiln-dried before treatment to an average of 12% to 15% moisture content.

B. All wood shall be treated as below except all-heart redwood.

C. Lumber shall be milled to finish size and shape prior to treating, and it shall be treated before assembly. Plywood may be treated in regular panel sizes.

2.2 MATERIALS

A. Asbestos Prohibition: No asbestos containing materials shall be used under this section. The Contractor shall insure that all materials incorporated in the project are asbestos-free unless specifically approved in writing by the Engineer.

B. Water-Borne Preservatives shall be Woman, CCA, Osmose CCA or Chemonite ACZA in accordance with American Wood Preservers Association (AWPA) Standard P5.

C. Oil-Borne Preservatives shall be water repellant penta-chlorophenol (Penta) or tri-N-butyltin oxide (TBTO) in accordance with AWPA Standard P8, or chlorpyrifos and 3-iodo-2-propynyl butylcabamate (IPBC) manufactured to the manufacturer's quality control. The solvent used in formulating the preservative solution shall meet the requirements of AWPA hydrocarbon solvent Type C, Standard P9, Paragraph 3.1.

PART 3 – EXECUTION

3.1 WOOD PRESERVATION WITH WATER-BORNE PRESERVATIVES

A. Unless specified otherwise, all lumber and plywood shall be treated by a pressure method with Wolman CCA, Osmose CCA or Chemonite ACZA in accordance with American Wood Preservers Bureau Standards AWPB Approved (Hawaii use only) and AWPB LP-2, respectively. All 1" and 2" lumber and all plywood shall be dried to a moisture content of 19% or less after treatment.

3.2 WOOD PRESERVATION BY PRESSURE TREATMENT WITH OIL-BORNE PRESERVATIVES

A. Exposed lumber 2" nominal thickness and over that will be unpainted or will receive a clear finish shall be unincised and pressure treated with either a 1.2% TBTO solution to a net retention of 0.06 pounds of TBTO per cubic foot of wood or a 0.5% chlorpyrifos/0.75% IPBC solution to a net retention of 500 ppm chlorpyrifos and 1000 ppm IPBC per cubic foot of wood.

3.3 WOOD PRESERVATION OF DIP TREATMENT

A. All finish lumber under 2" nominal thickness; finish plywood; and millwork items that will be exposed to view in the finished work shall be immersion treated for a minimum period of 15 minutes in any of the preservatives specified in accordance with the requirements of the National Wood, Window and Door Association (NWWDA) Industry Standard I.S. 4-81.

3.4 INSTALLATION

A. Wherever it is necessary to end cut or penetrate into (such as by drilling or notching) treated wood on the job, all such cuts and penetrations shall be treated in accordance with AWPA Standard M-4-84 using two heavy brush coats of treating solution as specified therein or of the same solution used in the initial treatment of the wood.

3.5 MEASUREMENT AND PAYMENT

A. Preservative treated lumber shall not be paid for directly, but shall be considered incidental and included in the bids for the respective items in the Proposal Schedule.

- END OF SECTION -

SECTION 06600

PLASTIC PICNIC TABLES

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

This section covers the requirements for furnishing and installing recycled plastic picnic tables. The type, size, and dimensions shall be as called for in these specifications and as shown on the plans.

1.2 SUBMITTALS

A. PROCEDURES: Section 01300.

B. SUBMITTAL ITEMS:

1. Shop drawings for fabricated recycled plastic table, showing assembly and erection details, size of members, fastening, supports, anchors, clearances, plastic welding at counter-sunk bolt holes, and any other necessary connections.

2. Manufacturer's product data.

3. Schedules and Samples of Material.

4. Material Guarantee.

1.3 QUALITY ASSURANCE

A. AMERICAN DISABILITY ACT REQUIREMENTS: The accessible picnic table shall comply with Sections 305 and 306 of the 2010 ADA Standards for Accessible Design.

PART 2 – PRODUCTS

2.1 MATERIALS

A. ASBESTOS PROHIBITION: No asbestos containing materials shall be used under this section. The Contractor shall ensure that materials incorporated in the project are asbestos-free.

B. RECYCLED PLASTIC LUMBER PRODUCTS:

1. Out of 100% recycled plastic; Specific Gravity 0.75-0.92; Density, lbs/CF 35-50; Non-splintering; Non–weathering; No water absorption; No mildew or rot; Unaffected by Chemicals; No Insect Attack; UV Deterioration 1% in five (5) years; Flammability, Self-extinguishing; Ignition temperature approximately

650 Degrees Fahrenheit; Compression Strength 3,500 PSI; Tensile Strength ASTM D790 150,000PSE; Expected Life 35-50 years; Color: Dark Green.

C. PLASTIC PICNIC TABLE:

1. All Boards, including table top boards, seat, table end brace support, table top brace, and seat brace, shall be of 100% recycled plastic as specified herein. Contractor shall submit color samples to the Engineer for approval.

2. Table and seat dimensions shall be as shown on the Drawings.

3. Table top and seat plastic boards shall be secured with two stainless steel lag bolts each end and counter-sunk. Plastic welding will fill counter-sunk holes as per manufacturer's specifications.

4. Table top brace and seat plastic brace shall be secured with two stainless steel lag bolts each end and counter-sunk. Plastic welding will fill counter-sunk holes as per manufacturer's specifications.

5. Table shall be anchored and secured as shown on the Drawings.

6. All boards, ends, edges, and corners shall be 1/2" rounded.

2.2 CANDIDATE MANUFACTURERS

A. Candidate manufacturers and models are listed below.

1. Belson Outdoors Recycled Plastic, Model P-28
2. R.J. Thomas Mfg Co, Inc.
3. Or Pre-Approved Equal

PART 3 – EXECUTION

3.1 WORKMANSHIP

Good workmanship and appearance shall be considered of the highest importance. All work shall be done by experienced and skilled workers with operation and installation in a neat and workmanlike manner and in accordance with recognized good practices and standards.

3.2 EXAMINATION

A. Verify that the field conditions are acceptable and are ready to receive work.

B. Final location of plastic tables shall be as shown on the Drawings.

3.3 INSTALLATION

A. Plastic tables to be set in concrete footing level with concrete pad/pavilion slab and/or leveled horizontally at condition without concrete base.

B. Accessibility Guidelines (ADA – Americans with Disabilities Act): Verify all dimensions including seat height, table top height, accessible wheelchair clearance and passage, clear floor and ground space side walk and/or ramp connection before installation of plastic table unit.

