STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

HONOLULU, HAWAII

SPECIAL PROVISIONS PROPOSAL CONTRACT AND BOND

FOR

HAWAII BELT ROAD

NANUE STREAM BRIDGE REHABILITATION

VICINITY OF HILO

FEDERAL-AID PROJECT NO. BR-019-2(077)

DISTRICT OF HILO

ISLAND OF HAWAII

FFY 2024

NOTICE TO BIDDERS
Hawaii Revised Statutes (HRS),
Chapter 103D

The receiving of bids for **HAWAII BELT ROAD, NANUE STREAM BRIDGE REHABILITATION, DISTRICT OF HILO, ISLAND OF HAWAII, FEDERAL AID PROJECT NO. BR-019-2(077)**, will begin as of the HIePRO Release Date. Bidders shall register and submit complete bids through HIePRO only. Refer to the following HIePRO link for important information on Vendor Registration: https://hiepro.ehawaii.gov/welcome.html.

The solicitation specifications, proposal, and additional documents designated or incorporated by reference shall be available in HIePRO.

HIePRO OFFER DUE DATE AND TIME is December 12, 2024, at 2:00 p.m., Hawaii Standard Time (HST). **Bidders shall submit and upload the complete proposal to HIePRO prior to the offer due date and time. Proposals received after said due date and time shall not be considered. Any additional support documents explicitly designated as confidential and/or proprietary shall be uploaded as a separate file to HIePRO. Bidders shall not include confidential and/or proprietary documents as part of their proposal. The record of each bidder and their respective proposal shall be open to public inspection.**

FAILURE TO UPLOAD THE PROPOSAL TO HIePRO SHALL BE GROUNDS FOR REJECTION.

The scope of work includes replacing steel truss members, bearings, gusset plates, etc., that have corrosion and section loss; fixing spalls and delamination in the concrete deck, abutments, bridge railings and column pedestals; cleaning and painting the steel members following the repairs; addressing scour deficiencies for the bridge foundations; removal and disposal of bridge

sections and parts; cold planing and paving with asphalt and hybrid polymer concrete; management of contaminated materials; installation of pavement markings; installation of BMP measures for erosion control and hazardous materials; and traffic control. The estimated cost of construction is between $75,000,000 and $100,000,000.

To be eligible for award, bidders shall possess a valid State of Hawaii General Engineering "A" license **prior to the award of contract.**

A virtual pre-bid conference is scheduled for November 13, 2024, at 1:00 p.m., HST. Interested bidders shall contact Amy Sunahara, Project Manager, directly at amy.my.sunahara@hawaii.gov, no later than five working days prior to the scheduled pre-bid conference to receive the meeting invitation. All prospective bidders and/or their respective representatives are encouraged to attend, however, attendance is not mandatory. All information presented at the pre-bid conference shall be provided for clarification and information only. Any amendments to the solicitation shall be made by formal addendum and posted in HIePRO.

All Request for Information (RFI) questions and Substitution Requests shall be submitted in HIePRO **no later than November 20, 2024, at 2:00 p.m., HST.** RFI questions received after the stated deadline shall not be addressed. Substitution Requests received after the stated deadline shall not be considered. Verbal RFI(s) shall not receive a response. All responses to RFI questions shall be provided for clarification and information only and issued by formal addendum. Any amendments to the solicitation shall be made by formal addendum and posted in HIePRO.

If there is a conflict between the solicitation and information stated in the pre-bid conference, the meeting minutes, and/or the responses to RFI questions, the solicitation shall govern and control, unless as amended by formal addendum.

Campaign contributions by State and County Contractors. Contractors are hereby notified

of the applicability of HRS § 11-355 which states that campaign contributions are prohibited from specified State or county government contractors during the term of the contract if the contractors are paid with funds appropriated by a legislative body. For more information, contact the Campaign Spending Commission at (808) 586-0285.

Protests. Any protest of this solicitation shall be submitted in writing to the Director of Transportation, in accordance with HRS § 103D-701 and Hawaii Administrative Rules § 3-126.

The Equal Employment Opportunity Regulations of the Secretary of Labor implementing Executive Order 11246, as amended, shall be complied with on this project.

The U.S. Department of Transportation Regulation entitled "Nondiscrimination in Federally Assisted Programs of the U.S. Department of Transportation", Title 49, Code of Federal Regulations (CFR), Part 21, is applicable to this project. Bidders are hereby notified that the Department of Transportation shall affirmatively ensure that the contract entered into pursuant to this advertisement shall be awarded to the lowest responsible bidder without discrimination on the grounds of race, color, national origin, or sex (as directed by 23 CFR Part 200).

The U.S. Department of Transportation Regulations entitled "Participation by Disadvantaged Business Enterprise in Department of Transportation Financial Assistance Programs", Title 49, CFR, Part 26, is applicable to this project. Bidders are hereby notified that the Department of Transportation shall strictly enforce full compliance with all the requirements of the Disadvantaged Business Enterprise program with respect to this project.

Bidders shall read the Disadvantaged Business Enterprise Requirements, included in this solicitation, which establishes the program requirements pursuant to Title 49, CFR, Part 26, and includes the requirements of certification, method of award, and evidence of good faith. All Bidders shall email Amy Sunahara, Project Manager, at amy.my.sunahara@hawaii.gov, the

following: "Disadvantaged Business Enterprise Contract Goal Verification and Good Faith Efforts Documentation for Construction"; "Disadvantaged Business Enterprise Confirmation and Commitment Agreement – Trucking Company"; and "Disadvantaged Business Enterprise Confirmation and Commitment Agreement – Subcontractor, Manufacturer, or Supplier", **no later than December 17, 2024, at 4:30 p.m., HST**.

Failure to provide the respective documents shall be grounds for rejection of bid.

Driving While Impaired (DWI) Education. The Hawaii Department of Transportation (HDOT) encourages all organizations contracted with HDOT to have an employee education program preventing DWI. DWI is defined as operating a motor vehicle while impaired by alcohol or other legal or illegal substances. HDOT promotes this type of program to accomplish our mission to provide a safe environment for motorists, bicyclists, and pedestrians utilizing our State highways, and expects its contractors to do so as well.

For additional information, contact Amy Sunahara, Project Manager, by phone at (808) 692-7575, or by email at amy.my.sunahara@hawaii.gov.

The State reserves the right to reject any or all proposals and to waive any defects in said proposals in the best interest of the public.

ROBIN K. SHISHIDO
Deputy Director of Transportation for Highways

HIePRO RELEASE DATE: October 31, 2024

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INSTRUCTIONS FOR CONTRACTOR'S LICENSING

"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 where the general contractor has no license. Although the "A" and "B" contractor may still bid on and act as the "prime" contractor on an "A" or "B" project *(See, HRS § 444-7 for the definitions of an "A" 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. 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.

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246)

1. The Bidder's attention is called to the "Equal Opportunity" and the "Specific Equal Employment Opportunity Responsibilities" set forth in the "Required Federal Aid Construction Contract Provisions."

2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work on this project are as follows:

CATEGORY	TIMETABLE	GOAL
Female participation in each trade	Indefinite	6.9%
Minority participation in each	None	69.1% (Oahu)
Trade (female included)	None	70.4% (Hawaii, Maui, Kauai)

These goals are applicable to all the Contractor's aggregate on-site construction workforce whether or not part of that workforce is performing work on a Federal or Federally assisted construction contract or subcontract.

The Contractor's compliance with the Executive Order shall be based on its implementation of the Equal Opportunity Clause, and its efforts to meet the goals established for the contract resulting from this solicitation. The hours of female and minority employment and training must be substantially uniform throughout the length of the contract, and in trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract and Executive Order. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Area Director, Hawaii Area Office, Office of Federal Contract Compliance Programs, U.S. Department of Labor, 300 Ala Moana Blvd., P.O. Box 50149, Honolulu, Hawaii 96850, within 10 working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address, and telephone number of the subcontractor; employer identification number; estimated dollar amount of the subcontract; and estimated starting and completion dates of the subcontract. The Contractor shall indicate which are minority group subcontractors and the ethnic identity and sex of the owner(s) and policy-making official(s).

DISADVANTAGED BUSINESS ENTERPRISE REQUIREMENTS

I. GENERAL

This project is subject to Title 49, Code of Federal Regulations, Part 26, entitled "Participation by Disadvantaged Business Enterprise in Department of Transportation Financial Assistance Programs," hereinafter referred to as the ("DBE Regulations") and is incorporated and made a part of this contract herein by this reference. The following shall be incorporated as part of the contract documents for compliance. If any requirements herein are in conflict with the general provisions or special provisions applicable to this project, the requirements herein shall prevail unless specifically superseded or amended in the special provisions or by addendum.

II. POLICY

It is the policy of the U.S. Department of Transportation ("USDOT") and the State of Hawaii, Department of Transportation and its political subdivisions ("Department") that Disadvantaged Business Enterprises ("DBE"), as defined in the DBE Regulations, have an equal opportunity to receive and participate in federally assisted contracts.

III. DBE ASSURANCES

Each contract signed with a prime contractor (and each subcontract the prime contractor signs with a subcontractor) shall include the following assurance:

"The contractor, sub-recipient, or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of USDOT assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate which may include, but is not limited to; 1) withholding monthly progress payments; 2) assessing sanctions; 3) liquidated damages; and/or 4) disqualifying the contractor from future bidding as non-responsible."

The prime contractor agrees to include the above statements in any subsequent contracts that it enters into with other contractors and shall require those contractors to include similar statements in further agreements.

IV. BIDDER/OFFEROR RESPONSIBILITIES

All bidders/offerors are required to register with the Department's OCR, DBE Section, using the Bidder Registration Form, which can be downloaded from the Department's website at http://hidot.hawaii.gov/administration/ocr/dbe/dbe-program-forms/. Certified DBEs are considered registered with the Department and are not required to submit a

Bidder Registration Form. All other bidders/offerors are required to complete this form which may be faxed to (808) 831-7944, e-mailed to HDOT-DBE@hawaii.gov, or mailed to the HDOT DBE Section at 200 Rodgers Boulevard, Honolulu, Hawaii, 96819. Registered bidders/offerors are posted on the website listed above.

Bidders/offerors, subcontractors, manufacturers, vendors or suppliers, and trucking companies shall fully inform themselves with respect to the requirements of the DBE Regulations. Particular attention is directed to the following matters:

A. Bidders/offerors shall take all necessary steps to ensure that DBEs have an opportunity to participate in this contract.

B. DBEs may participate as a consultant, prime contractor, subcontractor, trucking company, or vendor of materials or supplies. DBEs may also team with other DBEs or non-DBE firms as part of a joint venture or partnership.

C. Agreements between a bidder/offeror and a DBE in which an DBE promises not to provide subcontracting quotations to other bidders/offerors are strictly prohibited.

D. A DBE shall be certified by the Department under the appropriate North American Industry Classification System (NAICS) code and work in their registered field of work in order for credit to be allowed.

E. Information regarding the current certification status of DBEs is available on the internet at https://hdot.dbesystem.com/.

F. Commercially Useful Function ("CUF"). An DBE must perform a CUF. This means that an DBE must be responsible for the execution of a distinct element of the work, must carry out its responsibility by actually performing, managing, and supervising at least 30% of the work involved by using its own employees and equipment, must negotiate price, determine quality and quantity, order and install material (when applicable), and must pay for the material itself.[1]

To determine whether an DBE is performing a CUF, the Department must evaluate the amount of work subcontracted, industry practices, whether the amount the firm is to be paid under the contract is commensurate with the work it is actually performing, the DBE credit claimed for performance of the work, and other relevant factors. The prime contractor is responsible to ensure that the DBE performs a CUF.

V. PROPOSAL REQUIREMENTS

A. DBEs must be certified by the bid opening date.

[1] The use of joint checks payable to an DBE subcontractor and supplier may be allowed to purchase materials and supplies under limited circumstances. See VII USE OF JOINT CHECKS UNDER THE DBE PROGRAM

B. DBE subcontractors, manufacturers, suppliers, trucking companies, and any second tier subcontractors shall be listed on the respective DBE forms as specified below in order to receive credit.

