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

BOARD OF LAND AND NATURAL RESOURCES

Suzanne D. Case
Chairperson

CONTRACT SPECIFICATIONS AND PLANS

Job No. F80C661C
KALALAU TRAIL ROCKFALL MITIGATION
NAPALI COAST STATE WILDERNESS PARK, KAUAI, HAWAII

Civil Engineer: AECOM Technical Services, Inc.

April 2016
State of Hawaii
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION
Honolulu, Hawaii

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CONTRACT SPECIFICATIONS AND PLANS

Job No. F80C661C
KALALAU TRAIL ROCKFALL MITIGATION
NAPALI COAST STATE WILDERNESS PARK, KAUAI, HAWAII

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

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

Apri 2016
NOTICE TO BIDDERS
(Chapter 103D, HRS)

COMPETITIVE BIDS for Job No. F80C661C, Kalalau Trail Rockfall Mitigation, Napali Coast State Wilderness Park, Kauai, Hawaii shall be submitted to the Department of Land and Natural Resources, Engineering Division on the specified date and time through the Hawaii State e-Procurement (HIePRO). HIePRO is accessible through the State Procurement Office website at www.spo.hawaii.gov.

The Department of Land and Natural Resources Interim General Condition, dated October 1994, as amended, and the General Conditions –AG008, latest revision shall be made part of the specifications.

The project is located at Kalalau Trail, Napali Coast State Wilderness Park, Kauai, Hawaii.

The work shall generally consist of site BMPs, rock bolting, installing shotcrete, and shotcrete sculpting. Due to the nature of work contemplated, bidders must possess a valid State Contractor’s license, classification C68RL.

A voluntary pre-bid conference/site visit will be held at the Trail Head, located at Napali Coast State Wilderness Park, on April 21, 2016, at 11:00 am.

The estimated cost of construction is $249,000.

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

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

Since the estimated value of the cost of construction is less than $250,000, the apprenticeship agreement preference pursuant to Hawaii Revised Statutes §103-55.6 (ACT 17, SLH 2009) shall not apply.

Should there be any questions, please refer to the HIePRO solicitation.
# INFORMATION AND INSTRUCTIONS TO BIDDERS

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INFORMATION AND INSTRUCTIONS TO BIDDERS

A. PROJECT LOCATION AND SCOPE OF WORK: The project location and scope of work shall be as generally described in the Notice to Bidders.

B. PROPOSALS: Bidders shall submit their bid, including the completed proposal form, bid bond, and any other documents required by the solicitation as part of their bid through the State of Hawaii e-Procurement System (HLePRO). 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 HLePRO 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 ERASURE: Any proposal which contains any omission or erasure or alteration not properly initialed, or conditional bid, or other irregularity may be rejected by the Board of Land and Natural Resources (Board).

F. NOTICE OF INTENT TO BID AND QUESTIONNAIRE: A Notice of Intent to Bid is not required for this project. In compliance with HRS Section 103D-310, the lowest responsive and responsible bidder may be required to complete a questionnaire. When requested by the State, the completed questionnaire shall be submitted to the Chief Engineer for evaluation. Failure to furnish the requested information within the time allowed may be grounds for a determination of non-responsibility, in accordance with HRS Section 103D-310 and HAR Section 3-122-108.

G. BID SECURITY: A bid security will be furnished by each bidder as provided in sub-section 2.7 of the General Conditions. The successful bidder’s bid security will be retained until Contract execution and furnished a performance and payment bond in an amount equal to one hundred percent (100%) of the total Contract price, including an amount estimated to be required for extra work, is furnished.

The Board reserves the right to hold the bid securities of the four lowest bidders until the successful bidder has entered into a contract and has furnished the required performance bond. All bid securities will be returned in accordance with sub-section 3.5 of the General Conditions.

Should the successful bidder fail to enter into a contract and furnish a satisfactory performance bond within the time stated in the proposal, the bid security shall be forfeited as required by law.

H. CONTRACTOR’S LICENSE REQUIRED: The Board will reject all bids received from contractors who have not been licensed by the State Contractors License Board in accordance
with Chapter 444, HRS; Title 16, Chapter 77, Hawaii Administrative Rules; and statutes amendatory thereto.

I. IRREGULAR BIDS: No irregular bids or propositions for doing the work will be considered by the Board.

J. WITHDRAWAL OF BIDS: No bidder may withdraw his bid between the time of the opening thereof and the award of contract.

K. SUCCESSFUL BIDDER TO FILE PERFORMANCE AND PAYMENT BONDS: The successful bidder will be required to file performance and payment bonds each; in the amount equal to the total contract price, including amounts estimated to be required for extra work, as provided in sub-section 3.6 of the General Conditions.

L. NUMBER OF EXECUTED ORIGINAL COUNTERPARTS OF CONTRACT DOCUMENTS: If requested by the Board, six copies of the Contract, performance and payment bonds shall be executed.

M. CHANGE ORDERS: No work of any kind in connection with the work covered by the plans and specifications shall be considered as change order work, or entitle the Contractor to extra compensation, except when the work has been ordered in writing by the Chief Engineer (Engineer) and in accordance with sub-section 4.2 of the General Conditions.

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

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

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

No work shall be done on Saturdays, Sundays, legal State holidays, and/or in excess of eight (8) hours each day without the written consent of the Engineer. Should permission be granted to work at such times, the Contractor shall pay for all inspection administrative costs thereof. No work shall be done at night unless authorized by the Engineer.

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

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

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

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

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

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

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

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

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

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

T. **HIRING OF HAWAII RESIDENTS**: The Contractor shall comply with Act 68, SLH 2010, in the performance and for the duration of this contract. The Contractor shall ensure that Hawaii residents compose not less than eighty percent of the workforce employed to perform the contract work on the project. The eighty percent requirement shall be determined by
dividing the total number of hours worked on the contract by Hawaii residents, by the total number of hours worked on the contract by all employees of the Contractor in the performance of the contract. The hours worked by any Subcontractor of the Contractor shall count towards the calculation for this section. The hours worked by employees with shortage trades, as determined by the Department of Labor and Industrial Relations (DLIR), shall not be included in the calculation for this section.

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

U. WATER AND ELECTRICITY: The Contractor shall make all necessary arrangements and pay all expenses for water and electricity used in the construction of this project.

V. PUBLIC CONVENIENCE AND SAFETY: The Contractor shall conduct construction operations with due regard to the convenience and safety of the public at all times. No materials or equipment shall be stored where it will interfere with the safe passage of public traffic. The Contractor shall provide, install, and maintain in satisfactory condition, all necessary signs, flares and other protective facilities and shall take all necessary precautions for the protection of the work and the convenience and safety of the public. The Engineer shall have the right to suspend the performance of the work in accordance with sub-section 7.20 - Suspension of Work of the General Conditions.

W. WORK TO BE DONE WITHOUT DIRECT PAYMENT: Whenever the contract that the Contractor is to perform work or furnish materials of any kind for which no price is fixed in the contract, it shall be understood that the Contractor shall perform such work or furnish said materials without extra charge or allowance or direct payment of any sort. The cost of performing such work or furnishing said material is to be included by the Contractor in a unit price for the appropriate item unless it is expressly specified that such work or material is to be paid for as extra work.

X. AS-BUILT DRAWINGS: As-built drawings, the intent of which is to record the actual in-place construction so that any future renovations or tie-ins can be anticipated accurately, shall be required. All authorizations given by the Engineer to deviate from the plans shall be drawn on the job site plans. All deviations from alignments, elevations and dimensions which are stipulated on the plans shall be recorded on the as-built drawings. Final as-built drawings shall be submitted to the Engineer for review and approval. After the Engineer approves the as-built drawings, the contractor shall submit an electronic copy in Adobe PDF format on CD ROM.

Y. ASBESTOS CONTAINING MATERIALS: The use of asbestos containing materials or equipment is prohibited. The Contractor shall insure that all materials and equipment incorporated in the project are asbestos-free.

Z. WORKER SAFETY: The Contractor shall provide, install and maintain in satisfactory condition all necessary protective facilities and shall take all necessary precautions for the protection and safety of its workers in accordance with the Occupational Safety and Health Standards for the State of Hawaii. The Engineer shall have the right to suspend the performance of the work in accordance with sub-section 7.20 - Suspension of Work of the
General Conditions.

AA. **TOILET FACILITIES:** All toilet facilities constructed at the project site shall be in accordance with the Public Health Regulations of the State Department of Health (DOH). All necessary precautions shall be observed at the project site. The use of sanitary facilities shall be strictly enforced and workers violating these provisions shall be promptly discharged.

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

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

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

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

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

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

FF. **HAWAII BUSINESS OR COMPLIANT NON-HAWAII BUSINESS REQUIREMENT:** Bidders (Contractors) shall be incorporated or organized under the laws of the State or be registered to do business in the State as a separate branch or division that is capable of fully performing under the contract, as stipulated in §3-122-112 HAR.
GG. **COMPLIANCE WITH §3-122-112 HAR:**
As a condition for award of the contract and as proof of compliance with the requirements of 103D-310(c) HRS, the apparent low bidder shall furnish the required documents to the Department. If the valid required certificates are not submitted on a timely basis for award of a contract, a bidder otherwise responsive and responsible may not receive the award. Bidder is responsible to apply for and submit the following documents to the Department.

A. **TAX CLEARANCE REQUIREMENTS (HRS Chapter 237):** Bidder shall obtain a tax clearance certificate from the Hawaii State Department of Taxation (DOTAX) and the Internal Revenue Service (IRS). The certificate is valid for six months from the most recently approved stamp date on the certificate; the certificate must be valid on the date received by the Department.