C. At the concrete pad, the footing at table end brace support legs shall be smooth and shall batch the slab floor line.

3.4 MEASUREMENT AND PAYMENT

A. Plastic picnic tables shall be paid for as specified in the Proposal Schedule.

- END OF SECTION -

SECTION 07411

PREFORMED METAL ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Provide all preformed field-assembled corrugated metal roofing, and other related work as indicated on the drawings and specified herein.

1.2 SUBMITTALS

A. Submit in accordance with Section 01300.

B. Product Data: Submit manufacturer's product specifications, standard details, certified product test results, installation instructions, and general recommendations, as applicable to materials and finishes for each component and for total panel assemblies.

C. Shop Drawings: Submit complete shop drawings with layout of panels, details of edge conditions, joints, panel profiles, supports, anchorages, trim, flashings, method of fastening, fasteners, underlayment, closures, and special details, and all other related information and detail for the completed installation. Distinguish between factory- and field- assembled work.

D. Performance Certification:

1. Roofing panel supplier shall submit certification that panels meet performance requirements in paragraph entitled "Performance Requirements" herein below. Provide design analysis and calculations to substantiate mechanical attachments to resist wind-uplift.

2. Manufacturer's Technical Representative shall submit certification that roofing panels have been installed according to the manufacturer's instructions and is free of defects in material and workmanship.

E. Samples: Submit sample panels 12 inches long by actual panel width, in the profile, style, and color indicated. Include clips, caps, fasteners, closures, and other exposed panel accessories.

F. Technical Representative Certification: Submit a signed certificate from the Manufacturer designating its Technical Representative for the project and attesting that this person is both qualified and authorized to act on its behalf of this position in respect to the Complete Roofing System.

G. Warranty Certification: Submit a signed certificate from the Manufacturer or its Technical Representative stating that the plans and specifications for the project have been reviewed and fully comply with the Manufacturer's design standards and meet the requirements for warranty of the Complete Roofing System for the specified

period.

H. Warranty: Submit written warranty as specified in paragraph entitled “WARRANTY” hereinbelow.

1.3 WARRANTY

A. Furnish written two (2) year warranty from the project acceptance date, jointly signed by Roofing Contractor, Flashing and Sheet Metal Contractor, and General Contractor which shall provide for repairs or replacement of roofing and flashing where leaking occurs due to faulty materials and workmanship at no extra cost to the State.

B. Provide manufacturer’s warranty for coating system under Hawaiian weather conditions, provide following as a guide for expected warranty:

1. The roofing panels and matching flashings with a factory applied Fluoropolymer (Kynar 500) paint finish are free from material defects and shall be warranted for twenty (20) years against peeling, chipping, cracking or color change in excess of 5 NBS units during the term of this warranty. The manufacturer/supplier shall replace or repair as necessary any panels whose factory color finish fails under normal wind and weathering conditions. This paint finish warranty commences upon project acceptance date.

2. Additionally, the metal roofing system components for the project as identified by the Contract Drawings for this project, shall be warranted for a period of fifteen (15) years from the project acceptance date. Manufacturer/supplier shall replace or repair as necessary any component of the roof system supplied by them, when installed and maintained according to Manufacturer’s instructions, which fail to provide a watertight and weatherproof system due to defective materials. All labor, materials, general condition, and equipment required to perform any repair work shall be provided by the manufacturer/supplier. Repair work shall be done in a manner that will not disrupt State access to the building.

3. The Surety shall not be held liable beyond two (2) years from the Project Acceptance Date.

1.4 QUALITY ASSURANCE

A. Performance Requirements:

1. Wind-Uplift Resistance: Comply with UL 580 for wind-uplift resistance class indicated.

2. Structural Performance: Capable of withstanding the effects of gravity loads and the following loads and stresses, based on testing according to ASTM E 1592.

a. Wind Loads: Meets requirements of 120 mph, Exposure C windloads, in accordance with current building codes and County of Hawaii Amendments.

b. Deflection Limits: Vertical deflections no greater than 1/240 of the span.

3. Seismic Performance: Provide metal roof panel assemblies capable of withstanding the effects of earthquake motions determined according to ASCE 7, “Minimum Design Loads for Buildings and Other Structures”: Section 9, “Earthquake Loads”.

B. Sealants: Provide sealants under in accordance with the roofing manufacturer’s recommendations.

C. Should the manufacturer’s warranty requirements necessitate different drawings and details exceeding the requirements of those indicated or specified, provide shop drawings and field adjustments for approval and at no cost to the State.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver panels and other components so they will not be damaged or deformed. Package panels for protection against damage during transportation or handling.

B. Exercise care in unloading, storing, and erecting panels to prevent bending, warping, twisting, and surface damage.

C. Stack materials on platforms or pallets, covered with tarpaulins or other suitable weathertight and ventilated covering. Store panels to ensure dryness. Do not store panels in contact with other materials that might cause staining, denting, or other surface damage.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Asbestos Prohibition: No asbestos containing materials or equipment shall be used under this section. The Contractor shall insure that all materials and equipment incorporated in the project are asbestos-free.

2.2 METALS AND FINISHES

A. Roof Panels:

1. Aluminum Sheet – Formed from 0.032-inch minimum thickness aluminum sheet, Alloy 3004 Alcald conforming to ASTM B 209. Panel configuration shall be as specified. Thicker gauge where required to meet performance requirements.

2. Aluminum/Zinc-Coated Steel Sheet – ASTM A 792/A 792M, AZ 55, 22-gauge minimum thickness.

B. Finish: Apply the following organic coating in thickness indicated. Furnish appropriate

air-drying spray finish in matching color for touchup. Fluoropolymer 2-coat (Kynar 500). Coating System: Manufacturer's standard 2-coat, thermocured system composed of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight with a total minimum dry film thickness on the exposed top of 1.0 mil and 30 percent reflective gloss when tested according to ASTM D 523, complying with AAMA 2605. Interior/underside finish shall be 1.0 mil and shall match the exterior coating and color paint finish.

1. Durability: Provide coating field tested under normal range of weather conditions for a minimum of twenty (20) years without significant peel, blister, flake, chip, crack, or check in finish; without chalking in excess of a chalk rating of 8 according to ASTM D 4214; and without fading in excess of 5 Hunter units.

2. Color: Color shall be as indicated or selected and as approved as per item entitled "SUBMITTALS" hereinabove prior to fabrication.

2.3 ROOF PANEL ASSEMBLIES

A. Corrugated Metal Roof Panels: Manufacturer's standard factory-formed, metal roof panel assembly with 7/8-inch high x 2-2/3-inch wide crown spacing corrugated shape. Panels furnished shall be one continuous single panel over the entire roof span; no lapping condition shall be permitted in this project.