C. The following forms are due to the Department's Project Manager or designee **by the close of business, 4:30 P.M. Hawaii Standard Time (HST), five (5) days after bid opening:**[2]

1. DBE Confirmation and Commitment Agreement. This form must be signed by the bidder/offeror and each DBE subcontractor, manufacturer, supplier, or trucking company. Information to be provided on the form shall include, among other things, the project number, the DBE's NAICS codes, description of work, bid items with corresponding price information, prime contractor name and contact information DBE name and contact information and subcontractor name and contact information if the DBE is a second tier subcontractor.

2. DBE Contract Goal Verification and Good Faith Efforts (GFE) Documentation for Construction. List the dollar amount of all subcontractors, manufacturers, suppliers, and trucking companies (both DBE and non-DBE firms). Bidder/offeror must also list the DBE project goal on this form (See paragraph D below regarding goal calculation). The bidder/offeror must submit documentation demonstrating how the DBE goal was met or how the bidder/offeror attempted to meet the goal if the goal was not met. This documentation shall include quotations for both DBE and non-DBE subcontractors when a non-DBE is selected over a DBE for the project. **Documentation of good faith efforts is required irrespective of whether the bidder/offeror met the DBE project goal.**

The above forms must be complete and provide the necessary information to properly evaluate bids/proposals. Failure to provide any of the above shall be cause for bid/proposal rejection.

D. Calculation of the DBE contract goal for this project is the proportionate contract dollar value of work performed, materials, and goods to be supplied by DBEs. DBE credit shall not be given for mobilization, force account items and allowance items. This DBE contract goal is applicable to all the contract work performed for this project and is calculated as follows:

1. DBE contract goal percentage = Contract Dollar Value of the work to be performed by DBE subcontractors and manufacturers, plus 60% of the contract dollar value of DBE suppliers, divided by the sum of all contract items (sum of all contract items is the total amount for comparison of bids less mobilization, force account items, and allowance items).

[2] In computing calendar days, the day from which the period begins to run is not counted, and when the last day of the period is a Saturday, Sunday, or Federal or State holiday, the period extends to the next day that is not a Saturday, Sunday, or holiday.

2. The Department shall adjust the bidder's/offeror's DBE contract goal to the amount of the project goal if it finds that the bidder/offeror met the goal but erroneously calculated a lower percentage. If the amount the bidder/offeror submits as its contract goal exceeds the project goal, the bidder/offeror shall be held to the higher goal.

VI. COUNTING DBE PARTICIPATION TOWARDS CONTRACT GOAL

A. Count the entire amount of the portion of a contract (or other contract not covered by paragraph B below) that is performed by the DBE's own forces. Include the cost of supplies and materials obtained by the DBE for the work on the contract, including supplies purchased or equipment leased by the DBE (except supplies and equipment the DBE subcontractor purchases or leases from the prime contractor or its affiliate).

B. Count the entire amount of fees or commissions charged by an DBE firm for providing a bona fide service, such as professional, technical, consultant, or managerial services, or for providing bonds or insurance specifically required for the performance of a USDOT-assisted contract, toward DBE goals, provided the Department determines the fee to be reasonable and not excessive as compared with fees customarily allowed for similar services.

C. When an DBE subcontracts part of the work of its contract to another firm, the value of the subcontracted work may be counted toward DBE goals only if the DBE's subcontractor is itself an DBE. Work that an DBE subcontracts to a non-DBE firm does not count toward DBE goals.

D. When an DBE performs as a participant in a joint venture, count a portion of the total dollar value of the contract equal to the distinct, clearly defined portion of the work of the contract that the DBE performs with its own forces toward DBE goals.

E. Count expenditures to an DBE contractor toward DBE goals only if the DBE is performing a CUF on that contract.

F. The following is a list of appropriate DBE credit to be allowed for work to be performed by an DBE subcontractor. Count expenditures with DBEs for materials or supplies toward DBE goals as provided in the following:

1. If the materials or supplies are obtained from an DBE manufacturer, count 100 percent of the cost of the materials or supplies toward DBE goals;
2. For purposes of determining DBE goal credit, a manufacturer is a firm that operates or maintains a factory or establishment that produces (on the premises) the materials, supplies, articles, or equipment required under the contract and of the general character described by the specifications;

3. If the materials or supplies are purchased from an DBE regular dealer, count 60 percent of the cost of the materials or supplies toward DBE goals;
4. For purposes of determining DBE goal credit, a regular dealer is a firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials, supplies, articles or equipment of the general character described by the specifications and required under the contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business;
5. To be a regular dealer, the firm must be an established, regular business that engages, as its principal business and under its own name, in the purchase and sale or lease of the products in question;
6. A person may be a regular dealer in such bulk items as petroleum products, steel, cement, gravel, stone, or asphalt without owning, operating, or maintaining a place of business as provided in the DBE Regulations, if the person both owns and operates distribution equipment for the products. Any supplementing of a regular dealers' own distribution equipment shall be by a long-term lease agreement and not on an ad hoc or contract-by-contract basis;
7. Packagers, brokers, manufacturers' representatives, or other persons who arrange or expedite transactions are not regular dealers;
8. With respect to materials or supplies purchased from an DBE, which is neither a manufacturer nor a regular dealer, count the entire amount of fees or commissions charged for assistance in the procurement of the materials and supplies, or fees or transportation charges for the delivery of materials or supplies required on a job site, toward DBE goals, provided that the Department determines the fees to be reasonable and not excessive as compared with fees customarily allowed for similar services. Do not count any portion of the cost of the materials and supplies themselves toward DBE goals; however,
9. If a firm is not currently certified as an DBE in accordance with standards of this part at the time of the execution of the contract, do not count the firm's participation toward any DBE goals, except as provided for in §26.87(i);
10. Do not count the dollar value of work performed under a contract with a firm after it has ceased to be certified toward the Department’s overall goal; and
11. Do not count the participation of an DBE subcontractor toward a contractor's final compliance with its DBE obligations on a contract until the amount being counted has actually been paid to the DBE.

G. The following factors are used in counting DBE participation for trucking companies:

1. The DBE must be responsible for the management and supervision of the entire trucking operation for which it is responsible on a particular

contract, and there cannot be a contrived arrangement for the purpose of meeting DBE goals;

2. The DBE must itself own and operate at least one (1) fully licensed, insured, and operational truck used on the contract;
3. The DBE receives credit for the total value of the transportation services it provides on the contract using trucks it owns, insures, and operates using drivers it employs;
4. The DBE may lease trucks from another DBE firm, including an owner-operator who is certified as an DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services the lessee DBE provides on the contract;
5. The DBE may also lease trucks from a non-DBE firm, including from an owner-operator. The DBE that leases trucks equipped with drivers from a non-DBE is entitled to credit for the total value of transportation services provided by non-DBE leased trucks equipped with drivers not to exceed the value of transportation services on the contract provided by DBE-owned trucks or leased trucks with DBE employee drivers. Additional participation by non-DBE owned trucks equipped with drivers receives credit only for the fee or commission it receives as a result of the lease arrangement. If a recipient chooses this approach, it must obtain written consent from the appropriate Department operating administration.
   EXAMPLE: DBE firm X uses two (2) of its own trucks on a contract, leases two (2) trucks from DBE Firm Y and six (6) trucks from non-DBE Firm Z. DBE credit would be awarded for the total value of transportation services provided by Firm X and Firm Y, and may also be awarded for the total value of transportation services provided by four (4) of the six (6) trucks provided by Firm Z. In all, full credit would be allowed for the participation of eight (8) trucks. With respect to the other two (2) trucks provided by Firm Z, DBE credit could be awarded only for the fees or commissions pertaining to those trucks Firm X receives as a result of the lease with Firm Z;
6. The DBE may lease trucks without drivers from a non-DBE truck leasing company. If the DBE leases trucks from a non-DBE truck leasing company and uses its own employees as drivers, it is entitled to credit for the total value of these hauling services.
   EXAMPLE: DBE Firm X uses two (2) of its own trucks on a contract. It leases two (2) additional trucks from non-DBE Firm Z. Firm X uses its own employees to drive the trucks leased from Firm Z. DBE credit would be awarded for the total value of the transportation services provided by all four (4) trucks; and
7. For purposes of determining whether a trucking firm performs a CUF, a lease must indicate that the DBE has exclusive use of and control over the truck. This does not preclude the leased truck from working for others during the term of the lease with the consent of the DBE, so long as the lease gives the DBE absolute priority for use of the leased truck. Leased trucks must display the name and identification number of the DBE.

H. The bidder/offeror may be a joint venture or partnership that has a certified DBE as a partner. A "Joint Venture" means an association between an DBE firm and one (1) or more other firms to carry out a single, for-profit, business enterprise for which the parties combine their property, capital, efforts, skills and knowledge, and in which the DBE is responsible for a distinct, clearly defined portion of the work of the contract, and whose share in the capital contribution, control, management, risks and profits are commensurate with its ownership interest.

I. Effects of a Summary Suspension of an DBE. When an DBE's certification is suspended, the DBE may not be considered to meet a contract goal on a new contract and any work it does on a contract received during the suspension shall not be counted towards the overall goal. The DBE may continue to perform work under an existing contract executed before the DBE received a Notice of Suspension and may be counted towards the contract goal during the period of suspension as long as the DBE is performing a CUF under the existing contract.

J. Effects of Decertification of an DBE. Should an DBE become decertified during the term of the subcontract for reasons beyond the control of and with no fault or negligence on the part of the contractor, the work remaining under the subcontract may be credited towards the contract goal, but are not included in the overall accomplishments.

Should the DBE be decertified after contract award and before notice to proceed, the contractor must still meet the DBE goal by either: a) withdrawing the subcontract from the DBE and expending good faith efforts to replace it with an DBE that is currently certified for that same work; or b) continuing with the subcontract with the decertified firm and expending good faith efforts to find other work not already subcontracted out to DBEs in an amount to meet the DBE goal either by; 1) increasing the participation of other DBEs on the project; 2) documenting good faith efforts; or 3) by a combination of the above.

VII. USE OF JOINT CHECKS UNDER THE DBE PROGRAM

A. The following guidelines apply to the use of joint checks:

1. The second party (typically the prime contractor) acts solely as a guarantor;
2. The DBE must release the check to the supplier;
3. The use of joint checks is a commonly recognized business practice;
4. The Department must approve the use of joint checks prior to use by contractors and/or DBEs. As part of this approval process the Department will analyze industry practice to confirm that the use of joint checks is commonly employed outside of the DBE program for non-DBE subcontractors on both federal and state funded contracts. Using joint checks shall not be approved if it conflicts with other aspects of the DBE Regulations regarding CUF; and
5. The Department will monitor the use of joint checks closely to avoid abuse.

B. Contractors and DBEs should review the following general guidelines when determining whether to use joint checks closely to avoid abuse:

1. That standard industry practice applies to all contractors (federal and state contracts);
2. Use of joint checks must be available to all subcontractors;
3. Material industry sets the standard industry practice, not prime contractors;
4. Short term, not to exceed reasonable time (i.e., one (1) year, two (2) years) to establish/increase a credit line with the material supplier;
5. No exclusive arrangement between one (1) prime and one (1) DBE in the use of joint checks that might bring the independence of the DBE into question;
6. Non-proportionate ratio of DBE's normal capacity to size of contract and quantity of material to be provided under the contract;
7. The DBE is normally responsible to install and furnish the work item; and
8. The DBE must be more than an extra participant in releasing the check to the material supplier.

C. The Department shall allow the use of joint checks if the following general conditions are met:

1. DBE submits request to the Department for action;
2. There is a formalized agreement between all parties that specify the conditions under which the arrangement shall be permitted;
3. There is a full and prompt disclosure of the expected use of joint checks;
4. The Department will provide prior approval;
5. DBE remains responsible for all other elements of 49 CFR 26.55(c)(1);
6. The agreement states clearly and determines that independence is not threatened because the DBE retains final decision making responsibility;
7. The Department will determine that the request is not an attempt to artificially inflate DBE participation;
8. Standard industry practice is only one (1) factor;
9. The Department will monitor and maintain oversight of the arrangement by reviewing cancelled checks and/or certification statement of payment; and
10. The Department will verify there is no requirement by prime contractor that the DBE is to use a specific supplier nor the prime contractor's negotiated unit price.

VIII. DEMONSTRATION OF GOOD FAITH EFFORTS FOR CONTRACT AWARD

A. When a project goal is not met, the Department shall conduct the initial review of GFE submitted by the bidder/offeror and shall determine whether the bidder/offeror has performed the quality, quantity, and intensity of efforts that demonstrate a reasonably active and aggressive attempt to meet the contract goal in accordance with 49 CFR Part 26, Appendix A.