B. **Department of Labor (DLIR) “Certificate of Compliance”**. (HRS Chapter 383 - Unemployment Insurance, Chapter 386 - Workers’ Compensation, Chapter 392 - Temporary Disability Insurance, and 393 – Prepaid Health Care): Bidder shall obtain a certificate of compliance from the Hawaii State Department of Labor and Industrial relations (DLIR). The certificate is valid for six months from the date of issue; certificates must be valid on the date received by the Department.

C. **Department of Commerce and Consumer Affairs (DCCA), Business Registration Division (BREG) “Certificate of Good Standing”**: Bidder shall obtain a certificate of good standing issued by the Department of Commerce and Consumer Affairs (DCCA), Business Registration Division (BREG). The certificate of good standing is valid for six months from the date of issue; certificates must be valid on the date received by the Department.

Alternately, instead of separately applying for these certificates at the various state agencies, bidder may choose to use the Hawaii Compliance Express (HCE), which allows businesses to register online through a simple wizard interface at [http://vendors.hawaiicounty.gov](http://vendors.hawaiicounty.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. F80C661C
KALALAU TRAIL ROCKFALL MITIGATION
NAPALI COAST STATE WILDERNESS PARK, KAUAI, HAWAII

__________________________, 2016

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 the work of site BMPs, rock bolting, and installing shotcrete, 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. F80C661C
KALALAU TRAIL ROCKFALL MITIGATION
NAPALI COAST STATE WILDERNESS PARK, KAUAI, HAWAII

on file in the office of the Engineering Division for the TOTAL SUM BID (Items 1 to 6) of:

______________________________________________________________ Dollars ($____________________)

and will fully complete all work under this contract within 30 consecutive calendar days from the
date of written notice to proceed, including date of said order, said total sum being itemized on the
following pages.
# PROPOSAL

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Quantity</th>
<th>Unit</th>
<th>Description</th>
<th>Unit Price</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>LS</td>
<td>Erosion Control BMPs, including all labor, materials and maintenance, installed complete.</td>
<td>LS</td>
<td>$_______</td>
</tr>
<tr>
<td>2</td>
<td>18</td>
<td>CY</td>
<td>Shotcrete, including rebar dowels, geocomposite drains, reinforcing steel, shotcrete with sculpted finish, installed complete</td>
<td>$_________</td>
<td>$_______</td>
</tr>
<tr>
<td>3</td>
<td>110</td>
<td>SF</td>
<td>Sculpted Finish for Shotcrete, including equipment, labor and materials for applying a sculpted finish, as specified, installed complete</td>
<td>$_________</td>
<td>$_______</td>
</tr>
<tr>
<td>4</td>
<td>60</td>
<td>LF</td>
<td>Rock Bolts, including all labor, materials, equipment, installed complete.</td>
<td>$_________</td>
<td>$_______</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>LS</td>
<td>Trail Traffic Control</td>
<td>LS</td>
<td>$_______</td>
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</tbody>
</table>

**Subtotal Base Bid (Items 1-5)** $_______

| 6        | 1        | LS   | Mobilization and Demobilization. (Not to Exceed 10% of the Total Sum Bid)   | LS         | $_______|

**Total Sum Base Bid (Items 1-6)** $_______
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. Hawaii products may be available for items noted on the Offer Form. The Hawaii Products List is available on the SPO webpage at http://hawaii.gov/spo. Click on Procurement of Goods, Services and Construction-Chapter 103D, HRS; under Procurement click on Preferences, Hawaii Products and select Hawaii Products List to view.

Bidder offering a Hawaii product ("HP") shall identify the HP in the table below. Any person desiring a Hawaii product preference shall have the product(s) certified and qualified, if not currently on the Hawaii Products List, prior to the deadline for receipt of offer(s) specified in the procurement notice and solicitation. The responsibility for certification and qualification shall rest upon the person requesting the preference.

Persons desiring to qualify their product(s) not currently on the Hawaii Product List, shall complete Form SPO-38, Certification for Hawaii Product Preference, and submit the completed form to the Procurement Officer providing any additional information required by the Procurement Officer. One form shall be completed and submitted for each product. Form SPO-38 is available on the SPO webpage at http://hawaii.gov/spo, under the Quicklinks menu click on Forms for Vendors/Contractors/Services Providers.

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.

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Pre-Approved Hawaii Product Description &amp; Manufacturer</th>
<th>Class (I or II)</th>
<th>Quantity</th>
<th>Unit Measure</th>
<th>Unit Price</th>
<th>Total Price</th>
</tr>
</thead>
</table>


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RECYCLED PRODUCTS PREFERENCE
This project allows a 10% price preference for recycled products in accordance with HRS 103D-1005. Bidders are required to complete this section. FAILURE TO COMPLETE THIS SECTION MAY BE SUFFICIENT CAUSE FOR REJECTION OF THE BID.

Only the following products are being considered for the recycled product preference. Please indicate your selection of recycled or non-recycled product by indicating its cost FOB jobsite unloaded in the schedule below, including applicable General Excise & Use Taxes.

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>RECYCLED PRODUCT COST</th>
<th>NONRECYCLED PRODUCT COST</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>$</td>
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The bidder requesting a recycled product preference by his selection above, shall also complete and submit the form “CERTIFICATION OF RECYCLED CONTENT” as shown in the Interim General Conditions and provide all supporting information with this proposal. Additional information may be requested to qualify a product.

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

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

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

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

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

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

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

1. If applicable to this project, any bidder seeking the preference must be a party to an apprenticeship agreement registered with the State Department of Labor and Industrial Relations (DLIR) at the time the bid is submitted for each apprenticeable trade the bidder will employ to construct the project. “Employ” means the employment of a person in an employer-employee relationship.

   a. The apprenticeship agreement shall be registered with the DLIR and conform to the requirements of Hawaii Revised Statutes Chapter 372.

   b. Subcontractors do not have to be a party to an apprenticeship agreement for the bidder to obtain preference.

   c. The bidder is not required to have apprentices in its employ at the time the bid is submitted to qualify for the preference.

2. A bidder seeking the preference must state the apprenticeable trade the bidder will employ for each trade to be employed to perform the work by submitting a completed signed original Certification Form 1 verifying participation in an apprenticeship program registered with DLIR. “Apprenticeable trade” shall have the same meaning as “apprenticeable occupation” pursuant to Hawaii Administrative Rules (HAR) §12-30-5.

   a. The Certification Form 1 shall be authorized by an apprenticeship sponsor listed on the DLIR list of registered apprenticeship programs. “Sponsor” means an operator of an apprenticeship program and in whose name the program is approved and registered with the DLIR pursuant to HAR §12-30-1.

   b. The authorization shall be an original signature by an authorized official of the apprenticeship sponsor.

   c. The completed signed original Certification Form 1 for each trade must be submitted with the bid. Previous certifications shall not apply.

   d. When filling out the Certification Form 1, the name of Apprenticeable Trade and Apprenticeship Sponsor must be the same as recorded in the List of Construction Trades in Registered Apprenticeship Programs that is posted on the DLIR website. “Registered apprenticeship program” means a construction trade program approved by the DLIR pursuant to HAR §12-301 and §12-30-4.

   e. The Certificate Form 1 and the List of Construction Trades in Registered Apprenticeship Programs is available on the DLIR website at: http://hawaii.gov/labor/wdd.

3. Upon receiving the Certification Form 1, the Procurement Officer will verify that the apprenticeship program is on the List of Construction Trades in Registered Apprenticeship Programs and that the form is signed by an authorized official of the Apprenticeship Program.
Sponsor. If the programs and signature are not confirmed by the DLIR, the bidder will not qualify for the preference.

4. If the bidder is certified to participate in an apprenticeship program for each trade which will be employed by the bidder for the project, a preference will be applied to decrease the bidder’s bid amount by five percent (5%) for evaluation purposes.

5. Should the bidder qualify for other preferences (e.g. Hawaii Products), all applicable preferences shall be applied to the bid price.

CAMPAIGN CONTRIBUTIONS BY STATE AND COUNTY CONTRACTORS PROHIBITED
If awarded a contract in response to this solicitation, offeror agrees to comply with HRS 11-355, which states that campaign contributions are prohibited from a State and county government contractor during the term of the contract if the contractor is paid with funds appropriated by a legislative body between the execution of the contract through the completion of the contract.
CONDITION OF AWARD

It is understood that the award of the contract will be made on the basis of the lowest responsible Total Sum Base Bid (Items 1 to 6) selected by the Board of Land and Natural Resources.

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:

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

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

JOINT CONTRACTORS OR SUBCONTRACTORS TO BE ENGAGED ON THIS PROJECT

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

“A” General Engineering Contractors and “B” General Building Contractors are reminded that due to the Hawaii Supreme Court’s January 28, 2002 decision in Okada Trucking Co., Ltd. v. Board of Water Supply, et al., 97 Haw. 450 (2002), they are prohibited from undertaking any work, solely or as part of a larger project, which would require the general contractor to act as a specialty contractor in any area in which the general contractor has no license. Although the “A” and “B” contractor may still bid on and act as the “prime” contractor on an “A” or “B” project (See, HRS §444-7 for the definitions of an “A” and “B” project.), respectively, the “A” and “B” contractor may only perform work in the areas in which they have the appropriate contractor’s license (An “A” or “B” contractor obtains “C” specialty contractor’s licenses either on its own, or automatically under HAR § 16-77-32). The remaining work must be performed by appropriately licensed entities.

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

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

In completing the Joint Contractors or Subcontractors List, describe the specialty contractor’s nature and scope of work to be performed for this project and provide the complete firm name of the joint contractor or subcontractor in the respective columns. If the Bidder is a general contractor and providing the work of the required specialty contractor, fill in the Bidder’s (general contractor’s) name and nature and scope of work to be performed on this project.