2.4 FLASHING AND CLOSURES

A. Provide flashings, including, but not limited to, ridges, hips, valleys, closures, etc. Formed of prefinished material to match panels of manufacturer's standard and custom fabricated flashings for the panels specified. Configuration of flashings shown on the drawings are intended to indicate basic intent. Other flashings which accomplish the basic intent and is standard with the panel manufacturer may only be acceptable with the approval as per item entitled "SUBMITTALS" hereinabove. Provide metal flashings for locations indicated. Furnish sheet metal flashing items in 8- to 10-foot lengths. Single pieces less than 8-feet long may be used at corners, and at ends of runs. Provide accessories and other items essential to complete the sheet metal installation of the same materials as the items to which they are applied. Connect all pieces of linear flashing by a slip joint to permit thermal movement.

2.5 UNDERLAYMENT MATERIALS

A. Building Paper: Asphalt-saturated felt conforming to ASTM D 226, Type II, No. 30. Provide under metal roofing where indicated on the drawings.

2.6 MISCELLANEOUS MATERIALS

A. General: Provide materials and accessories required for a complete panel assembly and as recommended by panel manufacturer, unless otherwise indicated.

B. Fasteners: Stainless steel ASTM Type 316 self-drilling screw type fasteners and other suitable fasteners designed to withstand design loads. Use stainless-steel fasteners

for all applications. Use exposed fasteners with prefinished coated head to match panel color and with composite metal and neoprene washer.

C. Accessories: Unless otherwise specified, provide components required for a complete panel assembly, including trim, copings, ridge closures, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match materials and finishes of panels.

1. Closure Strips: Closed-cell, self-extinguishing, expanded, cellular, rubber or cross-linked, polyolefin-foam flexible closure strips. Cut or pre-mold to match configuration of panels. Provide closure strips where indicated or necessary to ensure weathertight construction.

2. Sealing Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealing tape with release paper backing. Provide permanently elastic, non-sag, nontoxic, non-staining tape.

3. Elastomeric Joint Sealant: ASTM C 920, of base polymer, type, grade, class, and use classifications required to seal joints in panel and remain weathertight. Provide sealant recommended by panel manufacturer.

4. Sealants and Gaskets: Manufacturer's standard type suitable for use in conjunction with installation of roofing panel; non-staining; non-corrosive; non-shrinking and non-sagging; ultra-violet and ozone resistant for exterior applications.

D. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil dry film thickness per coat, unless otherwise indicated. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements indicated for conditions affecting performance of metal panel.

B. Do not proceed with panel installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Coordinate panel system with rain drainage work; flashing; trim; and construction of substrates, vents, and other adjoining work to provide a leak-proof, secure, and non-corrosive installation.

B. Promptly remove protective film, if any, from exposed surfaces of metal panels. Strip with care to avoid damage to finish.

3.3 PANEL INSTALLATION

A. General: Comply with panel manufacturer's written instructions and recommendations for installation, as applicable to project conditions and supporting substrates. Anchor panels and other components of the work securely in place, with provisions for thermal and structural movement.

1. Field cutting exterior panels by torch is not permitted.

2. Install panels with self-drilling stainless steel fasteners, recommended by manufacturer.

3. Install panels over solid substrate or structure unless otherwise indicated.

4. Install underlayment under panels as per manufacturer's recommendations where indicated on the drawings.

5. Install preformed metal roofing over surfaces which are dry, sound and ready to receive installation of work of this section.

6. Coordinate installation of roofing with installation of roof mounted components, or items projecting through. Ensure roof openings are properly sized and located prior to roofing installation.

7. Complete roof installation to provide weathertight service.

B. Install in accordance with the approved erection instructions and shop drawings. Panels shall be in full and firm contact with supports and with each other at side and end laps. Correct defects or errors in the material in a manufacturer's approved manner. Replace materials which cannot be corrected in an approved manner with non-defective material.

C. Roofing units shall be applied parallel to the roof slope. Provide panel sheets in full lengths from ridge to eave, with no transverse joints except at the junction of ventilators, curbs, and similar openings or as indicated on drawings.

D. Install components required for a complete panel assembly, including trim, copings, ridge closures, clips, flashings, sealants, fillers, closure strips, and similar items.

E. Separate dissimilar metals by painting each metal surface in area of contact with a bituminous coating, by applying rubberized-asphalt underlayment to each metal surface, or by other permanent separation as recommended by manufacturers of dissimilar metals.

F. Arrange side laps to leeward of prevailing wind direction. End laps shall be not less than 6 inches and side laps shall be a minimum of two corrugation which indicates a lap of at least two full crown and one valley corrugation lap.

G. Install underlayment where specified and where indicated perpendicular to roof slope. Apply in shingle fashion and lap joints a minimum of 4-inches and 6-inches at end laps.

H. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of panel assemblies. Provide types of gaskets, fillers, and sealants indicated or, if not otherwise indicated, types recommended by panel manufacturer.

1. Install weather-seal under ridge cap. Flash and seal panels at eave and rake with rubber, neoprene, or other closures to exclude weather.

2. Seal panel end laps with double beads of tape or sealant, full width of panel. Seal side joints where recommended by panel manufacturer.

3. Prepare joints and apply sealants in accordance with manufacturer's recommendations.

I. Corrugated Roof Panel Assembly: Fasten panels to supports with fasteners according to panel manufacturer's written instructions.

1. Install fasteners at each support with self-drilling/self-tapping fasteners.

2. At end laps of panels, install tape calk between panels.

J. Installation Tolerances: Shim and align panel units within installed tolerance of 1/4-inch in 20-feet on slope and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

K. Erect and install in strict compliance with manufacturer's current published instructions and in accordance with approved shop drawings, specifications, and samples.

L. Fasten roofing in accordance with manufacturer's recommendations. Fasteners shall be located and spaced in strict compliance with roofing manufacturer's published instructions.

M. Install closures at hips, ridges, and eaves.

N. Flash and seal all items projecting through or mounted on roofing. Ensure a weathertight installation.

O. Inspection: Manufacturer's technical representative shall inspect panels during installation to ensure compliance with these specifications and conformance to manufacturer's installation instructions. Upon completion of the panel system, manufacturer's representative shall provide a written certification that panels have been installed in accordance with manufacturer's instructions and is free of defects in material and workmanship.

3.4 CLEANING AND PROTECTING

A. Damaged Units: Replace panels and other components of the work that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

B. Cleaning: Remove temporary protective coverings and strippable films, if any, as soon as each panel is installed. On completion of panel installation, clean finished surfaces as recommended by panel manufacturer and maintain in a clean condition during construction.