B. The bidder/offeror bears the responsibility of demonstrating that it met the contract goal, or if the contract goal was not met, by documenting the GFE it made in an attempt to meet the goal. It is the sole responsibility of the bidder/offeror to submit any and all documents, logs, correspondence, and any other records or information to the Department that will demonstrate that the bidder/offeror made good faith efforts to meet the DBE goal.

C. In its good faith evaluation, the Department shall perform the following as part of its evaluation: a) compare the bidder's/offeror's bid against the bids/offers of other bidders/offerors, and compare the DBEs and DBE work areas utilized by the bidder/offeror with the DBEs listed in other bids/offers submitted for this contract (If other bidders obtained DBEs in a particular work area in which the low bidder did not, the Department shall take this into consideration in its evaluation); b) verify contacts by bidders/offerors with DBEs; and c) compare the DBE and the categories of DBE work targeted by the bidder/offeror for participation in the contract, with the total pool of available DBEs ready, willing and able to perform work on each particular subcontract targeted by the bidder/offeror.

D. Actions on the part of the bidder/offeror that will be considered demonstrative of good faith efforts include, but are not limited to, the following:

1. Whether the bidder/offeror submitted the required information (i.e., DBE name, address, NAICS code, description of work, project name, and number), and dollar amounts for all subcontractors, within five (5) days of bid opening;
2. Whether the bidder/offeror solicited through all reasonable and available means (e.g., attendance at pre-bid meetings, advertising and/or written notices) the interest of all certified DBEs who have the capability to perform part or all of the work to be included under the contract. The Department will also consider whether the bidder/offeror solicited the participation of potential DBEs as early in the procurement process as practicable, and allowed sufficient time for the DBEs to properly inquire about the project and respond to the solicitation. The Department will also review whether the bidder/offeror took appropriate steps to follow up with interested DBEs in a timely manner to facilitate participation by DBEs in this project;
3. Whether the bidder/offeror identified and broke up portions of work that can be performed by DBEs in order to increase the likelihood that an DBE will be able to participate, and that the DBE goal could be achieved (e.g., breaking out contract items into economically feasible units to facilitate DBE participation even when the bidder/offeror might otherwise prefer to self-perform these work items with its own forces);
4. Whether the bidder/offeror made available or provided interested DBEs with adequate information about the plans, specifications, and requirements of the project in a timely manner, and assisted them in responding to the bidder's/offeror's solicitation;

5. Whether the bidder/offeror negotiated in good faith with interested DBEs. Evidence of such negotiations includes documenting: a) the names, addresses and telephone numbers of DBEs that were contacted; b) a description of the information that was provided to DBEs regarding the plans and specifications; and c) detailed explanation for not utilizing individual DBEs on the project;
6. Whether the bidder/offeror solely relied on price in determining whether to use an DBE. The fact that there may be additional or higher costs associated with finding and utilizing DBEs are not, by itself, sufficient reasons for a bidder's/offeror's refusal to utilize an DBE, or the failure to meet the DBE goal, provided that such additional costs are not unreasonable. Also, the ability or desire of a bidder/offeror to perform a portion of the work with its own forces, that could have been undertaken by an available DBE, does not relieve the bidder/offeror of the responsibility to make good faith efforts to meet the DBE goal, and to make available and solicit DBE participation in other areas of the project to meet the DBE goal;
7. Whether the bidder/offeror rejected DBEs as being unqualified without sound reasons based on a thorough investigation of their capabilities. The DBEs standing within the industry, membership in specific groups, organizations or associations, and political or social affiliation are not legitimate basis for the rejection or non-solicitation of bids from particular DBEs;
8. Whether the bidder/offeror made efforts to assist interested DBEs in obtaining bonding, lines of credit, or insurance;
9. Whether the bidder/offeror made efforts to assist interested DBEs in obtaining necessary equipment, supplies, materials or related assistance or services;
10. Whether the bidder/offeror effectively used the services of available minority/women community organizations, minority/women business groups, contractors' groups, and local, state and federal minority/women business assistance offices or other organizations to provide assistance in recruitment and placement of DBEs;
11. Whether the bidder/offeror, who selects a non-DBE over an DBE subcontractor, has quotes of each DBE and non-DBE subcontractor submitted to the bidder for work on the contract; and for each DBE that was contacted but not utilized by the bidder/offeror for a contract, the bidder/offeror has a detailed written explanation for each DBE detailing the reasons for the bidder's/offeror's failure or inability to utilize, or to allow the DBE to participate in the contract; and
12. Whether other bidders/offerors met the goal and whether the apparent successful bidder/offeror could have met the goal with additional efforts. The Department may determine that an apparent successful bidder/offeror who fell short of meeting the goal, made good faith efforts when it met or exceeded the average DBE participation obtained by other bidders/offerors.

IX. ADMINISTRATIVE RECONSIDERATION.

If it is determined by the Department that the apparent successful bidder/offeror has failed to meet the provisions of 49 CFR Section 26.53(a), the bidder/offeror may submit a request for administrative reconsideration. If under the provisions of 49 CFR, Section 26.53(d), it is determined by the Department that the apparent successful bidder/offeror has failed to meet the provisions of this subsection, the bidder/offeror may submit a written request for administrative reconsideration.

A. Within five (5) working days of being informed in writing by the Department that the bidder/offeror has not documented sufficient GFE, a bidder/offeror may request administrative reconsideration. Bidders/offerors should make this request in writing to the following official:

Director of Transportation
Hawaii Department of Transportation
869 Punchbowl Street, Room 509
Honolulu, Hawaii 96813

B. The reconsideration official, or his or her designee (referred to as "reconsideration official"), shall not have played any role in the original determination that the bidder/offeror failed to meet the goal or make adequate good faith efforts to do so.

C. As part of this reconsideration, the bidder/offeror will have the opportunity to provide written documentation or argument concerning the issue of whether it met the goal or made adequate GFE to do so. The bidder/offeror will have the opportunity to meet in person with the reconsideration official to discuss the issue of whether it met the goal or made adequate GFE to do so.

D. In an administrative reconsideration, the reconsideration official will review all previously submitted documents, oral and written arguments, and other evidence presented in the reconsideration, in making the decision.

E. The Department shall inform the bidder/offeror of the decision within thirty (30) days of the proceeding. The decision will state the Department's findings, and explain the basis of those findings, with respect to whether or not the bidder/offeror met the contract goal, or whether or not the bidder/offeror made adequate GFE to achieve the contract goal.

F. The reconsideration decision is not administratively appealable to USDOT but is appealable under HRS 103D-709.

X. AWARD OF CONTRACT

A. In a sealed bid procurement, the Department reserves the right to reject any or all bids. The award of contract, if it is awarded, will be to the lowest responsive and responsible bidder who meets or exceeds the DBE project goal, or who makes

good faith efforts to meet or exceed the DBE project goal, as determined by the Department.

B. If the lowest responsible bidder does not meet the DBE project goal and does not demonstrate to the satisfaction of the Department that it made good faith efforts to meet the DBE project goal, such bid shall be rejected as non-responsive. The Department will then consider the next lowest responsive and responsible bidder for award in accordance with paragraph A above.

XI. REPLACEMENT OF AN DBE ON A PROJECT WITH A CONTRACT GOAL

Under this contract, the prime contractor shall utilize the specific DBE listed to perform the work and supply the materials for which each is listed unless the contractor obtains written consent from the Department to replace an DBE. If the Department's consent is not provided, the contractor shall not be entitled to any payment for work or material unless it is performed or supplied by the listed DBE. The Department reserves the right to request copies of all DBE subcontracts.

The Department will require a contractor to make good faith efforts to replace an DBE that is terminated or has otherwise failed to complete its work on a contract with another certified DBE, to the extent needed to meet the contract goal. A prime contractor's inability to find a replacement DBE at the original price is not sufficient to demonstrate that good faith efforts have been made to replace the original DBE. The fact that the contractor has the ability and/or desire to perform the contract work with its own forces does not relieve the contractor of the obligation to make good faith efforts to find a replacement DBE, and it is not a sound basis for rejecting a prospective replacement DBE's reasonable quote.

The Department will require the prime contractor to promptly provide written notice to the project manager of the DBE's inability or unwillingness to perform and provide reasonable documentation.

The written notice by the contractor must include the following:

1. The date the contractor determined the certified DBE to be unwilling, unable or ineligible to perform work on the contract;
2. The projected date that the contractor shall require a substitution or replacement DBE to commence work if consent is granted by the Department;
3. Documentation of facts that describe and cite specific actions or inactions on the part of the affected DBE that led to the contractor's conclusion that the DBE is unwilling, unable, or ineligible to perform work on the contract;
4. A brief statement of the affected DBE's capacity and ability or inability to perform the work as determined by the contractor;
5. Documentation of contractor's good faith efforts to enable affected DBE to perform the work;
6. The current percentage of work completed on each bid item by the affected DBE;

7. The total dollar amount currently paid per bid item for work performed by the affected DBE;
8. The total dollar amount per bid item remaining to be paid to the DBE for work completed but for which the DBE has not received payment, and with which the contractor has no dispute; and
9. The total dollar amount per bid item remaining to be paid to the DBE for work completed, for which the DBE has not received payment, and with which the contractor and DBE have a dispute.

The prime contractor shall send a copy of the written notice to replace a certified DBE on a contract to the affected DBE. The affected DBE may submit a written response within five (5) calendar days to the Department to explain its position on its performance on the committed work. The Department shall consider both the prime contractor's request and DBE's stated position before approving the termination or substitution request, or determining if any action shall be taken against the contractor.

There shall be no substitution or termination of an DBE subcontractor at any time without the prior written consent of the Department. The Department will provide written consent only if the contractor has good cause, as determined by the Department, to terminate the DBE. Good cause may include, but is not limited to the following circumstances:

1. The DBE subcontractor fails or refuses to execute a written contract;
2. The listed DBE subcontractor fails or refuses to perform the work of its subcontract in a way consistent with normal industry standards;
3. The listed DBE subcontractor fails or refuses to meet the prime contractor's reasonable, nondiscriminatory bond requirements;
4. The listed DBE subcontractor becomes bankrupt, insolvent, or exhibits credit unworthiness;
5. The listed DBE subcontractor is ineligible to work on public works projects because of suspension and debarment proceedings pursuant to 2 CFR Parts 180, 215 and 1200 or applicable state law;
6. The Department has determined that the listed DBE subcontractor is not a responsible contractor;
7. The listed DBE subcontractor voluntarily withdraws from the project and provides to the Department written notice of its withdrawal;
8. The listed DBE is ineligible to receive DBE credit for the type of work required; and
9. An DBE owner dies or becomes disabled with the result that the listed DBE contractor is unable to complete its work on the contract.

Upon approval from the Department to replace an DBE, the contractor's good faith efforts shall be documented and submitted to the Department within seven (7) calendar days. This time period may be extended for another seven (7) calendar days upon request by the prime contractor.

If an DBE subcontractor is unable to perform work under the contract, and is to be

replaced, the contractor's failure to obtain a substitute certified DBE or to make good faith efforts to obtain such a substitute DBE subcontractor to perform said work, may constitute a breach of this contract for which the Department may terminate the contract or pursue such remedy as deemed appropriate by the Department.

XII. CONTRACT COMPLIANCE

This contract is subject to contract compliance tracking, and the prime contractor and all subcontractors are required to report payments electronically in the HDOT online Certification and Contract Compliance Management System (hereafter referred to as "online tracking system"). The prime contractor shall report the date payment was made by the Department and shall report payment to all subcontractors for the audit period. The prime contractor and all subcontractors are responsible for responding by any noted response date or due date to any instructions or request for information, and to check the online tracking system on a regular basis to manage contact information and contract records.

The prime contractor is responsible for ensuring all subcontractors have completed all requested items and that their contact information is accurate and up-to-date. HDOT may require additional information related to the contract to be provided electronically through the online tracking system at any time before, during, or after contract award. Information related to contractor access of the online tracking system will be provided to designated point of contact with each contractor upon award of the contract. The online tracking system is web-based and can be accessed at the following Internet address: https://hdot.dbesystem.com/.