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

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

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<th>COMPLETE FIRM NAME OF JOINT CONTRACTOR OR SUBCONTRACTOR</th>
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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. ________________________________
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 HlePRO solicitation for interpretation and must be received in the time frame set in the HlePRO solicitation. Any interpretation, if made and any supplemental instructions will be in the form of written addenda to the plans and specifications and made available prior to the offer due date. It shall be the prospective bidder’s sole responsibility to verify and obtain any said addenda. Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligation under his bid as submitted. All addenda so issued shall become part of the contract documents.”

**Section 3 – Award and Execution of Contract**

1. **AMEND Section 3.3, Award of Contract, by deleting “sixty (60)” and replacing with “ninety (90)” in the first paragraph.**

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

“If the contract is not awarded within the ninety (90) days, the Department may request the successful Bidder to extend the time for the acceptance of its bid. The Bidder may reject such a request without penalty; and in such case, the Department may at its sole discretion make a similar offer to the next lowest responsive and responsible bidder and so on until a bid is duly accepted or until the Department elects to stop making such requests.”

3. **AMEND Section 3.9, Notice to Proceed, by deleting “180 days” and replacing with “one (1) year” in the last paragraph.**

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

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

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

The notice of award, if any, resulting from this solicitation shall be posted on the Procurement System on the SPO website: http://hawaii.gov/spo2/.

Section 5 – Control of Work

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

Section 6 – Substitution of Materials and Equipment

ADD the following to Section 6.3 Sub-paragraph b:

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

Section 7 – Prosecution and Progress

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

“d. Insurance Requirements

1. Obligation of Contractor

The Contractor shall not commence any work until it obtains, at its own expense, all required insurance. Such insurance must have the approval of the Department as to limit, form and amount and must be maintained with a company authorized by law to issue such insurance in the State of Hawaii.

All insurance described herein will be maintained by the Contractor for the full period of the contract and in no event will be terminated or otherwise allowed to lapse prior to written certification of final acceptance of the work by the Department.

Certificate(s) of Insurance acceptable to the Department shall be filed with the Engineer prior to commencement of the work. These certificates shall contain a provision that coverages afforded under the policies will not be canceled or changed until at least thirty days written notice has been given to the Engineer by registered mail. The insurance policies shall name the State of Hawaii, its officers and employees as an additional insured and such coverage shall be noted on the Certificate. Should any policy be canceled before final acceptance of the work by the Department, and the Contractor fails to immediately procure replacement insurance as specified, the Department, in addition to all other remedies it may have for such breach, reserves the right to procure such insurance and deduct the cost thereof from any money due to the Contractor.
Nothing contained in these insurance requirements is to be construed as limiting the extent of Contractor’s responsibility for payment of damages resulting from its operations under this contract, including the Contractor’s obligation to pay liquidated damages, nor shall it affect the Contractor’s separate and independent duty to defend, indemnify and hold the Department harmless pursuant to other provisions of this contract. In no instance will the Department’s exercise of an option to occupy and use completed portions of the work relieve the Contractor of its obligation to maintain the required insurance until the date of final acceptance of the work.

All insurance described herein shall cover the insured for all work to be performed under the contract, all work performed incidental thereto or directly or indirectly connected therewith, including traffic detour work or other work performed outside the work area, and all change order work.

The Contractor shall, from time to time, furnish the Engineer, when requested, satisfactory proof of coverage of each type of insurance required or a copy of the actual policies covering the work. Failure to comply with the Engineer’s request may result in suspension of the work, and shall be sufficient grounds to withhold future payments due the Contractor and to terminate the contract for Contractor’s default.

2. Types of Insurance

The Contractor shall purchase and maintain insurance described below which shall provide coverage against claims arising out of the Contractor’s operations under the contract, whether such operations be by the Contractor itself or by the subcontractor or by anyone directly or indirectly employed by any of them or by anyone for whose acts any of them may be liable.

(a) Worker’s Compensation. The Contractor and all subcontractors shall obtain full worker’s compensation insurance coverage for all persons whom they employ or may employ in carrying out the work under this contract. This insurance shall be in strict conformity with the requirements of the most current and applicable State of Hawaii Worker’s Compensation Insurance laws in effect on the date of the execution of this contract and as modified during the duration of the contract.

(b) Commercial General Liability Insurance and Automobile Insurance. Contractor’s commercial general liability insurance and automobile liability insurance shall both be obtained in a combined, single limit of not less than $1,000,000 per occurrence that shall include coverage for bodily injury, sickness, disease or death of any person, arising directly or indirectly out of, or in connection with, the performance of work under this contract.

The Contractor’s property damage liability insurance shall provide for a single combined limit of not less than $1,000,000 for all damages arising out of injury to or destruction of property of others including the Department’s, arising directly or indirectly out of or in connection with the performance of the work under this contract including explosion or collapse.

The Contractor shall either:

i. Require each of its subcontractors to procure and to maintain during the life of its subcontract, subcontractors’ comprehensive general liability, automobile liability
and property damage liability insurance of the type and in the same amounts specified herein; or

ii. Insure the activities of its subcontractors in its own policy.

The Contractor will be permitted, in cooperation with insurers, to maintain a self insured retention for up to 25% of the per occurrence combined single limits of the commercial general liability and the automobile liability policies. The existence of the self insured retention must be noted on the certificate of insurance coverage submitted to the Department or else it will be understood that the insurer is providing first dollar coverage for all claims. For all claims within the self-insured retention amount, the rights, duties and obligations between the Contractor and the Department shall be identical to that between a liability insurer and the Department, as an additional insured, as if there was no self-insured retention.

(c) Builder’s Risk Insurance. Unless included in the Specifications of this project, the Contractor shall not be required to provide builder’s risk insurance. If required as noted in the Specifications, builder’s risk insurance shall be provided during the progress of work and until final acceptance by the Department upon completion of the contract. It shall be “All Risk” (including but not limited to earthquake, windstorm and flood damage) completed value insurance coverage on all completed work and work in progress to the full replacement value thereof. Such insurance shall include the Department as additional name insured. The Contractor shall submit to the Engineer for its approval all items deemed to be uninsurable. The policy may provide for a deductible in an amount of up to 25% of the amount insured by the policy. With respect to all losses up to any deductible amount, the relationship between the Contractor and the Department shall be that of insurer and additional insured as if no deductible existed”.

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

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

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

The Contractor shall pay all just claims for materials, supplies, tools, labor and other just claims against the Contractor or any subcontractor in connection with this contract and the surety bond will not be
released by final acceptance and payment by the Department unless all such claims are paid or released. The Department may, but is not obligated to, withhold or retain as much of the monies due or to become due the Contractor under this contract considered necessary by the Engineer to cover such just claims until satisfactory proof of payment or the establishment of a payment plan is presented.

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

Section 8 – Measurement and Payment

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

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

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

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


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

   e. In lieu of submitting the tax clearances from Taxation and IRS, and SPO Form -22, the Contractor may choose to use the Hawaii Compliance Express as described on page SP-1 of this Special Provisions.
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SECTION 01019

GENERAL SPECIFICATIONS

PART 1 - GENERAL

1.01 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.

1.02 GENERAL

A. Construction Lines, Levels and Grades: 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 change shall be made in accordance with the Engineer's instruction. The Contractor shall not be entitled to extra payment for failing to report the discrepancies before proceeding with any work whether within the area affected or not.

B. Examination of Premises: The Contractor shall contact the State Parks Division to obtain permission before visiting the site.

C. Notices: The Contractor shall notify the State Parks Division and give at least three (3) working days notice before starting any work.

D. Disruption of Utility Services: All work related to the temporary disconnection of electrical system shall be pre-arranged with the Engineer so that any disruption of such services will be kept to a minimum. In the event temporary power hook-up is required, the Contractor shall provide the necessary services.

E. Contractor's Operations

1. The Contractor must employ, insofar as possible, such methods and means of carrying out the work so as not to cause any interruption or interference to the facility's operations. Where the Contractor's operations would result in interruptions which would hamper the operations of the facilities, the Contractor shall rearrange the schedule of work accordingly.

2. The Contractor shall maintain safe passageway to and from the facility's occupied rooms and other occupied spaces for the user agency personnel and the public at all times.

General Specifications
01019-1
F. 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 State Parks Division. Any lawn damaged by the Contractor shall be restored as instructed by the Engineer at no cost to the State.

G. Toilet Accommodations: The Contractor may use the existing toilet facilities if available and so designated by the State; however, it is the Contractor's responsibility to keep them clean and in a sanitary condition at all times. In addition, the following requirements of the State Department of Health (DOH) must be strictly adhered to in the Forest Reserve area:

1. Portable covered receptacles for fecal matter and urine, of the design and number specified by the DOH, shall be provided.

2. No employee will be allowed to deposit fecal matter or urine in any place except in these receptacles. Any infringement of this requirement shall result in immediate transfer or discharge of the offender or other disciplinary measures satisfactory to the State.

3. All deposits in these receptacles shall be immediately covered with a chemical solution prescribed by the DOH. These receptacles, with their contents, shall be collected and removed for disposal at the close of each working day. The method of disposal must be satisfactory to the DOH to prevent contamination of any water supply, stream or other bodies of water.

4. The receptacles shall be thoroughly cleaned with water and the required chemical solution and then returned to the required places for service.

H. 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.

I. 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.
J. 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.

K. 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.

L. 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.

M. 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.

N. 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.

O. 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.

General Specifications
01019-3
Omitted words and phrases shall be provided by inference to form complete sentences.

P. Required Submittals

1. 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.

2. 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 together with the marked-up field office plans to the Engineer.