C. Sweep roofing sheets clean of metal filings at end of each day.

D. Remove all scrap, debris, and excess material at the end of each work day and upon completion of the work.

E. All exposed surfaces shall be free of dents, creases, waves, scratch marks, and handling marks upon completion of the work.

3.5 MEASUREMENT AND PAYMENT

A. Preformed metal roofing shall not be paid for directly, but shall be considered incidental and included in the respective line items in the Proposal Schedule.

- END OF SECTION -

SECTION 09310

CERAMIC TILE

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

A. This Section covers requirements for the furnishing and installation of ceramic tile.

1.2 SUBMITTALS

A. PROCEDURES: Section 01300.

B. SUBMITTAL ITEMS:

1. Samples of various ceramic tiles and marble thresholds shall be submitted to the Engineer for approval and for color and pattern selection. Samples shall be identified as to their grade and manufacturer.

2. Before installation of ceramic tile, the Standard Form of Master Grade Certificate signed by the Contractor and Manufacturer stating grade and kind of tile shall be submitted to the Engineer. All packages of tile shall be delivered to the job in sealed cartons bearing grade seals in conformance with U.S. Department of Commerce Simplified Practice Recommendation R61-61.

3. Warranty for a minimum of 2 years against defects resulting from the use of defective or inferior materials, equipment or workmanship.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Ceramic Wall and Floor Tiles: By domestic manufacturer, standard grade, complying with ANSI A137.1.

1. Ceramic wall tile and trims shall be dust-pressed, white non-vitreous body, 4-1/4" x 4-1/4" x 5/16" thick with a slightly beveled modified straight edge and bright glazed finish.

2. Unglazed ceramic floor tile shall be standard quality, dust-pressed, machine made porcelain body tile, minimum 2" x 2" square with a slightly beveled modified straight edge, from price range group 2. Moisture absorption of the tile shall be less than 0.5%. Medleys consisting of not more than 3 colors may be selected.

3. All trim shapes shall be provided as detailed and as required. External corners shall be rounded convex. Internal vertical corners shall be square.

Top of wainscot shall be rounded with full (4-1/4") bull nose cap. Base tile shall be 4-inch-high, sanitary coved base. Other shapes such as curbs, beads, shoes, round out corners and square in corners, etc., shall be provided to achieve a neat complete installation.

B. Pointing Grout for Ceramic Tile: Commercial Portland Cement Grout, water-resistant, non-shrinking, complying with ANSI 118.6 - Ceramic Tile Grouts. Color to be selected by the Engineer.

C. Cement: Portland Cement conforming to the requirements of ASTM C-150, Type I.

D. Waterproof Admixture: Approved integral waterproof admixture.

E. Sand: Conforming to ASTM C-144.

F. Hydrated Lime: Conforming to ASTM C-206, Type S or ASTM C-207, Type S.

G. Water: Potable.

H. Reinforcing Wire Mesh: 2 x 2 - 16/16 welded wire fabric, galvanized.

I. Marble Threshold: Domestic Group "A" as classified by Marble Institute of America. Finish sand-rubbed or honed; 4" wide; color to be selected by Engineer.

J. Tile: Color and pattern as specified on drawings.

PART 3 – EXECUTION

3.1 PREPARATION

A. Before any work is begun, the Contractor shall inspect the walls and floors on which tile work is to be applied. Such surface shall be sound, clean, free of oily film, and in proper condition. If a proper surface cannot be achieved, the Contractor shall notify the Engineer in writing and present recommendations for corrective measures. Proceeding with tile work will imply acceptance of the surface by the Contractor. Scratch coats or mortar setting beds shall not be applied until necessary grounds, hangers, anchors or other items to receive plumbing fixtures or other fittings of any kind which are to be secured against the tile surface have been installed properly. Coordinate work with other trades as necessary.

3.2 INSTALLATION

A. Ceramic Tile:

1. Installation shall be in accordance with ANSI A108.1 - Glazed Wall Tile, Ceramic Mosaic Tile, Quarry Tile and Paver Tile Installation with Portland Cement Mortar and the "Handbook for Ceramic Tile Installation" as published by the Tile Council of America.

2. Work shall be carefully laid out in an endeavor to center the tiles, to space

them evenly, and to avoid cutting them. If cutting is necessary, all cut ends shall be rubbed smooth and even. Lay out tile on floors and lengthwise on walls so that no tile less than 1/2 size occurs. For height stated in feet and inches, maintain full courses to produce nearest attainable heights without cutting tile. All cutting and drilling shall be done without marring the surfaces and shall be done neatly to fit closely around pipes, fixtures and fittings so that cover plates will overlap cuts.

3. Floor tile shall be laid in a straight joint pattern. Joints in wall tile shall be aligned vertically and horizontally. Staggering of joints through openings will not be permitted.

B. Cement Mortar:

1. Mortar shall be freshly prepared and uniformly mixed in a drum-type batch mixer for at least 3 minutes in the following proportion by volume. No retempering of mortar will be permitted. Mortar that has reached its initial set shall be discarded.

2. For mortar setting bed on floors:

1 part	portland cement
6 parts	damp sand

Waterproof admixture in accordance with manufacturer's specifications.

3. For mortar setting bed on walls:

1 part	portland cement
5 parts	damp sand
1/2 part	hydrated lime

up to

1 part	portland cement
7 parts	damp sand
1 part	hydrated lime

(At showers, omit hydrated lime and add waterproof admixture in accordance with manufacturer's specifications.)

C. SETTING PROCEDURES:

1. FLOORS:

a. On floors, apply mortar setting bed not less than 3/4" thick, over an area no greater than can be covered with tile before the initial set. If mortar setting bed is to be applied directly on concrete surface, first saturate the surface with water but do not allow free water to appear on the surface. Embed reinforcing wire mesh in the middle of the setting bed. Screed, tamp and slope the mortar setting bed toward

the floor drains at a maximum slope of 1:50 (and/or slope as shown) and shall meet ADAAG cross slope requirements.

b. Use a 3/32" to 1/16" thick skim coat of neat portland cement mixed to the consistency of a pasty thick cream to bond tile to the mortar setting bed. Press and beat the tiles into the plastic mortar setting bed until exactly to the required slope or level as fixed by straight edges accurately placed at regular intervals. Joints shall be of uniform width of 1/16" or as determined by the spacers on the tiles.