XIII. PAYMENT

A. The Department will make an estimate in writing each month based on the items of work performed and materials incorporated in the work and the value therefore at the unit prices or lump sum prices set forth in the contract. All progress estimates and payments will be approximate only and shall be subject to correction at any time prior to or in the final estimate and payment. The Department will not withhold any amount from any payment to the contractor, including retainage.

B. The contractor shall pay all subcontractors within ten (10) calendar days after receipt of any progress payments from the Department. This clause applies to both DBE and non-DBE subcontractors, and all tiers of subcontracts.

C. The contractor will verify that payment or retainage has been released to the subcontractors or its suppliers within the specified time through entries in the Department's online tracking system during the corresponding monthly audits. Prompt payment will be monitored and enforced through the contractor's reporting of payments to its subcontractors and suppliers in the online tracking system.

Subcontractors, including lower tier subcontractors and/or suppliers will confirm the timeliness and the payment amounts received utilizing the online tracking system. Discrepancies will be investigated by the DBE Program Office and the project engineer. Payments to the subcontractors, including lower tier subcontractors, and including retainage released after the subcontractor or lower tier subcontractor's work has been completed to the Department's satisfaction, will be reported by the Contractor or the subcontractor.

D. When any subcontractor has satisfactorily completed its work as specified in the subcontract, and there are no bona fide disputes, the contractor shall make prompt and full payment to the subcontractor of all monies due, including retainage, within ten (10) calendar days after the subcontractor's work is satisfactorily completed. A subcontractor's work is satisfactorily completed when all the tasks called for in the subcontract have been accomplished and documented, as required by the Department. The contractor must obtain the prior written approval from the Department before it can continue to withhold retainage from any subcontractor who has completed its portion of the work. This clause applies to both DBE and non-DBE subcontractors, and all tiers of subcontracts.

XIV. RECORDS

The contractor shall maintain and keep all records necessary for the Department to determine compliance with the contractor's DBE obligations. The records shall be available at reasonable times and places for inspection by the Department and appropriate Federal agencies. The records to be kept by the contractor shall include:

1. The names, race/ethnicity, gender, address, phone number, and contact person of all DBE and non-DBE consultants, subcontractors, manufacturers, suppliers, truckers and vendors identified as DBEs;
2. The nature of work of each DBE and non-DBE consultant, subcontractor, manufacturer, supplier, trucker and vendor;
3. The dollar amount contracted with each DBE and non-DBE consultant, subcontractor, manufacturer, supplier, trucker and vendor; and
4. Cumulative dollar amount of all change orders to the subcontract.

XV. FAILURE TO COMPLY WITH DBE REQUIREMENTS

The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of USDOT assisted contracts. All contractors, subcontractors, manufacturers and suppliers are hereby advised that failure to carry out all DBE requirements specified herein shall constitute a material breach of contract that may result in termination of the contract or such other remedy as deemed appropriate by the Department including but not limited to: 1) withholding monthly progress payments; 2) assessing sanctions; 3) liquidated damages; and/or 4) disqualifying the contractor from future bidding as non-responsible.

Disadvantaged Business Enterprise (DBE)
Contract Goal Verification and Good Faith Efforts (GFE)
Documentation For Construction

Project #:	**County:**
DBE Project Goal:	**Prime Contractor:**

As required by the specifications "*Disadvantaged Business Enterprise Requirements*," the dollar amount of each subcontract (both DBE and non-DBE firms) for all subcontractors, manufacturers, suppliers, and trucking companies is due by the close of business, 4:30 P.M. Hawaii Standard Time (HST) five (5) days after bid opening. **Failure to provide required information sufficient to evaluate the bid/proposal shall be cause for bid/proposal rejection.**

Calculation of the DBE contract goal for this project is the proportionate contract dollar value of work performed, materials, and goods to be supplied by DBEs. DBE credit shall not be given for mobilization, force account items, and allowance items. This DBE contract goal is applicable to all the contract work performed for this project and is calculated as follows:

1. DBE contract goal percentage = Contract Dollar Value of the work to be performed by DBE subcontractors and manufacturers, plus 60% of the contract dollar value of DBE suppliers, divided by the sum of all contract items (sum of all contract items is the total amount for comparison of bids less mobilization, force account items, and allowance items).

2. The Department shall adjust the bidder's/offeror's DBE contract goal to the amount of the project goal if it finds that the bidder/offeror met the goal but erroneously calculated a lower percentage. If the amount the bidder/offeror submits as its contract goal exceeds the project goal, the bidder/offeror shall be held to the higher goal.

Name of Subcontractor, Supplier, Manufacturer, and Trucking Company	DBE (Y/N)	Bid Item Number and Description	Approx. Quantity/ Hours	Unit	Unit Price/ Rate	Dollar Amount

A. Dollar amount of the work to be performed by DBE subcontractors, manufacturers, and trucking companies, plus 60% of the dollar amount of DBE suppliers	
B. Sum of all work items less mobilization, force account items, allowance items	
A/B = DBE contract goal	

NAME and SIGNATURE of AUTHORIZED REPRESENTATIVE of PRIME CONTRACTOR: DATE:

_____ _____

Summary of Good Faith Efforts (GFE)

As required by the specifications "*Disadvantaged Business Enterprise Requirements*," documentation of GFE shall be submitted by the close of business, 4:30 P.M. HST five (5) days of bid opening. **The bidder/offeror shall respond to the following questions and describe efforts to obtain DBE participation whether or not the DBE project goal is met.** Responses must be sufficient to properly evaluate the bidder's/offeror's good faith efforts. Copies of correspondence return receipts, telephone logs, or other documentation will be required to support GFE. Attach additional sheets, if necessary. Based on responses given, HDOT shall make a determination of the bidders' GFE. **Failure to provide required information sufficient to evaluate the bid/proposal shall be cause for bid/proposal rejection.**

1. Did you submit the required information by the close of business, 4:30 P.M. HST, five (5) days after bid opening (i.e. DBE name, address, NAICS code, description of work, project name, and number)?

2. Explain your GFE if any, to solicit through all reasonable and available means (e.g. attendance at pre-bid meetings, advertising and/or written notices) the interest of all certified DBEs who have the capability to perform part or all of the work to be included under the contract.

    a. Explain your GFE if any, to solicit the participation of potential DBEs as early in the procurement process as practicable.

    b. Explain your GFE if any, to allow sufficient time for the DBEs to properly inquire about the project and respond to the solicitation.

    c. Explain your GFE if any, to take appropriate steps to follow up with interested DBEs in a timely manner to facilitateparticipation by DBEs in this project.

3. Explain your GFE if any, to identify and break up portions of work that can be performed by DBEs in order to increase the likelihood that a DBE will be able to participate, and that the DBE goal could be achieved (e.g. breaking out contract items into economically feasible units to facilitate DBE participation even when you might otherwise prefer to self-perform these work items).

4. Explain your GFE if any, to make available or provide interested DBEs with adequate information about the plans, specifications, and requirements of the project in a timely manner, and assist them in responding to your solicitation.

5. Explain your GFE if any, to negotiate in good faith with interested DBEs. Evidence of such negotiations includes documenting: a) the names, addresses and telephone numbers of DBEs that were contacted; b) a description of the information that was providedto DBEs regarding the plans and specifications; and c) detailed explanation for not utilizing individual DBEs on the project.

6. Did you solely rely on price in determining whether to use a DBE? If yes please explain. The fact that there may be additional or higher costs associated with finding and utilizing DBEs are not, by themselves, sufficient reasons for your refusal to utilize a DBE or

NAME and SIGNATURE of AUTHORIZED REPRESENTATIVE of PRIME CONTRACTOR: DATE:

_____ _____

failure to meet the DBE goal, provided that such additional costs are not unreasonable. Also, the ability or desire to perform a portion of the work with your own forces, that could have been undertaken by an available DBE, does not relieve you of the responsibility to make good faith efforts to meet the DBE goal, and to make available and solicit DBE participation in other areas of the project to meet the DBE goal.

7. Did you reject DBEs as being unqualified without sound reasons based on a thorough investigation of their capabilities? If yes, please explain. The DBEs standing within the industry, membership in specific groups, organizations or associates, and political or social affiliation are not legitimate basis for the rejection or non-solicitation of bids from particular DBEs.

8. Explain your GFE to assist interested DBEs in obtaining bonding, lines of credit, or insurance.

9. Explain your GFE if any, to assist interested DBEs in obtaining necessary equipment, supplies, materials or related assistance or services.

10. If you selected a non-DBE over a DBE subcontractor, please provide the quotes of each DBE and non-DBE subcontractor submitted to you for work on the contract; and for each DBE that was contacted but not utilized for a contract, provide a detailed written explanation for each DBE detailing the reasons for not utilizing or allowing the DBE to participate in the contract.

11. Explain your GFE if any, to effectively use the services of available minority/women community organizations, minority/women business groups, contractors' groups, and local, state and federal minority/women business assistance offices or other organizations to provide assistance in recruitment and placement of DBEs.

NAME and SIGNATURE of AUTHORIZED REPRESENTATIVE of PRIME CONTRACTOR: DATE:

_____ _____

Disadvantaged Business Enterprise (DBE)
Contract Goal Verification and Good Faith Efforts (GFE)
Documentation For Construction
INSTRUCTIONS

Project #	Self-explanatory
County	County where project is located
DBE Project Goal	Indicate DBE goal listed in the proposal on P-1
Prime Contractor	Name of prime contractor
Name of Subcontractor, Supplier, Manufacturer, and Trucking Company	Company name of subcontractor, supplier, manufacturer, or trucking firm
DBE (Y/N)	Y for yes and N for no
Bid Item Number and Description	Pay item and description
Approx. Quantity/ Hours	Self-explanatory
Unit	Unit of measure
Unit Price/ Rate	Self-explanatory
Dollar Amount	Total dollar amount committed to subcontractor, supplier, manufacturer, or trucking firm
A. Dollar amount of the work to be performed by DBE subcontractors, manufacturers, and trucking companies, plus 60% of the dollar amount of DBE suppliers	Total amount of DBE participation
B. Sum of all work items less mobilization, force account items, allowance items	List total of work items minus mobilization, force accounts and allowances. DBE credit shall not be given for mobilization, force account items, and allowance items.
A/B = DBE contract goal	Self-explanatory
Name and Signature of Authorized Representative of Prime Contractor	Self-explanatory (Note: bidder must sign and date every page of form.)
Date	Date form is signed
Summary of Good Faith Efforts (GFE)	Complete by answering questions in detail and providing documentation to support how bidder demonstrated good faith efforts to meet the goal, irrespective of whether or not the goal was met.

Disadvantaged Business Enterprise (DBE)
Confirmation and Commitment Agreement
Trucking Company

This commitment is subject to the award and receipt of a signed contract from the Hawaii Department of Transportation (HDOT) for the subject project. DBEs must be certified by the bid opening date.

Project #:	**County:**
NAICS CODE/DESCRIPTION OF WORK:	**SECONDARY NAICS CODE:**

*All quantities and units should match the bid tab item whenever possible.
The prime contractor shall inform HDOT the dates when the trucking firm starts and completes all work under the subcontract.

Estimated Beginning Date (Month/Year):	**Estimated Completion Date (Month/Year):**

TRUCKING COMPANY:	Item No.	Item Description	Unit	Unit Price / Rate	Amount
				$	$
				$	$
				$	$
			TOTAL COMMITMENT AMOUNT		**$**

1. Number of hours contracted or quantities to be hauled: _____
2. Number of fully operational trucks to be used:_____Tractor/trailers:_____Dump trucks: _____
3. Number of fully operational trucks owned by DBE:_____Dump trucks:_____Tractors/trailers:_____
4. If Owner Operators or additional trucking companies are to be used answer the following:

Name of Trucking Company	**DBE Y/N**	**Estimated Dollar Amount to be Contracted**	**Number and Type of Trucks (specify)**
		$	
		$	

The prime contractor certifies by signature on this agreement to utilize the DBE trucking company as listed on the agreement form. If a DBE trucking company is unable to perform the work as listed on this agreement form, the prime contractor will follow the substitution/replacement approval process as outlined in the contract DBE requirements. **IMPORTANT! The signatures of the DBE, prime contractor, and subcontractor (only if the DBE will be a second tier sub) confirms that all information on this Agreement is true and correct. Parties should sign Agreement in the order in which they are listed.**

DBE NAME:		Name/Title (please print):
Address:		Signature:
Phone:	Fax:	
Email:		Date:
Prime Contractor:		Name/Title (please print):
Address:		Signature:
Phone:	Fax:	
Email:		Date:
Subcontractor (only if the DBE will be a second tier sub):		Name/Title (please print):
Address:		Signature:
Phone:	Fax:	
Email:		Date:

HDOT retains the information collected through this form. With few exceptions, you are entitled on request to be informed about the information that we collect about you.