      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

General Specifications
01019-4
SECTION 01090

STANDARD REFERENCES

PART 1 - GENERAL

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

<table>
<thead>
<tr>
<th>Abbreviation</th>
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</tr>
</thead>
</table>
| 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 |

Standard References  
01090-1
<table>
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| 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 |
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 |

Standard References  
01090-2
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<tr>
<td>New York, NY 10017</td>
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</tbody>
</table>
| 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 American, 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 |
<table>
<thead>
<tr>
<th>Abbreviation</th>
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| DIS          | Division of Industrial Safety  
California Department of Industrial Relations  
2422 Arden Way  
Sacramento, CA  95825 |
| 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 |

Standard References  
01090-4
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| IAPMO        | International Association of Plumbing and Mechanical Officials  
5032 Alhambra Avenue  
Los Angeles, CA  90032 |
| ICBO         | International Conference of Building Officials  
5360 South Workman Mill Road  
Whittier, CA  90601 |
| ICEA         | Insulated Cable Engineers Association  
P.O. Box P  
South Yarmouth, MA  02664 |
| IEEE         | Institute of Electrical and Electronics Engineers, Inc.  
345 East 47th Street  
New York, NY  10017 |
| IES          | Illuminating Engineering Society  
C/O United Engineering Center  
345 East 47th Street  
New York, NY  10017 |
| ISA          | Instrument Society of America  
400 Stanwix Street  
Pittsburgh, PA  15222 |
| JIC          | Joint Industrial Council  
7901 Westpark Drive  
McLean, VA  22101 |
| MILSPEC      | Military Specifications  
Naval Publications and Forms Center  
5801 Tabor Avenue  
Philadelphia, PA  19120 |
| MSS          | Manufacturers Standardization Society of the Valve and Fittings Industry, Inc.  
127 Park Street, N.E.  
Vienna, VA  22180 |
<table>
<thead>
<tr>
<th>Abbreviation</th>
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| NAAMM        | National Association of Architectural Metal Manufacturers  
               100 South Marion Street  
               Oak Park, IL  60302 |
| NACE         | National Association of Corrosion Engineers  
               P.O. Box 986  
               Katy, TX  77450 |
| NEC          | National Electric Code  
               National Fire Protection Association  
               470 Atlantic Avenue  
               Boston, MA  02210 |
| NEMA         | National Electrical Manufacturer's Association  
               155 East 44th Street  
               New York, NY  10017 |
| NESC         | National Electric Safety Code  
               American National Standards Institute  
               1430 Broadway  
               New York, NY  10018 |
| NFPA         | National Forest Products Association  
               (Formerly called: National Lumber Manufacturer's Association)  
               1619 Massachusetts Avenue, N.W.  
               Washington, DC  20036 |
| OSHA         | Occupational Safety and Health Act  
               U.S. Department of Labor  
               San Francisco Regional Office  
               450 Golden Gate Avenue, Box 36017  
               San Francisco, CA  94102 |
| PPIC         | The Plumbing & Piping Industry Council, Inc.  
               Suite 402  
               510 Shatto Place  
               Los Angeles, CA  90020 |
| SAE          | Society of Automotive Engineers  
               2 Pennsylvania Street  
               New York, NY  10001 |
SAMA
Scientific Apparatus Makers Association
One Thomas Circle
Washington, DC 20005

SBCC
Southern Building Code Congress
1116 Brown-Marx Building
Birmingham, AL 35203

SMACNA
Sheet Metal and Air Conditioning Contractors National Association, Inc.
8224 Old Courthouse Road
Tysons Corner Vienna, VA 22180

SSPWC
Standard Specifications for Public Works Construction
Building News, Inc.
3055 Overland Avenue
Los Angeles, CA 90034

TEMA
Tubular Exchanger Manufacturer's Association
331 Madison Avenue
New York, NY 10017

UBC
Uniform Building Code
Published by ICBO

UL
Underwriters Laboratories Inc.
207 East Ohio Street
Chicago, IL 60611

UMC
Uniform Mechanical Code
Published by ICBO

UPC
Uniform Plumbing Code
Published by IAPMO

USBR
Bureau of Reclamation
U.S. Department of Interior
Engineering and Research Center
Denver Federal Center, Building 67
Denver, CO 80225

WWPA
Western Wood Products Association
(Formerly called: West Coast Lumberman's Association - WCLA)
Yeon Building
PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION
SECTION 01300

SUBMITTALS

PART 1 - GENERAL

1.01 SUBMITTALS

A. Shop drawings shall be required for:

Any as called for in the plans, specifications or by the Engineer.

B. Other required submittals shall include:

1. Manufacturer's Data.

2. Certificates of Warranty.

3. Any others as called for in the plans, specifications, or by the Engineer.

Submittals are required, as a minimum, for rock bolts, compost filter sock, and shotcrete work. See respective sections in these documents for submittal requirements.

1.02 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

Submittals
01300-1
WILL INTEGRATE THIS SUBMITTAL INTO THEIR OWN WORK.

DATE RECEIVED
SPECIFICATION SECTION
SPECIFICATION PARAGRAPH
DRAWING NUMBER
SUBCONTRACTOR NAME
SUPPLIER NAME
MANUFACTURER NAME

CERTIFIED BY:

C. This stamp, "filled in", should appear on the title sheet of each shop drawing, on a cover sheet of submittals in an 8-1/2" x 11" format, or on one face of a cardstock tag (min. 3" x 6") tied to each sample. The tag on the samples should state what the sample is so that, if the tag is accidentally separated from the sample, it can be matched up again. The back of this tag will be used by the Engineer for his receipt, review, and log stamp and for any comments that relate to the sample.

D. All submittals for material, equipment, and shop drawings listed in the contract documents shall be required and shall be reviewed by the Engineer, prior to any ordering of materials and equipment.

E. Unless otherwise noted, the Contractor shall submit to the Engineer for his review eight copies of all shop drawings and/or catalog cuts for fabricated items and manufactured items 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.

Submittals
01300-2
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

1.01 GENERAL REQUIREMENTS

This section covers the requirements for mobilization and demobilization.

1.02 MOBILIZATION

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

1.03 DEMOBILIZATION

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

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 GUIDELINES

A. Contractor shall coordinate access to the site and mobilization with the State.

B. 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.

C. All equipment, machinery, buildings, utilities and incidentals mobilized and demobilized under this section shall remain the property of the Contractor.
PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

Mobilization and Demobilization will be paid on a lump sum basis. Measurement for payment will not apply.

4.02 PAYMENT

Mobilization and Demobilization will be paid on a lump sum basis and shall not exceed 10% of the total bid price. Payment will be full compensation for the work prescribed in this section and the contract documents.

END OF SECTION
SECTION 02100

SITE PREPARATION

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

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

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 GENERAL

A. Maintenance of Traffic: The Contractor shall conduct operations with minimum interference to passageways, etc.

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

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. 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: Bench marks, etc., shall be carefully maintained, but if disturbed or destroyed, shall be replaced as directed, at the Contractor's expense.

E. Disposal: All materials resultant from operations under this Section including rocks, debris, and surplus earth material shall be stored at a safe location onsite approved by the Engineer.
3.02 EXISTING UTILITY LINES

The existence of active underground utility lines within the construction area is not definitely known. Should any unknown line be encountered during excavation, the Contractor shall immediately notify the Engineer of such discovery. The Engineer shall then investigate and issue instructions for the preservation or disposition of the unknown line. Authorization for extra work shall be issued by the Engineer only as he/she deems necessary.

3.03 CLEAN UP OF PREMISES

Clean up and remove all debris accumulated from Contractor operations from time-to-time as directed. Upon completion of the construction work and before final acceptance of the contract work, remove all surplus materials, equipment, etc., and leave entire jobsite clean and neat to the satisfaction of the Engineer.

PART 4 – MEASUREMENT AND PAYMENT

Site Preparation will not be paid separately. The cost will be considered incidental to various contract items.

END OF SECTION
SECTION 02268

ROCK BOLTS

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

This work shall consist of installation of rock bolts in accordance with the design documents at the locations shown on the plans or as directed by the Engineer. The Contractor shall install rock bolts as specified by the design plans, and supply all materials, equipment, and labor required for the installation of the rock bolts specified herein.

1.02 SUBMITTALS

The Contractor shall submit in writing, not less than two weeks prior to the beginning of the drilling, to the Engineer for approval the following items:

A. Qualifications of the Company. The company shall have a minimum of five (5) years of experience in the installation of similar types of bolts. Provide a project reference list verifying the successful completion of projects of similar nature and magnitude.

B. Qualifications of the Contractor’s personnel. The foreman and the drill operator shall have a minimum of two years of demonstrated experience in the installation of similar bolts. Provide resumes for the foreman and each drill operator summarizing each individual’s experience.

C. The Contractor shall submit a detailed plan for the bolting. The plan shall detail:

1. The proposed construction sequence.

2. The proposed drilling methods and equipment.

3. The proposed grout mix design specifications, including manufacturer’s data sheets and catalog cuts, plus the procedure and equipment used for placing the grout or epoxy adhesive.

4. The proposed rock bolt coupler, bearing plate, anchor unit, flat washer, and beveled washer specifications, including manufacturers’ data sheets and catalog cuts.
Anchorage devices shall be capable of developing 95 percent of the minimum guaranteed ultimate tensile strength of the post-tensioning steel. The anchorage devices shall conform to the static strength requirements of Section 3.1(1) and Section 3.1.8(1) of the Post-tensioning Institute Guide Specifications for Post-Tensioning Materials.

5. A detailed schedule of work for performing rock bolt installation, including final cleanup and washing of grouting equipment.

D. Work shall not begin until the plan has been approved in writing by the Engineer.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Rock Bolts

All rock bolts including anchorages, bearing plates, couplers, centralizers, corrosion protection, and other appurtenances shall be products of a manufacturer regularly engaged in the manufacturing of rock bolts. Rock bolts shall be 1” diameter, Type 316 stainless steel threaded bars and capable of being tensioned.