2. WALLS:

a. On walls, apply scratch coat mixed in the following proportions by volume:

1 part	portland cement
4 parts	dry sand
Or	
5 parts	damp sand
1/2 part	hydrated lime

Or

1 part	portland cement
3 parts	dry sand
Or	
4 parts	damp sand

b. Dampen hollow concrete block surfaces just before applying the scratch coat. Apply scratch coat plumb and true to a thickness not less than 1/4". Use sufficient pressure to key the coat properly and cross scratch the surface before initial set has taken place. Allow to dry a minimum of 24 hours.

c. Apply mortar setting bed not more than 3/4" thick on walls after first wetting the surface of the scratch coat evenly but not to the point of saturation. Attach temporary screeds with blobs of mortar to provide a plumb and true surface the proper distance back from the finish wall line. Apply, rod, and float the mortar setting bed over areas no greater than will be covered with tile while the setting bed remains plastic.

d. Use a 1/32" to 1/16" thick skim coat of neat portland cement mixed to the consistency of a pasty thick cream, to bond tile to the mortar setting bed. Soak tile in water for at least 1/2 hour, press and beat soaked tile into the plastic mortar setting bed to a true plane with uniform joints of 1/16" width or as determined by the spacers on the tiles. Cut through the setting bed horizontally and vertically at every fourth course.

3. GENERAL

a. Allow tiles to set a minimum of 48 hours prior to grouting.

D. THRESHOLDS:

1. Marble threshold shall be installed similar to ceramic tile as described hereinbefore where shown on plans. Clean as recommended by the manufacturer.

2. Cement threshold shall be installed where shown on plans and shall be shaped and troweled smooth.

E. Install expansion and control joints as detailed on the contract drawings.

F. Grouting and Pointing of Joints: Installation shall be in accordance with ANSI A108.10 - Installation of Grout in Tilework. Joints shall be saturated with water and then grouted with a Commercial Portland Cement Grout mixed with an acrylic waterproofing admixture in accordance with the admixture manufacturer's specifications to a uniform creamy consistency. The grout shall be forced into the joints to the full depth. Use gray color for floors and white for walls. Take special care not to scratch glazed tile during this operation. Remove surplus grout before it has hardened and leave the face of the tile clean. Keep expansion and control joints free of grout.

G. Curing Floors: Apply reinforced kraft paper over floor as soon as pointing or grouting is completed. Lap the paper not less than 6 inches and leave in place for 3 full days.

H. Upon completion of tile work, remove all rubbish, unused material, etc. and give the finished surface a thorough cleaning. Do not use acid solution on glazed tile work. Do not permit traffic on tile floors for 24 hours after laying. Thereafter permit no traffic unless floors are covered with heavy paper. Leave finished tile work clean and free from cracked, chipped or broken tile. Protect tile work and threshold until acceptance of project.

3.03 MEAUSREMENT AND PAYMENT

A. Ceramic tile shall not be paid for directly, but shall be considered incidental and included in the respective bid items in the Proposal Schedule.

- END OF SECTION -

SECTION 09900

PAINTING

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

A. This section covers the requirements for furnishing and installing of paints.

1.2 SUBMITTALS

A. PROCEDURES: Section 01300.

B. SUBMITTAL ITEMS:

1. Four (4) sets of proposed painting finish schedules.

2. Three (3) sets of each color finish sample.

3. After the color finish sample has been approved, one set of color finish samples painted onto 8-1/2"x 11". The cardboard shall be divided into 4 horizontal strips and painted as follows:

a. Prime 3 strips starting from the bottom.
b. 1st coat bottom 2 strips.
c. 2nd coat bottom strip

4. Before work on the project is commenced, four (4) complete sets of a work schedule showing work sequence of operations and dates.

5. Written guarantee as specified in this Section.

1.2 ANALYZING AND TESTING

A. All paints shall be subject to laboratory tests whenever the Engineer deems necessary to determine conformation to the requirements of these specifications. Cost of testing will beborne by the State. All rejected materials shall be removed from the job site immediately. Surfaces painted with rejected material shall be redone at no additional cost to the State.

1.4 GUARANTEE

A. The Contractor shall guarantee that the work performed under this section conforms to the contract requirements and is free of any defect of material or workmanship

performed by the Contractor. Such guarantee shall continue for a period of 2 years from the date of project acceptance during which period the Contractor shall remedy at his own expense any such failure to conform or any such defect.

B. The State shall notify the Contractor in writing within a reasonable time after discovery of any failure or defect.

C. Should the Contractor fail to remedy any failure or defect described in Paragraph A above within 10 working days after receipt of notice thereof, the State shall have the right to repair or otherwise remedy such failure or damage at the Contractor's expense.

1.5 SPECIAL REQUIREMENTS

A. CODES:

1. The Contractor shall comply with the State OSHL (Occupational Safety and Health Law) and all pollution control regulations of the State Department of Health.

2. Any violations of the above regulations or codes shall be dealt with as mentioned in the Special Provisions Section and the Environmental Protection Section of these specifications.

B. PROTECTION:

1. PERSONS:

a. The Contractor shall take all necessary precautions to protect public pedestrians including tenants from injury.

b. The Contractor shall provide, erect and maintain safety barricades around scaffolds, hoists and wherever Contractor's operations create hazardous conditions in order to properly protect the public and tenants.

2. COMPLETED WORK: The Contractor shall provide all necessary protection for wet paint surfaces.

3. PROTECTIVE COVERING: The Contractor shall provide and install protective covering over all areas that are not scheduled for treatment. Protective covering shall be clean sanitary drop cloth or plastic sheets. Paint applied to surfaces not scheduled for treatment shall be completely removed and surfaces shall be returned to original condition.

4. SAFEGUARDING OF PROPERTY: The Contractor shall take whatever steps may

be necessary to safeguard his work and also the property of the State and other individuals in the vicinity of his work area during the execution of this Contract. He shall be responsible for and make good on any and all damages and for losses to work or property caused by his or his employee's negligence.

5. FIRE SAFETY: The Contractor shall direct his employees not to smoke in the vicinity and exercise precautions against fire at all times. Waste rags, plastic (polyester sheets), empty cans, etc. shall be removed from the site at the end of each day.

C. STORAGE AREA FOR MATERIALS:

1. No paint material, empty cans and paint brushes and rollers may be stored in buildings, but shall be stored in separate storage facilities away from the buildings.

2. The Contractor may furnish a job site storage facility. Such facility shall comply with requirements of the local Fire Department. The storage area shall be kept clean and facility shall be locked when not in use or when no visual supervision is possible.

D. The Engineer shall have the right to reject all work which is not in compliance with the plans and specifications. Rejected work will be redone at no additional cost to the State.