Disadvantaged Business Enterprise (DBE)
Confirmation and Commitment Agreement
Trucking Company
INSTRUCTIONS

The purpose of this agreement is to secure the commitment of the bidder/offeror to utilize the listed DBE trucking company, and the DBE's confirmation that it will perform work for the bidder/offeror on this project. The information on this form shall be provided by the DBE.

Project #	Self-explanatory
County	County where project is located
NAICS Code/Description of Work	Primary North American Industry Classification System code under which DBE is certified to performand description of work to be done
Secondary NAICS Code	List other NAICS codes firm is certified to perform
Estimated Beginning Date (Month/Year)	Date DBE shall begin work on the project
Estimated Completion Date (Month/Year)	Date DBE's work will be completed
Trucking Company	Name of DBE trucking company
Item No.	List pay item number
Item Description	Description of item
Unit	Unit of measure – e.g. weight or hours
Unit Price/Rate	Cost per unit or hourly rate
Amount	Total amount per pay item
Total Commitment Amount	Sum of all pay items and total commitment of bidder/offeror to DBE
Number of hours contracted or quantities to be hauled	Approximate number of hours or tonnage to be hauled
Number of fully operational trucks to be used:	Total number of trucks to be used for the project
Tractor/Trailers	Number of tractor trailers to be used
Dump Trucks	Number of dump trucks to be used
Number of fully operational trucks owned by DBE	Number of listed DBE's trucks to be used on thisproject
Name of Trucking Company	If other trucking companies (DBE or non-DBE) are to be leased, list name and information about type of trucks in this section
Estimated Dollar Amount to be Contracted	Provide information about estimated cost to lease trucks
Number of Dump Trucks, Tractor/Trailer	Self-explanatory
DBE NAME	DBE Company name
Name/Title	Name and title of DBE's representative
Address	Self-explanatory
Phone	Self-explanatory
Fax	Self-explanatory
Email	Self-explanatory
Signature	Signature of DBE's representative
Date	Date agreement is signed
Prime Contractor	Company name

Name/Title	Name and title of prime contractor's representative
Address	Self-explanatory
Phone	Self-explanatory
Fax	Self-explanatory
Email	Self-explanatory
Signature	Signature of prime contractor's representative
Date	Date agreement is signed
Subcontractor (only if the DBE will be a second tier sub):	Name of subcontractor only if the listed DBE trucking company will be performing work under this subcontractor
Name/Title	Name and title of the subcontractor's representative
Address	Self-explanatory
Phone	Self-explanatory
Fax	Self-explanatory
Email	Self-explanatory
Signature	Signature of subcontractor
Date	Date agreement is signed

Disadvantaged Business Enterprise (DBE)
Confirmation and Commitment Agreement
Subcontractor, Manufacturer, or Supplier

This commitment is subject to the award and receipt of a signed contract from the Hawaii Department of Transportation (HDOT) for the subject project. DBEs must be certified by the bid opening date.

Project #:	**County:**
NAICS CODE/DESCRIPTION OF WORK:	**SECONDARY NAICS CODE:**

*All quantities and units should match the bid tab item whenever possible.

The prime contractor shall inform HDOT of the dates when the subcontractor starts and completes all work under the subcontract.

Estimated Beginning Date (Month/Year):	**Estimated Completion Date (Month/Year):**

SUBCONTRACTOR:	Item No.	Item	Approx. Quantity	Unit	Unit Price	Amount
					$	$
					$	$
					$	$
					$	$
	TOTAL COMMITMENT AMOUNT					$

MANUFACTURER:	Item No.	Item	Approx. Quantity	Unit	Unit Price	Amount
					$	$
					$	$
	TOTAL COMMITMENT AMOUNT					$

SUPPLIER:	Item No.	Item	Approx. Quantity	Unit	Unit Price	Amount
					$	$
					$	$
	TOTAL COMMITMENT AMOUNT					$

The prime contractor certifies by signature on this agreement that subcontracts will be executed between the prime contractor and the DBE subcontractors as listed on the agreement form. If a DBE subcontractor is unable to perform the work as listed on this agreement form, the prime contractor will follow the substitution/replacement approval process as outlined in the contract DBE requirements. **IMPORTANT! The signatures of the DBE, prime contractor, and subcontractor (only if the DBE will be a second tier sub) confirms that all information on this Agreement is true and correct. Parties should sign Agreement in the order in which they are listed.**

DBE NAME:		Name/Title (please print):
Address:		Signature:
Phone:	Fax:	
Email:		Date:
Prime Contractor:		Name/Title (please print):
Address:		Signature:
Phone:	Fax:	
Email:		Date:
Subcontractor (only if the DBE will be a second tier sub):		Name/Title (please print):
Address:		Signature:
Phone:	Fax:	
Email:		Date:

HDOT retains the information collected through this form. With few exceptions, you are entitled on request to be informed about the information that we collect about you.

Disadvantaged Business Enterprise (DBE)
Confirmation and Commitment Agreement
Subcontractor, Manufacturer, or Supplier
INSTRUCTIONS

The purpose of this agreement is to secure the commitment of the bidder/offeror to utilize the listed DBE, and the DBE's confirmation that it will perform work for the bidder/offeror on this project. The information on this form shall be provided by the DBE.

Project #	Self-explanatory
County	County where project is located
NAICS Code/Description of Work	Primary North American Industry Classification System code under which DBE is certified to performand description of work to be done
Secondary NAICS Code	List other NAICS codes firm is certified to perform
Estimated Beginning Date (Month/Year)	Date DBE shall begin work on the project
Estimated Completion Date (Month/Year)	Date DBE's work will be completed
Subcontractor	Name of DBE subcontractor (company name)
Item No.	List pay item number
Item	Description of item
Approx. Quantity	Self-explanatory
Unit	List unit of measure
Unit Price	Cost per unit
Amount	Total amount per pay item
Total Commitment Amount	Sum of all pay items and total commitment of bidder/offeror to DBE
Manufacturer	Name of DBE manufacturer
Supplier	Name of DBE supplier (aka regular dealer)
DBE NAME	DBE Company name
Name/Title	Name and title of DBE's representative
Address	Self-explanatory
Phone	Self-explanatory
Fax	Self-explanatory
Email	Self-explanatory
Signature	Signature of DBE's representative
Date	Date agreement is signed
Prime Contractor	Company name
Name/Title	Name and title of prime contractor’s representative
Address	Self-explanatory
Phone	Self-explanatory
Fax	Self-explanatory
Email	Self-explanatory
Signature	Signature of prime contractor’s representative
Date	Date agreement is signed
Subcontractor (only if the DBE will be a second tier sub):	Name of subcontractor only if the listed DBE will be performing work under this subcontractor as a second tier subcontractor/supplier/manufacturer

Name/Title	Name and title of the subcontractor's representative that the listed DBE will work under as a second tier subcontractor/supplier/manufacturer
Address	Self-explanatory
Phone	Self-explanatory
Fax	Self-explanatory
Email	Self-explanatory
Signature	Signature of subcontractor's representative
Date	Date agreement is signed

REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under title 23, United States Code, as required in 23 CFR 633.102(b) (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services). 23 CFR 633.102(e).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider. 23 CFR 633.102(e).

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services) in accordance with 23 CFR 633.102. The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in solicitation-for-bids or request-for-proposals documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract). 23 CFR 633.102(b).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract. 23 CFR 633.102(d).

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. 23 U.S.C. 114(b). The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors. 23 U.S.C. 101(a).

II. NONDISCRIMINATION (23 CFR 230.107(a); 23 CFR Part 230, Subpart A, Appendix A; EO 11246)

The provisions of this section related to 23 CFR Part 230, Subpart A, Appendix A are applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR Part 60, 29 CFR Parts 1625-1627, 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding $10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR Part 60, and 29 CFR Parts 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), and Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR Part 230, Subpart A, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

1. Equal Employment Opportunity: Equal Employment Opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (*see* 28 CFR Part 35, 29 CFR Part 1630, 29 CFR Parts 1625-1627, 41 CFR Part 60 and 49 CFR Part 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140, shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR Part 35 and 29 CFR Part 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract. 23 CFR 230.409 (g)(4) & (5).

b. The contractor will accept as its operating policy the following statement:

> "It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, sexual orientation, gender identity, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action or are substantially involved in such action, will be made fully cognizant of and will implement the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer or other knowledgeable company official.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to ensure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action

within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs (i.e., apprenticeship and on-the-job training programs for the geographical area of contract performance). In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. 23 CFR 230.409. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established thereunder. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors, suppliers, and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurances Required:

a. The requirements of 49 CFR Part 26 and the State DOT's FHWA-approved Disadvantaged Business Enterprise (DBE) program are incorporated by reference.

b. The contractor, subrecipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, which may include, but is not limited to:
(1) Withholding monthly progress payments;
(2) Assessing sanctions;
(3) Liquidated damages; and/or
(4) Disqualifying the contractor from future bidding as non-responsible.

c. The Title VI and nondiscrimination provisions of U.S. DOT Order 1050.2A at Appendixes A and E are incorporated by reference. 49 CFR Part 21.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women.

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of more than $10,000. 41 CFR 60-1.5.

As prescribed by 41 CFR 60-1.8, the contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location under the contractor's control where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding $2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size), in accordance with 29 CFR 5.5. The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. 23 U.S.C. 113. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. 23 U.S.C. 101. Where applicable law requires that projects be treated as a project on a Federal-aid highway, the provisions of this subpart will apply regardless of the location of the project. Examples include: Surface Transportation Block Grant Program projects funded under 23 U.S.C. 133 [excluding recreational trails projects], the Nationally Significant Freight and Highway Projects funded under 23 U.S.C. 117, and National Highway Freight Program projects funded under 23 U.S.C. 167.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 “Contract provisions and related matters” with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages (29 CFR 5.5)

a. *Wage rates and fringe benefits.* All laborers and mechanics employed or working upon the site of the work (or otherwise working in construction or development of the project under a development statute), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of basic hourly wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. As provided in paragraphs (d) and (e) of 29 CFR 5.5, the appropriate wage determinations are effective by operation of law even if they have not been attached to the contract. Contributions made or costs reasonably anticipated for bona fide fringe benefits under the Davis-Bacon Act (40 U.S.C. 3141(2)(B)) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.e. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics must be paid the appropriate wage rate and fringe benefits on the wage determination for the classification(s) of work actually performed, without regard to skill, except as provided in paragraph 4. of this section. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: *Provided,* That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classifications and wage rates conformed under paragraph 1.c. of this section) and the Davis-Bacon poster (WH–1321) must be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b. *Frequently recurring classifications.* (1) In addition to wage and fringe benefit rates that have been determined to be prevailing under the procedures set forth in 29 CFR part 1, a wage determination may contain, pursuant to § 1.3(f), wage and fringe benefit rates for classifications of laborers and mechanics for which conformance requests are regularly submitted pursuant to paragraph 1.c. of this section, provided that:

(i) The work performed by the classification is not performed by a classification in the wage determination for which a prevailing wage rate has been determined;

(ii) The classification is used in the area by the construction industry; and

(iii) The wage rate for the classification bears a reasonable relationship to the prevailing wage rates contained in the wage determination.

(2) The Administrator will establish wage rates for such classifications in accordance with paragraph 1.c.(1)(iii) of this section. Work performed in such a classification must be paid at no less than the wage and fringe benefit rate listed on the wage determination for such classification.

c. *Conformance.* (1) The contracting officer must require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract be classified in conformance with the wage determination. Conformance of an additional classification and wage rate and fringe benefits is appropriate only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is used in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) The conformance process may not be used to split, subdivide, or otherwise avoid application of classifications listed in the wage determination.

(3) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken will be sent by the contracting officer by email to *DBAconformance@dol.gov*. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30–day period that additional time is necessary.

(4) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer will, by email to *DBAconformance@dol.gov*, refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30–day period that additional time is necessary.