B. Grout

Grout for the bolts shall consist of cement grout capable of permanently developing the bond and internal strength necessary for the tensioning required for the project. Cement grout shall be non-shrink, non-metallic, high strength pre-engineered packaged grout with a minimum compressive strength of 5,000 psi in three (3) days when mixed to flowable consistency. Any cement grout that is not pre-engineered and packaged shall be rejected. Submit all grout material mix design information and compression test results, performed for the purpose of this project, to the Engineer for approval. Cement grout shall be capable of being hydraulically pumped to the bottom of the drill hole allowing it to rise upwards filling all cavities of the drill hole.

Water for mixing grout shall be potable, clean and free of injurious quantities of substances known to be harmful to Portland cement or bar steel.

Equipment for mixing grout shall be high speed colloidal mixer with shearing action. The grouting equipment shall be capable of continuous mixing and shall produce a homogeneous grout mixture free of lumps. Batch mixing shall be per manufacturer’s recommendations.

C. Centralizers
Centralizers shall be placed in the bonded length as detailed in the plans, with no less than three (3) per bar. Centralizers shall permit the free flow of grout to pass through in the bolt hole. Centralizers shall be made of PVC schedule 40 and shall be of the size so to keep the bar at the center of the drilled hole. Any anchor bar that is not in the center of the hole shall be rejected at no additional cost to the State.

D. Miscellaneous Material

All miscellaneous materials such as nuts, washers, plates, couplers, etc. shall be Type 316 stainless steel.

PART 3 - EXECUTION

3.01 INSTALLATION

The rock bolts shall be handled and stored in such a manner as to avoid damage. Damage to the bolts as a result of abrasions, rust, cuts, nicks, welds, and weld splatter will be cause for rejection. The bolts shall be protected from dirt and harmful substances.

Prior to installation, all mill scale and grease shall be removed from the bar.

The Contractor shall drill holes to receive the rock bolts to the diameter specified by the project plans and drawings. Bolt orientation shall be coordinated in the field with the Engineer. Rock bolts shall be installed to the minimum embedment lengths as specified in the drawings. Should the Contractor choose to increase the embedment length, it shall be justified and approved by the Engineer prior to increasing the depth. The Contractor shall inform the Engineer no less than three (3) working days prior to grouting. The Contractor shall clean flush the drill holes of all drill cuttings, sludge, and debris with compressed air and install the anchor in the presence of the Engineer just prior to grouting.

Holes drilled for bolting, in which bolt installation is considered by the Engineer to be impractical, shall be grout filled and re-drilled at the Contractor’s expense. All unused holes shall be grout filled and capped with sculpted grout at the Contractor’s expense.

The Contractor shall exercise great care when drilling rock bolts and carving the dells to conceal rock bolt head assemblage.

Bolts must be installed at the center of the drilled hole. Install centralizers on each bolt as shown on the plans. Centralizers shall be securely fastened to prevent displacement. Any installed bolt not centered in or touching the side of the hole shall be grounds for rejection of bolt at the Contractor’s expense. All rejected bolts shall be replaced at no additional cost to the State.
The Contractor shall notify the Engineer in writing at least 3 working days, excluding weekends and holidays, prior to any scheduled grouting operation, at which time the Contractor shall provide the Engineer with a schedule of grouting. Grouting shall be performed according to the schedule and must be observed by the Engineer. Grouting performed not in the presence of the Engineer shall be grounds for rejection of the bolt at the Contractor’s expense. All rejected bolts shall be replaced at no additional cost to the State.

It is anticipated that the Contractor may encounter cracks and fractures within the subsurface during drilling and grouting operation. The Contractor shall be prepared to manage complete grouted bolt installation under the above conditions without any additional cost to the State. Use of grout socks shall be at the discretion of the Contractor with prior written approval from the Engineer. Contractor shall make every effort to provide reasonable justification to the Engineer for using grout socks. Grout sock diameter shall be a minimum of 40% larger but not to exceed 100% of the size of the drilled holes. Contractor shall submit grout sock information for approval by the Engineer prior to installation.

Grout shall be pumped into the bore hole from the bottom to the top. Mix the grout according to the grout manufacturer’s instructions for flowable consistency. Pump the grout into the borehole through a pre-inserted grout tube that extends to the bottom of the hole. The grout tube shall be temporarily fastened to the end of the bolt prior to inserting the bar into the hole. The end of the grout tube shall remain in the grout until the hole is completely filled to the top (or first stage). No top grouting will be allowed. All grout tubes must be removed immediately after grouting is completed.

Grouting shall be a two stage operation. During the first stage, grout shall be pumped into the drill hole to the embedment length of the bolt as specified by the plans and coordinated with the Engineer. Overfilling of grout beyond the specified embedment length shall be grounds for rejection of the installed bolt at the Contractor’s expense. The Contractor shall demonstrate to the Engineer’s satisfaction that the first stage of grouting is terminated at the proper depth. The bolt shall be maintained in position until the grout has reached final set or strength.

Avoid spilling grout, wet or dry, onto the work area. All spilled grout shall be completely removed from the rock surface and disposed of, and the area shall be restored to its natural conditions by the Contractor at no additional cost to the State.

Rock bolts shall be tensioned as specified in the drawings, after the first stage of grout is completely cured. Once the bolt is tensioned to the required torque, the remaining portion of the bore hole (stage two) shall be completely filled with grout, flush to the rock surface.
3.02 TESTING

Testing of rock bolts will not be required. All grouting must be performed in the presence of the Engineer. Allow at least 3 working days advanced notice excluding weekends and holidays prior to grouting. No grouting shall take place without the Engineer being present. Any bolt grouted without the presence of the Engineer shall be cause for rejection at no cost to the State. Prior to grouting each bolt, upon the request of the Engineer, the Contractor shall provide proof of drilled hole depth.

3.03 FINAL CLEANUP

All work area, including vegetation, shall be clean and free of grout and cement residue. Clean all spilled grout from the exposed rock surfaces. All rocks, debris, and surplus earth resulting from work of this section shall be relocated on site at a location approved by the Engineer.

All equipment wash water shall be contained and disposed of offsite. No wash water shall be dumped on site. No equipment shall be washed on the park grounds without proper containment apparatus that has been pre-approved by the Engineer.

PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

Rock bolts including all mobilization, materials, labor, equipment, clearing, and grading shall be measured at the contract price per linear foot in accordance with the contract documents.

4.02 PAYMENT

Payment for the accepted rock bolts shall be made at the contract unit price per linear foot bid item in the proposal. Such payment shall represent full compensation for furnishing all material, labor, tools, equipment, temporary cable lashing, and incidentals required to complete the work.

END OF SECTION

Rock Bolts
02268-5
SECTION 02621

COMPOST FILTER SOCK

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

This section describes the use of compost filter socks as temporary during-construction perimeter control Best Management Practice (BMP) devices. The socks shall be installed as indicated on the project drawings, or as designated by the Engineer.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Compost Filtration Media. The compost used in filter socks meet all local, state, and federal quality requirements. Biosolids compost must meet the Standards for Class A biosolids outline in 40 Code of Federal Regulations (CFR) Part 503. Compost used for filtration media should follow the guidelines contained in the table below:

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Units of Measure</th>
<th>Vegetated Filter Sock</th>
<th>Unvegetated Filter Sock</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>pH units</td>
<td>5.0 – 8.5</td>
<td>6 – 8</td>
</tr>
<tr>
<td>Soluble salt concentration²</td>
<td>dS/m (mmhos/cm)</td>
<td>Maximum 5</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Moisture content</td>
<td>%, wet weight basis</td>
<td>30 – 60</td>
<td>30 – 60</td>
</tr>
<tr>
<td>Organic matter content</td>
<td>%, dry weight basis</td>
<td>25 – 65</td>
<td>25 – 65</td>
</tr>
<tr>
<td>Particle size</td>
<td>% passing a selected mesh size, dry weight basis</td>
<td>3 in.=100% 1 in.=90-100% 0.75 in.=70-100% 0.25 in.=30-75% Max length=6 in.</td>
<td>2 in.=100% 0.375 in=10-30% Avoid compost with less than 30% fine particle to achieve optimum reduction</td>
</tr>
<tr>
<td>Stability(^3) (Carbon Dioxide Rate)</td>
<td>mg CO₂-C per gram of organic matter per day</td>
<td>&lt;8</td>
<td>(same as vegetated)</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>---------------------------------------------</td>
<td>-----</td>
<td>-------------------</td>
</tr>
<tr>
<td>Physical contaminants (manmade inerts)</td>
<td>%, dry weight basis</td>
<td>&lt;1</td>
<td>&lt;1</td>
</tr>
</tbody>
</table>

**Sources:**\(^a\)Alexander, 2003; \(^b\)Personal communication, B. Faucette, R. Tyler, N. Goldstein, R. Alexander, 2005

**Notes:**  
1. Recommended test methodologies are provided in [*Test Methods for the Evaluation of Composting and Compost*].  
2. Each plant species requires a specific pH range and has a salinity tolerance rating.  
3. Stability/maturity rating is an area of compost science that is still evolving, and other test methods should be considered. Compost quality decisions should be based on more than one stability/maturity test.  
4. Landscape architects and project engineers may modify the above compost specification ranges based on specific field conditions and plant requirements.

B. **Compost Filter Sock.** Compost filter sock shall utilize an outer layer of bi-axial grid, a middle layer of filtration mesh, and an inner layer of containment netting. All layers shall collectively enclose the compost filtration media. Compost filter sock shall be installed as 12" nominal diameters as indicated on the project drawings, or as specified by the Engineer. Compost filter socks shall be Biosock™ as manufactured by EnviroTech BioSolutions and indicated on the project drawings, or approved equal.