E. The sequence of operations shall divide the surfaces into work areas and present a schedule for:

1. Surface preparation and spot prime
2. Prime coat
3. First finish coat
4. Second finish coat

F. Inspection and Approvals: The Contractor shall obtain written approval from the Engineer upon completion of each phase of work (phases of work are: surface preparation and spot prime, prime, first finish coat, second finish coat) before proceeding into the next phase work. The Contractor shall give the Engineer one day (24 hours minimum) advance notice of completion of any phase of work for an area only when he deviates from the previously-submitted work schedule. The Contractor shall provide necessary access to areas to be inspected. Failure to obtain approval of any phase of work for a work area may result in redoing the operation at no cost to the State.

PART 2 – PRODUCTS

2.1 PROHIBITION OF HAZARDOUS MATERIALS

A. Do not use coatings having a lead content over 0.06 percent by weight of nonvolatile content.

B. Do not use coatings containing zinc-chromate or strontium-chromate.

2.2 PAINTS

A. Materials shall be equal in quality to that specified under the Schedule of Finishes and any given finish shall be as labeled by one manufacturer.

B. All materials shall be delivered to the job site in undamaged original containers beating the manufacturer's label and shall be stored in such a manner as to prevent damage. All rejected materials shall be removed from the job site immediately.

C. Sinclair paint is indicated for standard of quality and color, only. Comparable high quality top line paints manufactured by Devoe, Fuller O'Brien, Benjamin Moore, Sinclair, Spectra-Tone or approved equal.

D. Thinning of paint shall be done using material recommended by the manufacturer. Mix proprietary products according to manufacturer's printed specifications. Compound thinnet, mineral oil, kerosene, refined linseed oil, or gasoline shall not be used for thinning.

E. Except for metal primers, all paint shall contain mildewcide equal in strength to 2 oz. of Super Ad-It per gallon of paint pre-mixed by supplier.

F. The supplier shall submit a signed certification that the paint materials contains mildewcide equal in strength to 2 oz. of Super Ad It.

2.3 SCHEDULE OF FINISHES

A. The Schedule of Finishes is made for the convenience of the Contractor and indicates the types and quality of finished to be applied to the surfaces.

B. Any surface not specifically noted in the finish schedule shall be finished to match adjoining work.

2.4 SCHEDULE - EXTERIOR SURFACES

A. Wood – Beams, Columns, Rafters, and Purlins

1. First Coat - Olympic solid stain
2. Second Coat - Olympic solid stain

B. Steel:

1. Pretreatment - 321-60 Vinyl wash primer
2. First Coat - 221-12 Zinc rich primer
3. Second Coat - 312-XX Heavy duty enamel
4. Third Coat - 312-XX Heavy duty enamel

C. Color of paints shall be as approved by the Engineer.

PART 3 – EXECUTION

3.1 PREPARATION OF SURFACES

A. WOOD SURFACES: Fill nail holes, cracks, open joints and other imperfections with appropriate compound and allow to set. Caulk all openings which will permit the entrance of water.

B. FERROUS METAL:

1. Remove from surface to be painted all foreign matter such as tape, gum, and burrs.

2. Remove all rust to bare metal. Remove all loose, blistered, scaled, crazed, chalky finish to a tight and firm finish.

3.2 PAINT APPLICATION

A. GENERAL:

1. All work shall be done in a workmanlike manner by skilled and experienced mechanics and shall conform to the best painting practices.

2. All materials shall be applied in accordance with the manufacturer's specifications and the finished surfaces shall be free from runs, sags, drops, ridges, waves, laps, streaks, brush marks and variations in color, texture and finish (glossy or dull). The coverage shall be complete and each coat shall be so applied as to produce a film of uniform thickness. No paint, varnish or enamel shall be applied until the preceding coat is thoroughly dry and approved.

3. No exterior painting of unprotected surfaces shall be done in rainy, damp weather. Coats shall be applied only to surfaces that are thoroughly dry.

B. Application shall be by brush or roller only. Airless spraying may be permitted, but only with the approval of the Engineer for otherwise inaccessible areas.

C. Each coat shall be tinted a different shade from the preceding coat. Colors shall be as selected by the Engineer.

D. All surfaces adjacent to areas being finished shall be protected and left clean of paints, stains, etc. Clean drop cloths shall be used until completion of job.

E. All mixing shall be done outside the building.

3.3 CLEAN-UP

A. During the progress of the work, all debris, empty crates, waste, drippings, etc. shall be removed by the Contractor and the grounds about the areas to be painted shall be left clean and orderly at the end of each work day.

B. Upon completion of the work, staging, scaffolding, containers and all other debris shall be removed from the site. All paint, shellac, oil, or stains splashed or spilled upon adjacent surfaces not requiring treatment (hardware, fixture, floor, glass) shall be removed and the entire job left clean and acceptable.

3.4 MEASUREMENT AND PAYMENT

A. Painting shall not be paid for directly, but shall be considered incidental and included in the respective line items in the Proposal Schedule.

- END OF SECTION -

SECTION 10280

WASHROOM ACCESSORIES

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

A. This Section specifies washroom accessories as scheduled and as indicated on the Drawings.

1.2 SUBMITTALS

A. PROCEDURES: Section 01300.

B. SUBMITTAL ITEMS:

1. Manufacturer's data sheets for each product specified, including the following:

a. Installation instructions and recommendations.

b. Storage and handling requirements and recommendations.

c. Cleaning and maintenance instructions.

d. Replacement parts information.

2. A washroom accessory schedule, indicating the type and quantity to be installed in each washroom.

1.3 QUALITY ASSURANCE

A. Provide products manufactured by a company with a minimum of 10 years successful experience manufacturing similar products.

B. To the greatest extent possible, provide products from a single manufacturer.

C. Washroom accessories shall comply with applicable requirements of the 2010 Standards for Accessible Design.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store and handle materials and products in strict compliance with manufacturer's instructions and recommendations. Protect from damage.

1.5 WARRANTY

A. The manufacturer shall provide a one (1) year warranty for materials and workmanship from the date of final acceptance.

PART 2 – PRODUCTS

2.1 WASHROOM ACCESSORY SCHEDULE

A. Single-User Washroom, Heavy Duty:

1. TA-1: Bobrick B-6806 Series Concealed Mounting Grab Bar – 1-1/2 inch diameter with satin finish, or approved equal.
2. TA-2: Royce Rolls Ringer CTP-3 Multi-Roll Toilet Tissue Dispenser, or approved equal.
3. TA-3: Brey-Krause S-6221 Folding Shower Seat, or approved equal.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Install products in strict compliance with manufacturer's written instructions and recommendations, including the following:

1. Verify blocking has been installed properly.
2. Verify location does not interfere with door swings or use of fixtures.
3. Comply with manufacturer's recommendations for backing and proper support.
4. Use fasteners and anchors suitable for substrate and project conditions
5. Install units rigid, straight, plumb, and level, in accordance with manufacturer's installation instructions and approved shop drawings.
6. Conceal evidence of drilling, cutting, and fitting to room finish.
7. Test for proper operation.