(5) The contracting officer must promptly notify the contractor of the action taken by the Wage and Hour Division under paragraphs 1.c.(3) and (4) of this section. The contractor must furnish a written copy of such determination to each affected worker or it must be posted as a part of the wage determination. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 1.c.(3) or (4) of this section must be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

d. *Fringe benefits not expressed as an hourly rate.* Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor may either pay the benefit as stated in the wage determination or may pay another bona fide fringe benefit or an hourly cash equivalent thereof.

e. *Unfunded plans.* If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, *Provided,* That the Secretary of Labor has found, upon the written request of the contractor, in accordance with the criteria set forth in § 5.28, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

f. *Interest.* In the event of a failure to pay all or part of the wages required by the contract, the contractor will be required to pay interest on any underpayment of wages.

2. Withholding (29 CFR 5.5)

a. *Withholding requirements.* The contracting agency may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for the full amount of wages and monetary relief, including interest, required by the clauses set forth in this section for violations of this contract, or to satisfy any such liabilities required by any other Federal contract, or federally assisted contract subject to Davis-Bacon labor standards, that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to Davis-Bacon labor standards requirements and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld. In the event of a contractor's failure to pay any laborer or mechanic, including any apprentice or helper working on the site of the work all or part of the wages required by the contract, or upon the contractor's failure to submit the required records as discussed in paragraph 3.d. of this section, the contracting agency may on its own initiative and after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

b. *Priority to withheld funds.* The Department has priority to funds withheld or to be withheld in accordance with paragraph

2.a. of this section or Section V, paragraph 3.a., or both, over claims to those funds by:

(1) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;

(2) A contracting agency for its reprocurement costs;

(3) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;

(4) A contractor's assignee(s);

(5) A contractor's successor(s); or

(6) A claim asserted under the Prompt Payment Act, 31 U.S.C. 3901–3907.

3. Records and certified payrolls (29 CFR 5.5)

a. *Basic record requirements* (1) *Length of record retention.* All regular payrolls and other basic records must be maintained by the contractor and any subcontractor during the course of the work and preserved for all laborers and mechanics working at the site of the work (or otherwise working in construction or development of the project under a development statute) for a period of at least 3 years after all the work on the prime contract is completed.

(2) *Information required.* Such records must contain the name; Social Security number; last known address, telephone number, and email address of each such worker; each worker's correct classification(s) of work actually performed; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in 40 U.S.C. 3141(2)(B) of the Davis-Bacon Act); daily and weekly number of hours actually worked in total and on each covered contract; deductions made; and actual wages paid.

(3) *Additional records relating to fringe benefits.* Whenever the Secretary of Labor has found under paragraph 1.e. of this section that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in 40 U.S.C. 3141(2)(B) of the Davis-Bacon Act, the contractor must maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits.

(4) *Additional records relating to apprenticeship.* Contractors with apprentices working under approved programs must maintain written evidence of the registration of apprenticeship programs, the registration of the apprentices, and the ratios and wage rates prescribed in the applicable programs.

b. *Certified payroll requirements* (1) *Frequency and method of submission.* The contractor or subcontractor must submit weekly, for each week in which any DBA- or Related Acts-covered work is performed, certified payrolls to the contracting agency. The prime contractor is responsible for the submission of all certified payrolls by all subcontractors. A contracting agency or prime contractor may permit or require contractors to submit certified payrolls through an electronic system, as long as the electronic system requires a legally valid electronic signature; the system allows the contractor, the contracting agency, and the Department of Labor to access the certified payrolls upon request for at least 3 years after the work on the prime contract has been completed; and the contracting agency or prime contractor permits other methods of submission in situations where the contractor is unable or limited in its ability to use or access the electronic system.

(2) *Information required.* The certified payrolls submitted must set out accurately and completely all of the information required to be maintained under paragraph 3.a.(2) of this section, except that full Social Security numbers and last known addresses, telephone numbers, and email addresses must not be included on weekly transmittals. Instead, the certified payrolls need only include an individually identifying number for each worker (*e.g.,* the last four digits of the worker's Social Security number). The required weekly certified payroll information may be submitted using Optional Form WH–347 or in any other format desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division website at *https://www.dol.gov/sites/dolgov/files/WHD/legacy/files/wh347/.pdf* or its successor website. It is not a violation of this section for a prime contractor to require a subcontractor to provide full Social Security numbers and last known addresses, telephone numbers, and email addresses to the prime contractor for its own records, without weekly submission by the subcontractor to the contracting agency.

(3) *Statement of Compliance.* Each certified payroll submitted must be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor, or the contractor's or subcontractor's agent who pays or supervises the payment of the persons working on the contract, and must certify the following:

(i) That the certified payroll for the payroll period contains the information required to be provided under paragraph 3.b. of this section, the appropriate information and basic records are being maintained under paragraph 3.a. of this section, and such information and records are correct and complete;

(ii) That each laborer or mechanic (including each helper and apprentice) working on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR part 3; and

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification(s) of work actually performed, as specified in the applicable wage determination incorporated into the contract.

(4) *Use of Optional Form WH–347.* The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH–347 will satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(3) of this section.

(5) *Signature.* The signature by the contractor, subcontractor, or the contractor's or subcontractor's agent must be an original handwritten signature or a legally valid electronic signature.

(6) *Falsification.* The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 3729.

(7) *Length of certified payroll retention.* The contractor or subcontractor must preserve all certified payrolls during the course of the work and for a period of 3 years after all the work on the prime contract is completed.

c. *Contracts, subcontracts, and related documents.* The contractor or subcontractor must maintain this contract or subcontract and related documents including, without limitation, bids, proposals, amendments, modifications, and extensions. The contractor or subcontractor must preserve these contracts, subcontracts, and related documents during the course of the work and for a period of 3 years after all the work on the prime contract is completed.

d. *Required disclosures and access* (1) *Required record disclosures and access to workers.* The contractor or subcontractor must make the records required under paragraphs 3.a. through 3.c. of this section, and any other documents that the contracting agency, the State DOT, the FHWA, or the Department of Labor deems necessary to determine compliance with the labor standards provisions of any of the applicable statutes referenced by § 5.1, available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and must permit such representatives to interview workers during working hours on the job.

(2) *Sanctions for non-compliance with records and worker access requirements.* If the contractor or subcontractor fails to submit the required records or to make them available, or refuses to permit worker interviews during working hours on the job, the Federal agency may, after written notice to the contractor, sponsor, applicant, owner, or other entity, as the case may be, that maintains such records or that employs such workers, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available, or to permit worker interviews during working hours on the job, may be grounds for debarment action pursuant to § 5.12. In addition, any contractor or other person that fails to submit the required records or make those records available to WHD within the time WHD requests that the records be produced will be precluded from introducing as evidence in an administrative proceeding under 29 CFR part 6 any of the required records that were not provided or made available to WHD. WHD will take into consideration a reasonable request from the contractor or person for an extension of the time for submission of records. WHD will determine the reasonableness of the request and may consider, among other things, the location of the records and the volume of production.

(3) *Required information disclosures.* Contractors and subcontractors must maintain the full Social Security number and last known address, telephone number, and email address of each covered worker, and must provide them upon request to the contracting agency, the State DOT, the FHWA, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or other compliance action.

4. Apprentices and equal employment opportunity (29 CFR 5.5)

a. *Apprentices* (1) *Rate of pay.* Apprentices will be permitted to work at less than the predetermined rate for the work they perform when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship (OA), or with a State Apprenticeship Agency recognized by the OA. A person who is not individually registered in the program, but who has been certified by the OA or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice, will be permitted to work at less than the predetermined rate for the work they perform in the first 90 days of probationary employment as an apprentice in such a program. In the event the OA or a State Apprenticeship Agency recognized by the OA withdraws approval of an apprenticeship program, the contractor will no longer be permitted to use apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(2) *Fringe benefits.* Apprentices must be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringe benefits must be paid in accordance with that determination.

(3) *Apprenticeship ratio.* The allowable ratio of apprentices to journeyworkers on the job site in any craft classification must not be greater than the ratio permitted to the contractor as to the entire work force under the registered program or the ratio applicable to the locality of the project pursuant to paragraph 4.a.(4) of this section. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated in paragraph 4.a.(1) of this section, must be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under this section must be paid not less than the applicable wage rate on the wage determination for the work actually performed.

(4) *Reciprocity of ratios and wage rates.* Where a contractor is performing construction on a project in a locality other than the locality in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyworker's hourly rate) applicable within the locality in which the construction is being performed must be observed. If there is no applicable ratio or wage rate for the locality of the project, the ratio and wage rate specified in the contractor's registered program must be observed.

b. *Equal employment opportunity.* The use of apprentices and journeyworkers under this part must be in conformity with

the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

c. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. 23 CFR 230.111(e)(2). The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeyworkers shall not be greater than permitted by the terms of the particular program.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract as provided in 29 CFR 5.5.

6. Subcontracts. The contractor or subcontractor must insert FHWA-1273 in any subcontracts, along with the applicable wage determination(s) and such other clauses or contract modifications as the contracting agency may by appropriate instructions require, and a clause requiring the subcontractors to include these clauses and wage determination(s) in any lower tier subcontracts. The prime contractor is responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this section. In the event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and may be subject to debarment, as appropriate. 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract as provided in 29 CFR 5.5.

9. Disputes concerning labor standards. As provided in 29 CFR 5.5, disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility. a. By entering into this contract, the contractor certifies that neither it nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of 40 U.S.C. 3144(b) or § 5.12(a).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of 40 U.S.C. 3144(b) or § 5.12(a).

c. The penalty for making false statements is prescribed in the U.S. Code, Title 18 Crimes and Criminal Procedure, 18 U.S.C. 1001.

11. Anti-retaliation. It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

a. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the DBA, Related Acts, this part, or 29 CFR part 1 or 3;

b. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under the DBA, Related Acts, this part, or 29 CFR part 1 or 3;

c. Cooperating in any investigation or other compliance action, or testifying in any proceeding under the DBA, Related Acts, this part, or 29 CFR part 1 or 3; or

d. Informing any other person about their rights under the DBA, Related Acts, this part, or 29 CFR part 1 or 3.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

Pursuant to 29 CFR 5.5(b), the following clauses apply to any Federal-aid construction contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchpersons and guards.

1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek. 29 CFR 5.5.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph 1. of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages and interest from the date of the underpayment. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or

mechanic, including watchpersons and guards, employed in violation of the clause set forth in paragraph 1. of this section, in the sum currently provided in 29 CFR 5.5(b)(2)* for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph 1. of this section.

* $31 as of January 15, 2023 (See 88 FR 88 FR 2210) as may be adjusted annually by the Department of Labor, pursuant to the Federal Civil Penalties Inflation Adjustment Act of 1990.

3. Withholding for unpaid wages and liquidated damages

a. *Withholding process.* The FHWA or the contracting agency may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for any unpaid wages; monetary relief, including interest; and liquidated damages required by the clauses set forth in this section on this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract subject to the Contract Work Hours and Safety Standards Act that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to the Contract Work Hours and Safety Standards Act and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld.

b. *Priority to withheld funds.* The Department has priority to funds withheld or to be withheld in accordance with Section IV paragraph 2.a. or paragraph 3.a. of this section, or both, over claims to those funds by:

(1) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;

(2) A contracting agency for its reprocurement costs;

(3) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;

(4) A contractor's assignee(s);

(5) A contractor's successor(s); or

(6) A claim asserted under the Prompt Payment Act, 31 U.S.C. 3901–3907.

4. Subcontracts. The contractor or subcontractor must insert in any subcontracts the clauses set forth in paragraphs 1. through 5. of this section and a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor is responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs 1. through 5. In the event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and associated liquidated damages and may be subject to debarment, as appropriate.

5. Anti-retaliation. It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

a. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the Contract Work Hours and Safety Standards Act (CWHSSA) or its implementing regulations in this part;

b. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under CWHSSA or this part;

c. Cooperating in any investigation or other compliance action, or testifying in any proceeding under CWHSSA or this part; or

d. Informing any other person about their rights under CWHSSA or this part.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System pursuant to 23 CFR 635.116.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term “perform work with its own organization” in paragraph 1 of Section VI refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions: (based on longstanding interpretation)

(1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
(2) the prime contractor remains responsible for the quality of the work of the leased employees;

(3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and

(4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract. 23 CFR 635.102.