C. **Wood Anchor Stakes.** Wood anchor stakes shall have a nominal classification of ¾ by ¾ inch and minimum length of 16 inches. Larger sized wood anchor stakes may be installed at the discretion of the installer, or as specified by the Engineer. Do not use rebar or other metal rods.

D. **Seeds.** If seeds are used to create a vegetated compost filter sock, seeds shall meet the requirements determined by the Engineer.

E. **Live Cuttings.** If live cuttings are used to create a vegetated compost filter sock, live cutting shall meet the requirements determined by the Engineer.
PART 3 - EXECUTION

3.01 INSTALLATION REQUIREMENTS

Installation personnel are required to satisfactorily complete training by the compost filter sock manufacturer prior to the installation of the compost filter socks on the project site. Installation personnel shall follow all manufacturer instructions and guidelines. All installation personnel shall provide evidence of required training upon request of the Engineer.

A. Placement

Compost filter socks shall be installed onsite using a commercial pneumatic bark blower. Alternatively, compost filter socks can be pre-fabricated offsite in predetermined lengths and then installed onsite. Compost filter socks shall be placed in the areas shown on the project drawings or as designated by the Engineer.

B. Overlap

Where multiple sections of compost filter socks are required to form a continuous run, the sections shall be installed as shown on the plans and shall have a minimum overlap of 6 inches.

C. Anchor Method

The compost filter socks shall be anchored using wooden anchor stakes which meet the minimum requirements set forth in this specification. Wooden anchor stakes shall be installed to a minimum depth required to attain effective anchoring. Finished height of wooden anchor stake installation shall not exceed 1 inch above the finished height of the compost filter sock installation. Wooden anchor stakes shall be installed per the contract plan details and according to the guidelines below:

<table>
<thead>
<tr>
<th>Slope Gradient</th>
<th>Anchor Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;4:1</td>
<td>Not Required</td>
</tr>
<tr>
<td>4:1 to 3:1</td>
<td>10’ On Center</td>
</tr>
<tr>
<td>&gt;3:1 to 2:1</td>
<td>5’ to 10’ On Center</td>
</tr>
<tr>
<td>&gt;2:1</td>
<td>5’ On Center (end to end)</td>
</tr>
</tbody>
</table>

D. Inspection

Inspect compost filter socks when rain is forecast, following rainfall events, and daily during prolonged rainfall. Repair, modify, or supplement compost filter sock installations as needed or as required by the Engineer at no addition cost to the State.

Compost Filter Sock
02621-3
E. Maintenance

Maintain compost filter socks to provide adequate sediment holding capacity. Sediment should be removed when the sediment accumulation reaches one third (1/3) of the barrier height. Removed sediment should be incorporated in the project at locations designated by the Engineer or disposed of properly at no additional cost to the State.

PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

Temporary compost filter socks will be paid on a lump sum basis. Measurement for payment will not apply.

4.02 PAYMENT

The cost for compost filter socks installed as temporary BMPs will be paid at the contract lump sum basis. The cost is for the work prescribed in this section and the contract documents.

END OF SECTION
SECTION 03361

SHOTCRETE

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

This section describes furnishing and placing shotcrete (pneumatically applied mortar). Shotcrete consists of pneumatically applied mortar using either the dry-mix or wet-mix process. The Contractor shall place as specified by the design plans or as directed by the Engineer, and supply all materials, equipment, and labor required for the installation of the shotcrete as specified herein.

1.02 SUBMITTALS

The Contractor shall submit in writing, not less than two weeks prior to the beginning of the shotcreting, to the Engineer for approval of the following items:

A. Submit proposed mix design.

B. Submit proposed equipment, manufacturer’s specifications, and operating instructions.

C. Submit a resume for each proposed nozzle operator. Nozzle operators shall have at least two years of experience in this type of work. Nozzle operator may be apprentice with at least six months of experience if supervised by foreman in charge with at least two years of nozzle operator experience.

D. Submit a work plan including equipment washing and final cleanup.

E. Submit manufacturer’s literature, product data, and installation instructions for geocomposite drain.

F. Submit copies of manufacturer’s literature, product data, and installation instructions for synthetic fiber reinforcement. Submit copies of a certificate prepared by the concrete supplier stating that the approved synthetic fiber reinforcement was added to each batch of concrete at the manufacturer’s specified value and delivered to the project site.
PART 2 – QUALITY CONTROL/QUALITY ASSURANCE

2.01 PRECONSTRUCTION TESTING

Prepare one (1) preconstruction test panel in accordance with ASTM C 1140 for each proposed mix proportion, each anticipated shooting orientation, and each proposed nozzle operator. Make test panels at least 30 inches square with the same thickness as in the structure, but not more than 6 inches. Provide reinforcement of the same size and spacing required for the work. Obtain six test specimens from each panel.

The Engineer will visually grade reinforced specimens for conformance to specified core grade as specified in Specification Subpart 36.3.C - Shotcrete Core Grade.

Allow only nozzle operators with test panel mean core grade less than or equal to 2.5 to place job shotcrete. Require nozzle operator to shoot second test panel if first test panel is rejected. If nozzle operator’s second mean core grade is greater than 2.5, do not permit that nozzle operator to shoot on the project.

2.02 CONSTRUCTION TESTING

Produce material test panel for each mix and each workday or every 50 cubic yards placed, whichever is less. Keep test panels moist and at 70 degrees F ±10 degrees F until moved to test laboratory. Obtain test specimens either from job site material test panel or from in-place shotcrete. Test specimens from test panels in accordance with ASTM C 1140. Test specimens from in-place shotcrete in accordance with ASTM C 42. The Officer-in-Charge will grade cores that include reinforcement as specified in Subsection 2.03 - Shotcrete Core Grade.

The mean compressive strength of a set of three cores shall equal or exceed 0.85f'_c with no individual core less than 0.75 f'_c. The mean of a set of three cubes shall equal or exceed f'_c with no individual cube less than 0.88f'_c.

2.03 SHOTCRETE CORE GRADE

(1) Grade 1:

Shotcrete specimens are solid; there are no laminations, sandy areas or voids. Small air voids with maximum diameter of 1/8 inch and maximum length of 1/4 inch are normal and acceptable. Sand pockets or voids behind continuous reinforcing steel are unacceptable. The surface against the form or bond plane shall be sound, without sandy texture or voids.
(2) Grade 2:

Shotcrete specimens shall have no more than two laminations or sandy areas with dimensions not to exceed 1/8 inch thick by 1 inch long. The height, width, and depth of voids shall not exceed 3/8 inch. Porous areas behind reinforcing steel shall not exceed 1/2 inch in any direction except along length of reinforcing steel. The surface against the form or bond plane shall be sound, without sandy texture or voids.

(3) Grade 3:

Shotcrete specimens shall have no more than two laminations or sandy areas with dimensions exceeding 3/16 inch thick by 1-1/4 inches long, or one major void, sand pocket, or lamination containing loosely bonded sand not to exceed 5/8 inch thick and 1-1/4 inches in width. The surface against the form or bond plane may be sandy, with voids containing overspray to a depth of 1/16 inch.

(4) Grade 4:

Core shall meet, in general, requirements of Grade 3 cores, but may have two major flaws such as described for Grade 3, or may have one flaw with maximum dimension of 1 inch perpendicular to the face of the core, with maximum width of 1-1/2 inches. The end of the core that was shot against the form may be sandy, with voids containing overspray to a depth of 1/8 inch.

(5) Grade 5:

Core that does not meet criteria of core grades 1 through 4, by being of poorer quality, shall be classified as Grade 5.

(6) Determine grade by computing the mean of a minimum of three test specimens. Accept mean grade of 2.5 or less. Reject individual shotcrete cores with grade greater than 3.

(7) The above core grades are based on cores with surface area of 50 square inches. For cores with greater or lesser area than 50 square inches, adjust allowable flaws relative to 50 square inches.

2.04 EVALUATION OF IN-PLACE SHOTCRETE:

Remove and replace shotcrete that is delaminated, exhibits laminations, voids, or sand pockets exceeding limits for specified grade of shotcrete. Remove and replace shotcrete that does not comply with specified material properties. Repair core holes in accordance with ACI 301 Chapter 9. Do not fill holes by shooting.
2.05 ACCEPTANCE:

The Engineer will accept shotcrete work that meets requirements of the contract documents. The Engineer will accept shotcrete work that has previously failed to meet one or more requirements, but which has been repaired to meet requirements of the contract documents.

Shotcrete work that fails to meet one or more requirements and that cannot be brought into compliance will be evaluated for acceptance by the Engineer. Modifications and/or removal may be required to ensure remaining work complies with requirements of the contract documents. Modification, removal, and/or replacement of failed shotcrete work, as determined by the Engineer, shall be completed at the Contractor's expense at no additional cost to the State.

2.06 MATERIALS:

A. Shotcrete.

Shotcrete mix shall have a 28 day compressive strength of at least 3,000 psi. Shotcrete mix shall contain synthetic fiber reinforcement per ASTM C-1116 and contain a set corrosion inhibitor per ASTM C-1582.

B. Synthetic Fiber Reinforcement.

Fibrillated polypropylene fibers specifically manufactured for use as secondary concrete reinforcement, containing no reprocessed olefin materials. Synthetic fiber shall have the following physical characteristics:

1. Specific Gravity: 0.91
2. Tensile strength: 60 ksi minimum
3. Fiber lengths: 1/2", 3/4", 1-1/2", 2" per manufacturer

Add synthetic fiber reinforcement to concrete materials at the time concrete is batched in amounts in accord with approved submittals for each type of concrete required.

Mix batched concrete in strict accord with synthetic fiber reinforcement manufacturer's instruction and recommendations for uniform and complete dispersion.