3.2 CLEANING AND PROTECTION

A. Clean exposed surfaces of compartments, hardware, and fittings using methods acceptable to the manufacturer.

B. Touch-up, repair, or replace any products that are damaged prior to turnover of the project to the State.

3.3 MEASUREMENT AND PAYMENT

A. Washroom accessories shall be paid for as specified in the Proposal Schedule.

- END OF SECTION -

SECTION 15400

PLUMBING

PART 1 – GENERAL

1.1 GENERAL CONDITIONS

A. This section specifies plumbing requirements.

1.2 SCOPE

A. Provide all labor, materials, equipment, services and related work to complete all plumbing work as shown on the drawings and as specified. The work shall include the following:

1. Removal of existing plumbing equipment and piping, as indicated.

2. Plumbing fixtures and supports and connections thereto.

3. Domestic cold water piping.

4. Disinfection of water supply lines.

5. Testing and adjusting.

6. Manufacturer's literature, shop drawings, and record drawings.

1.3 GENERAL REQUIREMENTS

A. It is the intent of the plans and specifications to provide a complete installation. Should there be omissions or discrepancies in the plans and specifications, the Contractor shall call the attention of the Engineer to such omissions and discrepancies in advance of the date of bid opening so that the necessary corrections can be made. Otherwise the Contractor shall furnish and install the omissions or discrepancies as if the same were specified and provided for.

B. The installation shall be in accordance with all applicable laws, ordinances, and regulations, including but not limited to the following:

1. All work shall be done in accordance with the latest edition of the Uniform Plumbing Code and applicable codes of the County of Hawaii.

2. Work shall comply with applicable regulations of the State of Hawaii Health Department.

3. All plumbing fixtures and installation shall comply with the Americans with Disabilities Act Accessibility Guidelines (ADAAG).

4. Contractor shall obtain all permits, licenses, and certificates and pay for all fees.

1.4 SUBMITTALS

A. Approval of Materials, Fixtures and Equipment: As soon as practicable and within 30 days after award of contract and before commencement of installation of any materials and plumbing equipment, a complete schedule of the materials and equipment proposed for installation shall be submitted for the approval of the Engineer. The schedule shall include catalogs, cuts, diagrams, drawings and such other descriptive data as may be required by the Engineer. No consideration will be given to partial lists submitted from time to time. Any scheduled materials, fixtures and equipment not conforming to the specifications may be rejected.

B. Drawings: The drawings and specifications are intended to cover the complete installation of systems to function as described. The omission of reference to any necessary item of labor or material shall not relieve the Contractor from providing such labor or material. Drawings do not attempt to show exact details of piping and ductwork. Provide offsets as necessary to avoid local obstructions or interferences with other trades.

1. Contract Drawings: Mechanical plans are essentially diagrammatic, showing locations of pipes and other plumbing equipment. Where locations are not dimensioned, they are approximate, and before installing, Contractor shall study existing conditions and make installation in most logical manner.

2. Shop Drawings: The Contractor shall submit 6 copies of shop drawings and brochures or catalog cuts of plumbing fixtures for review and reply prior to start of work. Drawings shall show complete dimensioned installation, including all piping in building, plumbing fixtures and support installation, elevation, invert, supports and foundations. The Contractor shall show the entire work with inverts, sleeves and dimensions. Contractor shall check project drawings to avoid interferences with structural features and with work of other trades. No plumbing or piping work shall commence until plans have been reviewed by the Engineer. Any deviations from the shop drawings shall require prior approval by the Engineer.

3. Record Drawings: The Contractor shall keep at the job site a complete, neat and accurate record of all approved deviations from the contract drawings, shop drawings and specifications, indicating the work as actually installed. These changes shall be recorded on prints of the drawings affected and the shop drawings. As-builts shall be submitted to the Engineer after final acceptance.

4. Operation and Maintenance Manuals: Furnish 2 sets of operating and maintenance manuals on all equipment, bound between hard covers. Include for each piece of equipment the manufacturer's name, model, and serial number, operation and maintenance manual including control diagrams and source of service and replacement parts. Provide tabs separating each piece of equipment. Manual should indicate location of each piece of equipment by model number in the facility. When using

published manuals covering several equipment items or several model options, identify which data and instructions apply to the equipment furnished for this project. Submit one copy of the complete manual for review and approval prior to final inspection.

C. Certificates: Furnish certificates for evidence of proper performance or compliance with code for the following:

1. Sterilization of domestic water piping.

2. Water leak testing of domestic water piping.

1.5 WARRANTY AND CERTIFICATE

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

PART 2 – PRODUCTS

2.1 MATERIALS

A. All materials shall be new and of the best quality available in their respective kinds, free from all defects and shall be of the make and types specified or approved equal.

B. Domestic Water Piping:

1. Copper tubing, ASTM B88, Type K for buried underground piping and Type L for above ground piping, with ANSI B16.18 or B16.22 solder joint fittings.

2. Exposed piping in finished areas shall be chromium plated brass pipe to the shut off or stop valve of each fixture.

C. Water Valves: Ball valve. bronze body, 125 lb. pressure rated valves, with solder joint ends. Nibco, Stockham, Crane, Lunkenheimer, or approved equal.

D. Miscellaneous Materials:

1. Nipples: Nipples shall be the same material as the piping in which installed.

2. Unions: Unions shall be brass or bronze, either threaded or with solder joint ends, for use in copper tubing.

3. Wall and Ceiling Escutcheon Plates: Provide split hinged, locked type, or one-piece escutcheon plates of pressed steel with heavy coating of copper, nickel or chromium.

4. Solder: 95-5 tin antimony or 10% silver solder.

5. Supports: MSS SP-58 and SP-69, types 1,6,9 or 11 for suspended piping. Provide turnbuckles Type 13 and 15 where required for vertical adjustment. Maximum spacing shall be as specified in SP-69.

6. Piping Isolators: Standard commercial products, consisting of metal-clad hair felt manufactured specifically for isolating pipe from hangers.

7. Dielectric Fittings: Dielectric union with galvanized or plated steel female pipe threaded end and copper solder-joint end. Union shall have a water-impervious insulation barrier capable of limiting galvanic current to one percent of the short-circuit current in a corresponding bimetallic joint and, when dry, shall also be able to withstand a 600-volt breakdown test.