2. Pursuant to 23 CFR 635.116(a), the contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. Pursuant to 23 CFR 635.116(c), the contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract. (based on long-standing interpretation of 23 CFR 635.116).

5. The 30-percent self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements. 23 CFR 635.116(d).

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR Part 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract. 23 CFR 635.108.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR Part 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704). 29 CFR 1926.10.

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR Part 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 11, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT (42 U.S.C. 7606; 2 CFR 200.88; EO 11738)

This provision is applicable to all Federal-aid construction contracts in excess of $150,000 and to all related subcontracts. 48 CFR 2.101; 2 CFR 200.327.

By submission of this bid/proposal or the execution of this contract or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, subcontractor, supplier, or vendor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251-1387). Violations must be reported to the Federal Highway Administration and the Regional Office of the Environmental Protection Agency. 2 CFR Part 200, Appendix II.

The contractor agrees to include or cause to be included the requirements of this Section in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements. 2 CFR 200.327.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost $25,000 or more – as defined in 2 CFR Parts 180 and 1200. 2 CFR 180.220 and 1200.220.

1**. Instructions for Certification – First Tier Participants:**

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction. 2 CFR 180.320.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default. 2 CFR 180.325.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances. 2 CFR 180.345 and 180.350.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180, Subpart I, 180.900-180.1020, and 1200. “First Tier Covered Transactions” refers to any covered transaction between a recipient or subrecipient of Federal funds and a participant (such as the prime or general contract). “Lower Tier Covered Transactions” refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). “First Tier Participant” refers to the participant who has entered into a covered transaction with a recipient or subrecipient of Federal funds (such as the prime or general contractor). “Lower Tier Participant” refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction. 2 CFR 180.330.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold. 2 CFR 180.220 and 180.300.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. 2 CFR 180.300; 180.320, and 180.325. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. 2 CFR 180.335. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the System for Award Management website (https://www.sam.gov/). 2 CFR 180.300, 180.320, and 180.325.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default. 2 CFR 180.325.

* * * * *

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency, 2 CFR 180.335;.

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property, 2 CFR 180.800;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification, 2 CFR 180.700 and 180.800; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default. 2 CFR 180.335(d).

(5) Are not a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and

(6) Are not a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability (USDOT Order 4200.6 implementing appropriations act requirements).

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant should attach an explanation to this proposal. 2 CFR 180.335 and 180.340.

* * * * *

3. **Instructions for Certification - Lower Tier Participants:**

(Applicable to all subcontracts, purchase orders, and other lower tier transactions requiring prior FHWA approval or estimated to cost $25,000 or more - 2 CFR Parts 180 and 1200). 2 CFR 180.220 and 1200.220.

a. By signing and submitting this proposal, the prospective lower tier participant is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances. 2 CFR 180.365.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180, Subpart I, 180.900 – 180.1020, and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. “First Tier Covered Transactions” refers to any covered transaction between a recipient or subrecipient of Federal funds and a participant (such as the prime or general contract). “Lower Tier Covered Transactions” refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). “First Tier Participant” refers to the participant who has entered into a covered transaction with a recipient or subrecipient of Federal funds (such as the prime or general contractor). “Lower Tier Participant” refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated. 2 CFR 1200.220 and 1200.332.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold. 2 CFR 180.220 and 1200.220.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the System for Award Management website (https://www.sam.gov/), which is compiled by the General Services Administration. 2 CFR 180.300, 180.320, 180.330, and 180.335.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily

excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment. 2 CFR 180.325.

* * * * *

4. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

a. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals:

(1) is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency, 2 CFR 180.355;

(2) is a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and

(3) is a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability. (USDOT Order 4200.6 implementing appropriations act requirements)

b. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant should attach an explanation to this proposal.

* * * * *

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed $100,000. 49 CFR Part 20, App. A.

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such recipients shall certify and disclose accordingly.

XII. USE OF UNITED STATES-FLAG VESSELS:

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, or any other covered transaction. 46 CFR Part 381.

This requirement applies to material or equipment that is acquired for a specific Federal-aid highway project. 46 CFR 381.7. It is not applicable to goods or materials that come into inventories independent of an FHWA funded-contract.

When oceanic shipments (or shipments across the Great Lakes) are necessary for materials or equipment acquired for a specific Federal-aid construction project, the bidder, proposer, contractor, subcontractor, or vendor agrees:

1. To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels. 46 CFR 381.7.

2. To furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, ‘on-board’ commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (b)(1) of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Office of Cargo and Commercial Sealift (MAR-620), Maritime Administration, Washington, DC 20590. (MARAD requires copies of the ocean carrier's (master) bills of lading, certified onboard, dated, with rates and charges. These bills of lading may contain business sensitive information and therefore may be submitted directly to MARAD by the Ocean Transportation Intermediary on behalf of the contractor). 46 CFR 381.7.

ATTACHMENT A - EMPLOYMENT AND MATERIALS PREFERENCE FOR APPALACHIAN DEVELOPMENT HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS ROAD CONTRACTS (23 CFR 633, Subpart B, Appendix B)
This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

a. To the extent that qualified persons regularly residing in the area are not available.

b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.

3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.

4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.

5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.

6. The contractor shall include the provisions of Sections 1 through 4 of this Attachment A in every subcontract for work which is, or reasonably may be, done as on-site work.

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

HONOLULU, HAWAII

SPECIAL PROVISIONS

These Special Provisions shall supplement and/or amend the applicable provisions of the Hawaii Standard Specifications for Road and Bridge Construction, 2005, hereinafter referred to as the "Standard Specifications".

Amend **Section 101 - TERMS, ABBREVIATIONS, AND DEFINITIONS** to read as follows:

“DIVISION 100 - GENERAL PROVISIONS

SECTION 101 - TERMS, ABBREVIATIONS, AND DEFINITIONS

101.01 Meaning of Terms. The specifications are generally written in the imperative mood. In sentences using the imperative mood, the subject, “the Contractor shall”, is implied. In the material specifications, the subject may also be the supplier, fabricator, or manufacturer supplying material, products, or equipment for use on the project. The word “will” generally pertains to decisions or actions of the State.

When a publication is specified, it refers to the most recent date of issue, including interim publications, before the bid opening date for the project, unless a specific date or year of issue is provided.

101.02 Abbreviations. Meanings of abbreviations used in the specifications, on the plans, or in other contract documents are as follows:

AAN	American Association of Nurserymen
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
ADA	Americans with Disabilities Act
ADAAG	Americans with Disabilities Act Accessibility Guidelines
AGC	Associated General Contractors of America
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute
APA	American Plywood Association

ARA	American Railway Association
AREA	American Railway Engineering Association
ASA	American Standards Association
ASCE	American Society of Civil Engineers
ASLA	American Society of Landscape Architects
ASTM	American Society for Testing and Materials
AWG	American Wire Gauge
AWPA	American Wood Preserver's Association
AWS	American Welding Society
AWWA	American Water Works Association
BMP	Best Management Practice
CCO	Contract Change Order
CFR	Code of Federal Regulations
CRSI	Concrete Reinforcing Steel Institute
DCAB	Disability and Communication Access Board, Department of Health, State of Hawaii
DOTAX	Department of Taxation, State of Hawaii
EPA	U.S. Environmental Protection Agency
FHWA	Federal Highway Administration, U.S. Department of Transportation
FSS	Federal Specifications and Standards, General Services Administration, U.S. Department of Defense
HAR	Hawaii Administrative Rules
HDOT	Department of Transportation, State of Hawaii

HIOSH	Occupational Safety and Health, Department of Labor and Industrial Relations, State of Hawaii
HMA	Hot Mix Asphalt
HRS	Hawaii Revised Statutes
ICEA	Insulated Cable Engineers Association (formerly IPCEA)
IMSA	International Municipal Signal Association
IRS	Internal Revenue Service
ITE	Institute of Transportation Engineers
MUTCD	Manual on Uniform Traffic Control Devices for Streets and Highways, FHWA, U.S. Department of Transportation
NCHRP	National Cooperative Highway Research Program
NEC	National Electric Code
NEMA	National Electrical Manufacturers Association
NFPA	National Forest Products Association
NPDES	National Pollutant Discharge Elimination System
OSHA	Occupational Safety and Health Administration/Act, U.S. Department of Labor
SAE	Society of Automotive Engineers
SI	International Systems of Units
UFAS	Uniform Federal Accessibility Standards
UL	Underwriter's Laboratory
USGS	U.S. Geological Survey
VECP	Value Engineering Cost Proposal

101.03 Definitions. Whenever the following words, terms, or pronouns are used in the contract documents, unless otherwise prescribed therein and without regards to the use or omission of uppercase letters, the intent and meaning shall be interpreted as follows:

Addendum (plural - Addenda) - A written or graphic document, including drawings and specifications, issued by the Director during the bidding period. This document modifies or interprets the bidding documents by additions, deletions, clarifications or corrections.

Addition (to the contract sum) **-** Amount added to the contract sum by change order.

Advertisement - A public announcement inviting bids for work to be performed or materials to be furnished.

Amendment - A written document issued to amend the existing contract between the State and Contractor and properly executed by the Contractor and Director.

Award - Written notification to the bidder that the bidder has been awarded a contract.

Bad Weather Day (or Unworkable Day) - A day when weather or other conditions prevent a minimum of four hours of work with the Contractor's normal work force on critical path activities at the site.

Bag - 94 pounds of cement.

Barrel - 376 pounds of cement.

Base Course - The layer or layers of specified material or selected material of a designed thickness placed on a subbase or subgrade to support a surface course.

Basement Material - The material in excavation or embankments underlying the lowest layer of subbase, base, pavement, surfacing or other specified layer.

Bid - See Proposal.

Bidder - An individual, partnership, corporation, joint venture or other legal entity submitting, directly or through a duly authorized representative or agent, a proposal for the work or construction contemplated.

Bidding Documents (or Solicitation Documents) - The published solicitation notice, bid requirements, bid forms and the proposed contract documents including all addenda and clarifications issued prior to receipt of the bid.

Bid Security - The security furnished by the bidder from which the State may recover its damages in the event the bidder breaches its promise to enter into a contract with the State, or fails to execute the required bonds covering the work contemplated, if its proposal is accepted.

Blue Book - EquipmentWatch Cost Recovery (formerly known as EquipmentWatch Rental Rate Blue Book), available from EquipmentWatch, a division of Penton, Inc.

Calendar Day - See Day.

Change Order (or Contract Change Order) - A written order signed by the Engineer issued with or without the consent of the Contractor directing changes in the work, contract time or contract price. The purposes of a change order include, but are not limited to (1) establishing a price or time adjustment for changes in the work; (2) establishing full payment for direct, indirect, and consequential costs, including costs of delay; (3) establishing price adjustment or time adjustment for work covered and affected by one or more field orders; or (4) settling Contractor's claims for direct, indirect, and consequential costs, or for additional contract time, in whole or in part.

Completion - See Substantial Completion and Final Completion.

Completion Date - The date specified by the contract for the completion of all work on the project or of a designated portion of the project.

Comptroller - the Comptroller of the State of Hawaii, Department of Accounting and General Services.

Contract - The written agreement between the Contractor and the State, by which the Contractor shall provide all labor, equipment, and materials and perform the specified work within the contract time stipulated, and by which the State of Hawaii is obligated to compensate the Contractor at the prices set forth in the contract documents.

Contract Certification Date - The Date on which the Deputy Comptroller for the State of Hawaii (or authorized representative) signs the Contract Certification.

Contract Completion Date - The calendar day on which all work on the project, required by the contract, must be completed. See CONTRACT TIME.

Contract Documents - The contract, solicitation, addenda, notice to bidders, Contractor's bid proposal (including wage schedule, list of subcontractors and other documentations accompanying the bid), notice to proceed, bonds, general provisions, special provisions, specifications, drawings, all modifications, all written amendments, change orders, field orders, orders for minor changes in the work, the Engineer's written interpretations and clarifications issued on or after the effective date of the contract.

Contract Item (Pay Item) - A specific unit of work for which there is a price in the contract.

Contract Modification (Modification) - A change order that is mutually agreed to and signed by the parties to the contract.

Contract Price - The amount designated on the face of the contract for the performance of work.