C. Reinforcing Steel.

Reinforcing steel shall be 6 x 6 – W2.9 x W2.9 (or heavier) hot-dipped galvanized welded wire fabric and as specified by the design documents. Steel reinforcement shall be protected at all times from damage. All reinforcing steel shall be new, free from dirt, detrimental scale, paint, oil, or other foreign substances. Cleaning by sandblasting will not be allowed.

Shotcrete
03361-4
Reinforcement shall be accurately placed, supported, aligned, and secured against movement.

Splicing of wire mesh shall be made by lapping not less than two mesh squares and securely tied.

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

D. Rebar Dowels.

Rebar dowels shall be Grade 60 or higher as specified by the design documents. Rebar dowels shall be hot dip galvanized coated per ASTM A-153 to 3 to 4 mils thickness unless specified otherwise. All dowels shall be inspected and approved, for not having coating damage, by the Engineer prior to installation. Any dowels installed and not approved shall be rejected and replaced with new dowels without any additional cost to the State.

E. Geocomposite Drain.

Drain strip shall be a two part prefabricated soil drain consisting of a formed outer polystyrene core on all sides with a non-woven, needle punched polypropylene filter fabric.

Fabric Properties:
- Material: Polypropylene
- Grab tensile: 110 lbs per ASTM D4632
- Puncture: 65 lbs per ASTM D4833
- Mullen burst: 215 psi per ASTM D3786
- Elongation: 60% per ASTM D4632
- AOS Std.: 100 sieve per ASTM D4751
- Flow rate: 150 gpm/sq ft per ASTM D4491

Product Properties:
- Flow Capacity per unit width: 21 gpm/ln ft per ASTM D4716
- Thickness: 1 inch

Geocomposite drain strips shall be 6 inches wide and placed 2 feet center-to-center. If the Contractor needs to cut the drainage strips along the length to produce the desired width, all work must be in accordance with the manufacturer’s approved written directions.

Geocomposite drain shall be suitably wrapped and protected from exposure to direct sunlight. Geocomposite drains shall be placed in strips and connected in accordance
with manufacturer’s instructions to maintain continuity of flow channel through the drain. Splices shall overlap a minimum of 6 inches or as recommended by the manufacturer. Splice ends by peeling back the fabric and interlocking the dimpled core. Reattach the fabric and cover with tape.

Geocomposite drains shall be installed to ensure that the drains are hydraulically connected from the top to bottom of the shotcrete.

Geocomposite drains shall be attached to excavation surface by placing geotextile fabric directly against the slope surface.

Should the geotextile cover fabric become damaged during installation by tearing or puncturing, the damaged section shall be completely cut out and replaced.

Geocomposite drains shall be protected from damage and deleterious contamination where drains must remain exposed until they are covered with embankment or backfill material.

PART 3 - EXECUTION

Use shotcrete only at locations indicated in the contract documents or ordered by the Engineer.

3.01 PROPORTIONING, BATCHING, AND MIXING:

Batch the quantity of water as specified in mix design accepted by the Engineer for the process used. Proportion mortar ingredients, except water, either by volume or by weight. Batches requiring fractional sacks will not be allowed unless cement is weighed. Shotcrete mixtures shall be used within 90 minutes from initial batching. Each shotcrete batch shall be placed in accordance with ASTM C94.

A. Dry-Mix Process.

Thoroughly mix cement and fine aggregate before charging into delivery equipment. Maintain moisture content of fine aggregate between 3 to 6 percent, such that fine aggregate-cement mixture flows at a uniform rate (without slugs) through delivery hose.

B. Wet-Mix Process.

Mix material at central mixing plant or at project site. If mixing is done at project site, use mixer capable of thoroughly mixing specified materials in sufficient quantity to maintain continuous shotcrete placement.

3.02 SHOTCRETE PROCESS - GENERAL:

Shotcrete
03361-6
Use either dry-mix or wet-mix shotcrete process as follows:

A. Dry-Mix Process.
   1. Mix cement and fine aggregates thoroughly.
   2. Feed cement-fine aggregate mixture into special mechanical feeder (gun) or other delivery equipment accepted by the Engineer.
   3. Meter mixture into delivery hose by feed wheel or distributor.
   4. Convey mixture by compressed air through delivery hose to special nozzle. Fit nozzle with perforated manifold capable of introducing water under pressure and thoroughly mixing water with other ingredients.
   5. Jet mortar from nozzle at high velocity onto shotcrete-receiving surface.

B. Wet-Mix Process.
   1. Mix ingredients thoroughly, as specified in Subsection 3.01-(A) – Dry-Mix Process, including water.
   2. Introduce mortar into delivery equipment chamber.
   3. Meter mortar into delivery hose and convey mortar to nozzle by compressed air or by other means.
   4. Inject additional air at nozzle to increase velocity and improve gunning pattern.
   5. Jet mortar from nozzle at high velocity onto the shotcrete-receiving surface.

3.03 EQUIPMENT:
Operate equipment in accordance with manufacturer’s recommendations.

A. Dry-Mix Process.

Provide mixing equipment that will mix ingredients thoroughly and continuously.

Discharge fine aggregate-cement mixture into delivery hose in a manner that ensures delivery of a continuous, smooth stream of uniformly mixed material at proper velocity to discharge nozzle.

Equip discharge nozzle with manually operated water injection system (water ring) for directing even distribution of water through fine aggregate-cement mixture. Provide
water valve capable of adjusting quantity of water delivered to nozzle. Locate water valve to enable nozzle operator to instantaneously adjust water volume as necessary during shotcrete application.

Deliver conical discharge stream of uniform appearance. If stream distortion or nonuniform appearance is noted, suspend shotcrete application until uniform shotcrete discharge is restored.

Use adequate supply of clean air to maintain required nozzle velocity and simultaneous blowpipe operation for removing rebound. Supply water at uniform pressure of at least 15 pounds per square inch greater than operating air pressure at the nozzle. Use water booster pump to provide required pressure if line water pressure is inadequate.

B. Wet-Mix Process.

Provide wet-mix delivery equipment of design and size that has produced satisfactory results in similar work. Use wet-mix equipment that has adequate capacity to deliver pre-mixed materials accurately, uniformly, and continuously through delivery hose. Follow manufacturer’s recommendations regarding:

1. Type and size of nozzle.
2. Cleaning equipment.
3. Inspecting equipment.
4. Maintaining equipment.

Provide air compressor capable of performing as specified in Subsection 3.03-(A) - Dry Mix Process and wet-mix equipment manufacturer’s recommendations.

3.04 SURFACE PREPARATION:

Perform general clearing of the slope including the removal of vegetation within the shotcrete limits prior to applying shotcrete

A. Subgrade. Dampen surface immediately before shooting with sufficient moisture to provide firm foundation and to prevent absorption of water from the mortar, but without free surface water.
B. Concrete, Masonry, and Shotcrete. When bonding is required, remove all deteriorated, loose, unsound material, or contaminants that may inhibit bonding. Chip areas to be covered to remove offsets causing abrupt changes in thickness. Taper edges to eliminate square shoulders at perimeter of a cavity. Maintain surface saturated, surface-dry immediately before applying shotcrete.

C. Steel. Remove loose mill scale, rust, oil, paint, or other contaminants. Prepare surface in accordance with SSPC-SP6.6. If high-pressure water blasting is used, remove all freestanding water before applying shotcrete.

D. Rock. Remove loose material, mud, or other foreign material that will prevent bonding. Clean and pre-wet surface immediately before applying shotcrete.

E. Forms. If forms are to be removed after use, apply form-releasing coating material on forms. Use coating material that does not alter shotcrete properties or interfere with bond of subsequent shotcrete layers. Secure forms to minimize effects of vibration. Construct forms to allow escape of placement air and rebound.

3.05 CREW QUALIFICATIONS:

Use nozzle operators with at least two years of experience in this type of work. Nozzle operator may be apprentice with at least six months of experience if supervised by foreman in charge with at least two years of nozzle operator experience.

3.06 ALIGNMENT CONTROL:

Provide joints, side forms, headers, and shooting strips for backing or paneling. Place in a manner that minimizes trapping of rebound. Install ground wires as guides to establish thicknesses, surface planes, and finish lines. Maintain wires taut and true to line at all times during shotcreting application.

3.07 GUNNING:

Place shotcrete first in corners, recesses, and other areas where rebound or overspray cannot escape easily. Place shotcrete with nozzle held approximately perpendicular to receiving surface. In corners, direct nozzle at approximately 45-degree angle or bisect corner angle. Construct ditch lining in non-sagging layers. Build up each layer by making several passes of the nozzle over specified surface. Apply shotcrete from nozzle in steady, uninterrupted flow. Should flow become intermittent, direct flow away from work area until steady, uninterrupted flow is restored.

Suspend gunning if high winds prevent nozzle operator from properly applying shotcrete or if rain washes out or causes shotcrete to slough.
3.08 REBOUND:

Remove rebound or overspray from previously prepared surfaces prior to shotcrete placement. Reuse of rebound or overspray will not be allowed.

3.09 CURING AND PROTECTION:

A. All shotcrete 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 shotcrete shall be maintained with minimal moisture loss at a relatively constant temperature. Fresh shotcrete 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 shotcrete. Curing shall immediately follow the finishing operation.

B. Water Curing: If cured with water, shotcrete 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 shotcrete 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 shotcrete.

3.10 FINAL CLEANUP:

All work area, including surrounding vegetation, soil and rock surfaces, and existing rock impact fence components shall be clean and free of shotcrete or cement residue, wet or dry. All surplus earth resulting from construction shall be cleaned up and disposed. All debris resulting from work of this section shall be relocated behind the new chain link fencing as approved by the Engineer in the field at no additional cost to the State.

All equipment wash water shall be contained and disposed of offsite. No wash water shall be dumped on the site. No equipment shall be washed at the site without proper containment apparatus that is pre-approved by the Engineer.
PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

Shotcrete installation shall be measured per cubic yard of shotcrete completely installed. All other costs of material, labor, and equipment, and vegetative clearing shall be considered incidental work and shall not be measured for payment.