2.2 FIXTURES

A. See the Drawings for shower details.

PART 3 – EXECUTION

3.1 INSTALLATION AND WORKMANSHIP

A. All workmanship shall be of the highest standard. Vertical piping lines shall be plumbed and lines that are grouped shall be parallel and as direct as possible. Galvanized sheet metal thimbles shall be provided where pipes pass through masonry, and cutting shall be avoided as much as possible. Exposed pipe, where indicated, shall be run parallel with walls.

B. The installation shall comply with the latest accepted edition of the Plumbing Code, the Fire Marshall's regulations of the State of Hawaii, the regulations of the Department of Health of the State of Hawaii and all other applicable codes.

C. The Contractor shall obtain and pay for all permits and licenses for the work. At completion, transmit to the Engineer, applicable certificates of inspections.

3.2 EXCAVATION, BACKFILL AND CONCRETE WORK

A. All excavation and backfill in connection with plumbing work and mechanical work shall be accomplished in accordance with the Plumbing Code. Provide proper support along the pipe length where rocks are encountered, provide a minimum of 3" of backfill properly tamped for pipe. Coral shall not be used as backfill material for underground piping. Pipes shall be buried a minimum of 12" below grade.

3.3 CROSS CONNECTIONS AND INTERCONNECTIONS

A. No plumbing fixtures, device, or piping shall provide a cross connection or interconnection between a distributing supply for drinking or domestic purposes and a polluted supply such as a drainage system or a soil or waste pipe, so as to make possible the backflow of sewage, polluted water, or waste into the water supply system.

3.4 CUTTING AND REPAIRING

A. The work shall be carefully laid out in advance providing sleeves, templates or details for chases and openings to be left in the walls, floors, structural members or partitions. Any access cutting of construction will not be permitted. Cutting shall be carefully done, and damage to buildings, piping, wiring or equipment as a result of cutting for installation shall be repaired by skilled mechanics of the trade involved at no additional expense to the State. Written permission from the State's representative shall be obtained before any cutting is done.

3.5 PROTECTION TO FIXTURES, MATERIALS AND EQUIPMENT

A. Pipe openings shall be closed with caps or plugs during installation. Fixtures and equipment shall be tightly covered and protected against dirt, water and chemical or mechanical injury. Upon completion of all work the fixtures, materials and equipment shall be thoroughly cleaned, repainted as required, adjusted and operated.

3.6 CHLORINATION

A. Domestic cold water lines shall be sterilized with chlorine before acceptance of the work. Dosage of chlorine shall be not less than 50 ppm. Chlorinating material shall be introduced into the water lines in a manner approved by the Engineer. After a contact period of not less than twenty-four (24) hours the system shall be flushed with clean water until the residual chlorine content is not greater than 0.2 ppm. All valves in the lines being sterilized shall be opened and closed several times during the contact period. A certificate shall be furnished to the Engineer evidencing proper performance of sterilizations.

3.8 PIPE INSTALLATION

A. No pipe shall be closed up, furred in, buried or otherwise hidden until it has been inspected, tested and approved by the Engineer.

1. All copper water piping joints shall be 95-5 soldered or 10% silver solder.

2. All piping shall be inspected inside and out before installation and no obstructions shall be allowed. Pipe ends shall be taper reamed to full I. D. and all burrs removed.

3. All exposed piping shall be carefully handled to avoid excessive tool marking and polished fittings shall be handled with extra care so that tool marks do not show. All exposed piping shall be in one length, where possible, fittings shall be in walls under counter cabinet or in furred space.

4. Escutcheons: Shall be installed around all exposed pipe passing through a finished floor, wall or ceiling. Escutcheons shall be of sufficient outside diameter to cover the sleeve opening and shall fit snugly around the pipe.

5. Anchor piping in building with approved clamps or adjustable hangers spaced in accordance with the Plumbing Code. Straps for copper tubing shall be

copper or brass, or copper plated. Where copper contacts ferrous material, wrap with two layers of plastic tape.

6. Provide dielectric unions where copper piping is connected to ferrous pipe.

3.9 PLUMBING FIXTURES

A. Furnish, install and properly connect all plumbing fixtures and fittings and/or trims herein specified.

B. Setting of all fixtures shall be done in an approved workmanlike manner. Special attention shall be exercised to the fixture heights, especially for urinals, drinking fountains, electric water coolers, and wash basins. Where definite dimensions are not indicated, consult Engineer for exact heights. Joints between fixtures and wall shall be neatly caulked.

C. Fastenings: Where trimmings and fixtures are secured to concrete block or concrete, they shall be fastened with 1/4" minimum brass machine screw type expansion bolts sufficiently long to insure that the shield shall be wholly within sound concrete. Where trimmings and fixtures are to be mounted on concrete block or concrete, each fixture shall have the proper cast iron fixture bracket set anchored to the masonry wall with 1/4" diameter toggle bolts. Where fixtures are mounted on metal stud wall, provide 1/4" x 5" steel backing plates, spot welded to at least two studs. All exposed bolt head and nuts shall be chrome plated hexon brass with round tops. All escutcheons on walls and floors shall be chrome plated cast brass with chrome plated set screws.

D. No wood grounds shall be used for supports of plumbing fixtures.

E. Fixture supports shall be furnished by the Contractor as recommended by the manufacturer.

F. Provide and install shutoff valve to water supply branches to fixtures whether specifically mentioned or not.

G. If fixtures are supplied with hot water supply openings when not required, such openings are to be closed permanently with chrome plated faucet hole covers.

3.10 TESTING AND INSPECTION

A. Contractor shall furnish all equipment for tests and any required retests and pay for all cost of repairing any damage resulting from such tests. Contractor shall adjust systems until they are approved. Tests shall be performed in the presence of, and to the satisfaction of, the Engineer and inspector of the official agency involved.

B. Water piping shall be tested in accordance with the Plumbing Code. Water piping shall be tested at 150 psi.

3.11 CLEAN UP

A. Debris shall not be allowed as a result of this work. Upon completion of this work, remove all debris and excess materials, tools, etc., resulting from this work from the job site and leave the location of this work broom-cleaned in an acceptable manner as approved by the Engineer. All work including plumbing fixtures, traps and mechanical equipment shall be thoroughly cleaned and ready for use.

3.12 MEASUREMENT AND PAYMENT

A. Plumbing shall not be paid for directly, but shall be considered incidental and included in the respective bid items in the Proposal Schedule.

- END OF SECTION -