4.02 PAYMENT

Shotcrete will be paid on a unit price basis per cubic yard of shotcrete installed in accordance to the contract documents.

END OF SECTION
SECTION 03362
SCULPTED SHOTCRETE FINISH

PART 1 - GENERAL

1.1 GENERAL CONDITIONS

This section describes furnishing and constructing sculpted shotcrete finish. The Contractor shall construct the sculpted shotcrete finish as specified by the design plans or as directed by the Engineer, and supply all materials, equipment, and labor required for the sculpted shotcrete finishes as specified herein.

1.2 GENERAL REQUIREMENTS

Sculpted shotcrete finish shall be applied to shotcrete areas specified in the drawings.

The surface shall be finished to produce a rock-like aesthetic finish to simulate the color and texture of the nearby natural rock. Producing a rock-like aesthetic finish will require forming and carving relief into the shotcrete face to the limits shown on the plans. The relief shall be sculpted into shotcrete applied onto the structural shotcrete facing or onto a substrate suitable to sustain the sculpted shotcrete. The texture shall closely resemble that of the cuts within the local area adjacent to the project or approved mock-up.

1.3 PRE-QUALIFICATIONS OF SCULPTING SUBCONTRACTOR.

A. The sculpted rock company shall provide a project reference list verifying the successful construction completion of at least five (5) permanent sculpted shotcrete retaining wall projects during the past (2) years totaling at least 40,000 square feet of wall face shotcreted area. A brief description of each project with the Owner’s name and current phone number shall be included.

B. The sculpted rock company shall submit a list identifying the lead sculptor, additional sculptors and lead staining artisan to be used on the project each having experience installing sculpted shotcrete on at least (5) projects of similar magnitude and difficulty over the past (2) years. The list shall contain a summary of each individual’s experience.

C. Work shall be suspended by the State if the Contractor uses non-approved sculpting personnel.
D. Sculpted shotcrete shall closely resemble nearby natural rock outcroppings. Failure to achieve this close resemblance shall be grounds for rejection at the Contractor’s expense.

1.4 QUALITY ASSURANCE

A. Throughout the progress of installation of the Work of this Section, provide at least one person who shall be thoroughly familiar with the specified requirements, completely trained and experienced in the necessary skills, and who shall be continuously present at the site whenever work is in progress and shall direct work performed under this Section.

B. In actual installation of the Work of this Section, use adequate numbers of skilled workmen to ensure installation in strict accordance with the approved design.

C. In the case of conflict between referenced standards, the more stringent requirement shall govern.

1.5 SUBMITTALS

Shotcrete mix design, stain colors, paints and MSDS data sheets shall be submitted at least two weeks prior to the beginning of sculpted shotcrete construction.

1.6 TEST PANELS

For each area of sculpted shotcrete finish, the engineer will identify a nearby natural rock area to be used as a baseline for color, texture and finish for the sculpted shotcrete finish. Prepare one (1) preconstruction baseline test panel for each proposed finish, for each area. Make test panels at least 30 inches square with the same materials, construction, and the same thickness as design plans, but not more than 6 inches thick. Test panels shall represent a small section of the finished sculpted wall or floor finish. The test panel shall be used as a visual reference throughout the construction of the sculpted finish. Test Panels shall be received and approved by the engineer before proceeding with the construction.

PART 2 - PRODUCTS

2.1 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. Shotcrete Mix Design: The Contractor must receive notification from the Engineer
that the proposed mix design and method of placement are acceptable before shotcrete placement can begin. The recommended strength for shotcrete mix is 3000 psi.

C. Stain: The Contractor must receive notification from the Engineer that the proposed stain color is acceptable. The stains shall consist of a base and accent stain material. The base stain shall be an organic based non-toxic iron-oxide derivative that provides a spectrum of earth tones. The accent stain shall be hydrochloric acid with chromic, Cupric, Ferrous, Ferric, Manganese chloride stain with Sodium Dichromate.

PART 3 - EXECUTION

3.1 SCULPTING PROCESS

A. Sculpting and carving of the nozzle applied shotcrete shall be carved and shaped in so that all crevasses shall be created with a slope so that water cannot be trapped or puddled on the wall face.

B. Sculpting of shotcrete shall be carved in such a way in which finished work shall match an approximate look to that of the test panel.

3.2 SHOTCRETE CURING

Shotcrete curing shall be in accordance with Specification 03361-SHOTCRETE Subpart 3.09.

3.3 SHOTCRETE STAINING

A. All permanently exposed shotcrete surface shall be stained. Prior to staining, all permanently exposed shotcrete surfaces shall be cleaned and pressure washed with the water to remove latence and provide a clean surface. Sandblasting is not allowed.

B. Application of stain shall be by low pressure sprayer, brush or roller. Shotcrete shall be cured a minimum of 24 hrs prior to staining. If staining is done within 6 days of shotcrete application blanket curing shall continue after application of staining for the remaining duration of the 6 day cure period.

C. Shotcrete staining shall consist of applying a minimum of two separate applications of at least two multiple stain colors to all sculpted shotcrete (architectural surface treatment) such that the sculpted face demonstrates individual color variations and character to match that of the existing field variations and character to match that of the existing field conditions. Staining shall only be performed when the entire sculpting is complete and not performed during sculpting construction. The test panel shall reflect the color variations and patterns of natural rock formations.
D. Staining shall be performed on all portions of the finished surface once it is completed.

E. The first coat shall consist of lighter earth tone. The second application of stain shall consist of darker accent stain to create darker tones and for highlighting.

F. The accent stain shall be applied to replicate a close resemblance to the sculpted test panel. Caution shall be exercised to provide all necessary personal protection to the body during application. A copy of such printed material shall be furnished to the Engineer prior to application of the material. The stain material shall produce a spectrum of brown earth tone colors.

G. Shotcrete and staining of the test panel shall be completed at no additional cost to the State.

3.4 FINAL CLEANUP

All equipment wash water shall be contained and disposed of offsite. No wash water shall be dumped on the site. No equipment shall be washed on the trail surface without proper containment apparatus pre-approved by the Engineer.

PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

Sculpted shotcrete finish shall be measured per square foot of sculpted area. All other costs of material, labor, and equipment, and vegetative clearing shall be considered incidental work and shall not be measured for payment.

4.02 PAYMENT

Sculpted shotcrete will be paid on a unit price basis per square foot of sculpted area installed in accordance to the contract documents.

END OF SECTION

Sculpted Shotcrete Finish
03362-4
SECTION 03603

EPOXY ADHESIVE

PART I - GENERAL

1.1 GENERAL CONDITIONS:

This section covers the furnishing and installing of epoxy adhesive as required on the plans and in this specification. The epoxy adhesive shall be for structural bonding of concrete, masonry, and rock; grouting of reinforcing steel dowels. Epoxy adhesive shall have a gel consistency ideal for vertical applications.

1.2 SUBMITTALS:

Submit manufacturer's published literature and manufacturer's specifications for physical characteristics and performance data.

1.3 PRODUCT HANDLING:

Store unopened containers at 40 to 95 degrees F.

PART 2 - PRODUCTS

2.1 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. Epoxy adhesive shall be a multipurpose, 2 component, solvent free, moisture insensitive structural epoxy adhesive in accordance with ASTM C 881, Types I and II, Grade 3, Classes B and C for Epoxy Resin Adhesives with a minimum pot life of 30 minutes.

C. Physical Properties of Cured Epoxy Adhesive:

<table>
<thead>
<tr>
<th>ASTM TEST</th>
<th>RESULTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>D-695 Compressive Strength</td>
<td>11,236 psi</td>
</tr>
<tr>
<td>D-732 Shear Strength</td>
<td>3,550 psi</td>
</tr>
<tr>
<td>D-638 Tensile Strength</td>
<td>2,940 psi</td>
</tr>
<tr>
<td>D-790 Flexural Strength</td>
<td>5,582 psi</td>
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<tr>
<td>C-882 Bond Strength</td>
<td>2,460 psi</td>
</tr>
<tr>
<td>D-570 Absorption</td>
<td>0.63%</td>
</tr>
<tr>
<td>C-883 Shrinkage</td>
<td>complies</td>
</tr>
<tr>
<td>C-884 Thermal Compatibility</td>
<td>complies</td>
</tr>
</tbody>
</table>

Epoxy Adhesive
03603-1
PART 3 - EXECUTION

3.1 INSTALLATION AND WORKMANSHIP:

Work shall be performed by skilled workmen in conformance with approved commercial practices and the manufacturer's specifications.

A. Surface shall be clean and sound. It may be dry or damp, but free of standing water. Remove dust, grease, curing compounds, foreign particles and disintegrated materials.

B. Epoxy adhesive shall be mixed in accordance with the manufacture's specifications. Epoxy adhesives shall not be mixed within 50 feet from the stream bed. Any epoxy adhesive spills shall be properly contained and cleaned up with absorbent material and disposed of outside the project site. The Engineer shall be notified within 24 hours of any spills.

3.2 CLEAN UP

A. During the process of the work, the premises shall be kept reasonably free of all debris and waste materials resulting from the work under this section. All such debris and rubbish shall be removed from the site.

B. Clean residue from drilling immediately after holes are drilled.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT:

Epoxy adhesives shall not be measured for payment separately. Epoxy adhesives shall be considered incidental to Shotcrete work, Section 03361. All other costs of material, labor, and equipment shall also be considered incidental work and shall not be measured for payment.

4.01 PAYMENT:

Epoxy adhesives will not be paid separately. The cost will be considered incidental to Shotcrete work, Section 03361.

END OF SECTION

Epoxy Adhesive
03603-2