Contract Time (or Contract Duration) - The number of calendar or working days provided for completion of the contract, inclusive of authorized time extensions. Contract time shall commence on the Start Work Date and end on the Substantial Completion Date. If in lieu of providing a number of calendar or working days, the contract requires completion by a certain date, the work shall be completed by that date.

Contracting Officer - See Engineer.

Contractor - Any individual, partnership, firm, corporation, joint venture, or other legal entity undertaking the execution of the work under the terms of the contract with the State.

Critical Path - Longest logical sequence of activities that must be completed on schedule for the entire project to be completed on schedule.

Day - Any day shown on the calendar, beginning at midnight and proceeding up to, but not including, midnight the following day. If no designation of calendar or working day is made, "day" shall mean calendar day.

Department - The Department of Transportation of the State of Hawaii (abbreviated HDOT).

Director - The Director of the HDOT acting directly or through duly authorized representatives.

Plans (or Drawings) - The contract drawings in graphic or pictorial form including the notes, tables and other notations thereon indicating the design, location, character, dimensions, and details of the work.

Engineer - The Highway Administrator, Highways Division, HDOT, or the authorized person delegated to act on the Administrator's behalf.

Equipment - All machinery, tools, and apparatus needed to complete the contract.

Field Order - A written order issued by the Engineer or the Engineer's authorized representative to the Contractor requiring a change or changes to the contract work. A field order may (1) establish a price adjustment or time adjustment; or (2) may declare that no adjustment will be made to contract price or contract time; or (3) may request the Contractor to submit a proposal for an adjustment to the contract price or contract time.

Final Acceptance - The Status of the project when the Engineer finds that the Contractor has satisfactorily completed all contract work in compliance with the contract including all plant establishment requirements, and all the materials have been accepted by the State.

Final Completion - The date set by the Director that all work required by the contract has been completed in full compliance with the contract documents.

Final Inspection - Inspection where all contract items (with the exception of Planting Period and Plant Establishment Period) are accepted by the Engineer. Substantial Completion will be issued by the Engineer based on the satisfactory results of the Final Inspection.

Float - The amount of time between when an activity can start and when an activity must start, i.e., the time available to complete non-critical activities required for the performance of the work without affecting the critical path.

Guarantee - Legally enforceable assurance of the duration of satisfactory performance of quality of a product or work.

Hawaii Administrative Rules - Rules adopted by the State in accordance with Chapter 91 of the Hawaii Revised Statutes, as amended.

Hawaii eProcurement System (HIePRO) - The State of Hawaii eProcurement System for issuing solicitations, receiving proposals and responses, and issuing notices of award.

Highway (Street, Road, or Roadway) - A public way within a right-of-way designed, intended, and set aside for use by vehicles, bicyclists, or pedestrians.

Highways Division - The Highways Division of the Hawaii Department of Transportation constituted under the laws of Hawaii for the administration of highway work.

Holidays - The days of each year which are set apart and established as State holidays pursuant to Chapter 8 of the Hawaii Revised Statutes, as amended.

Inspector - The Engineer's authorized representative assigned to make detailed inspections of contract performance, prescribed work, and materials supplied.

Laboratory - The testing laboratory of the Highways Division or other testing laboratories that may be designated by the Engineer.

Laws - All Federal, State, and local laws, executive orders and regulations having the force of law.

Leveling Course - An aggregate mixture course of variable thickness used to restore horizontal and vertical uniformity to existing pavements or shoulders.

Liquidated Damages - The amount prescribed in Subsection 108.08 - Liquidated Damages for Failure to Complete the Work or Portions of the Work on Time, to be paid to the State or to be deducted from any payments payable to or, which may become payable to the Contractor.

Lump Sum (LS) - When used as a payment method means complete payment for the item of work described in the contract documents.

Material - Any natural or manmade substance or item specified in the contract to be incorporated in the work.

Notice to Bidders - The advertisement for proposals for all work or materials on which bids are required. Such advertisement will indicate the location of the work to be done or the character of the material to be furnished and the time and place for the opening of proposals.

Notice to Proceed - Written notice from the Engineer to the Contractor identifying the date on which the Contractor is to begin procuring materials and required permits and adjusting work forces, equipment, schedules, etc. prior to beginning physical work.

Pavement - The uppermost layer of material placed on the traveled way or shoulders or both. Pavement and surfacing may be interchangeable.

Pavement Structure - The combination of subbase, base, pavement, surfacing or other specified layer of a roadway constructed on a subgrade to support the traffic load.

Payment Bond - The security executed by the Contractor and surety or sureties furnished to the Department to guarantee payment by the Contractor to laborers, material suppliers and subcontractors in accordance with the terms of the contract.

Physical Work - Physical construction activities on the project site or at appurtenant facilities including staging areas. It includes; (i) building or installing any structures or facilities including, but not limited to sign erection; BMP installation; field office site grading and building; (ii) removal, adjustment, or demolition of physical obstructions on site; (iii) any ground breaking activities; and (iv) any utility work. It does not include pre-construction environmental testing (such as water quality baseline measurements) that may be required as part of contract.

Pre-Final Inspection - Inspection scheduled when Contractor notifies Engineer that all physical work on the project, with the exception of planting period and plant establishment period, has been completed. Notice from Contractor of substantial completion will suspend contract time until Contractor receives punchlist from Engineer.

Profile Grade - The elevation or gradient of a vertical plane intersecting the top surface of the proposed pavement.

Project Acceptance Date - The calendar day on which the Engineer accepts the project as completed. See Final Completion.

Proposal (Or Bid) - The offer of a Bidder, on the prescribed HDOT form, to perform the work and to furnish the labor and materials at the prices quoted.

Public Traffic - Vehicular or pedestrian movement on a public way.

Punchlist - A list compiled by the Engineer specifying work yet to be completed or corrected by the Contractor in order to substantially complete the contract.

Questionnaire - The specified forms on which the bidder shall furnish required information as to its ability to perform and finance the work.

Request for Change Proposal - A written notice from the Engineer to the Contractor requesting that the Contractor provide a price and/or time proposal for contemplated changes preparatory to the issuance of a field order or change order.

Right-of-Way - Land, property, or property interests acquired by a government agency for, or devoted to transportation purposes.

Roadbed - The graded portion of a highway within top and side slopes, prepared as a foundation for the pavement structure and shoulders.

Roadside - The area between the outside edges of the shoulders and the right-of-way boundaries. Unpaved median areas between inside shoulders of divided highways and infield areas of interchanges are included.

Section and Subsection - Section or subsection shall be understood to refer to these specifications unless otherwise specified.

Shop Drawings - All drawings, diagrams**,** illustrations, schedules and other data or information which are specifically prepared or assembled by or for the Contractor and submitted by the Contractor to illustrate some portion of the work.

Shoulder - The portion of the roadway next to the traveled way for: accommodation of stopped vehicles, placement of underground facilities, emergency use, and lateral support of base and surface courses.

Sidewalk - That portion of the roadway primarily constructed for use by pedestrians.

Solicitation - An invitation to bid or request for proposals or any other document issued by the Department to solicit bids or offers to perform a contract. The solicitation may indicate the time and place to receive the bids or offers and the location, nature and character of the work, construction or materials to be provided.

Specifications - Compilation of provisions and requirements to perform prescribed work.

(A) Standard Specifications. Specifications by the State intended for general application and repetitive use.

(B) Special Provisions. Revisions and additions to the standard specifications applicable to an individual project.

Standard Plans - Drawings provided by the State for specific items of work approved for repetitive use.

State - The State of Hawaii, its Departments and agencies, acting through its authorized representative(s).

State Waters – All waters, fresh, brackish, or salt, around and within the State, including, but not limited to, coastal waters, streams, rivers, drainage ditches, ponds, reservoirs, canals, ground waters, and lakes; provided that drainage ditches, ponds, and reservoirs required as a part of a water pollution control system are excluded.

Start Work Date - Date on which Contractor begins physical work on the contract. This date shall also be the beginning of Contract Time.

Structures - Bridges, culverts, catch basins, drop inlets, retaining walls, cribbing, manholes, endwalls, buildings, sewers, service pipes, underdrains, foundation drains, and other such features that may be encountered in the work.

Subbase - A layer of specified material of specified thickness between the subgrade and a base.

Subcontract - Any written agreement between the Contractor and its subcontractors which contains the conditions under which the subcontractor is to perform a portion of the work for the Contractor.

Subcontractor - An individual, partnership, firm, corporation, joint venture or other legal entity, as licensed or required to be licensed under Chapter 444, Hawaii Revised Statutes, as amended, which enters into an agreement with the Contractor to perform a portion of the work**.**

Subgrade - The top surface of completed earthwork on which subbase, base, surfacing, pavement, or a course of other material is to be placed.

Substantial Completion - The Status of the project when the Contractor has completed the work, except for the planting period and plant establishment period, and each of the following requirements are met:

(1) All traffic lanes (including shoulders, ramps, sidewalks and bike paths) are in their final configuration as designed and the final wearing surface has been installed;

(2) All operational and safety devices have been installed in accordance with the contract documents including guardrails, end treatments, traffic barriers, required signs and pavement markings, drainage, parapet, and bridge and pavement structures;

(3) All required illumination and lighting for normal and safe use and operation is installed and functional in accordance with the contract documents;

(4) All utilities and services are connected and working;

(5) The need for temporary traffic controls or lane closures at any time has ceased, except for lane closures required for routine maintenance;

(6) The building, structure, improvement or facility can be used for its intended purpose.

Substantial Completion Date - The date the Substantial Completion is granted by the Engineer in Writing and Contract Time stops.

Superintendent - The employee of the Contractor who is responsible for all the work and is a Contractor’s agent for communications to and from the State.

Surety - The qualified individual, firm or corporation other than the Contractor, which executes a bond with and for the Contractor to insure its acceptable performance of the contract.

Surfacing - The uppermost layer of material placed on the traveled way or shoulders. This term is used interchangeably with pavement.

Traveled Way - The portion of the roadway for the movement of vehicles, exclusive of shoulders.

Unsuitable Material - Materials that contain organic matter, muck, humus, peat, sticks, debris, chemicals, toxic matter, or other deleterious materials not suitable for use in earthwork.

Utility - A line, facility, or system for producing, transmitting, or distributing communications, power, electricity, heat, gas, oil, water, steam, waste, or storm water.

Utility Owner - The entity, whether private or owned by a State, Federal, or County governmental body, that has the power and responsibility to grant approval for, or undertake construction work involving a particular utility.

Water Pollutant - Dredged spoil, solid refuse, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical waste, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, soil, sediment, cellar dirt and industrial, municipal, and agricultural waste.

Water Pollution - (1) Such contamination or other alteration of the physical, chemical, or biological properties of any state waters, including change in temperature, taste, color, turbidity, or odor of the waters, or **(2)** Such discharge of any liquid, gaseous, solid, radioactive, or other substances into any state waters, as will or is likely to create a nuisance or render such waters unreasonably harmful, detrimental, or injurious to public health, safety, or welfare, including harm, detriment, or injury to public water supplies, fish and aquatic life and wildlife, recreational purposes and agricultural and industrial research and scientific uses of such waters or as will or is likely to violate any water quality standards, effluent standards, treatment and pretreatment standards, or standards of performance for new sources adopted by the Department of Health.

Work - The furnishing of all labor, material, equipment, and other incidentals necessary or convenient for the successful execution of all the duties and obligations imposed by the contract.

Working Day - A calendar day in which a Contractor is capable of working four or more hours with its normal work force, exclusive of:

(1) Saturdays, Sundays, and recognized legal State holidays and such other days specified by the contract documents as non-working days,

(2) Day in which the Engineer suspends work for four or more hours through no fault of the Contractor."

END OF SECTION 101

Make this section a part of the Standard Specifications:

"**SECTION 102 - BIDDING REQUIREMENTS AND CONDITIONS**

102.01 Prequalification of Bidders. Prospective bidders shall be capable of performing the work for which they are bidding.

In accordance with HRS Chapter 103D-310, the Department may require any prospective bidder to submit answers to questions contained in the 'Standard Qualification Questionnaire For Prospective Bidders On Public Works Contracts' furnished by the Department, properly executed and notarized, setting forth a complete statement of the experience of such prospective bidder and its organization in performing similar work and a statement of the equipment proposed to be used, together with adequate proof of the availability of such equipment. Whenever it appears to the Department, from answers to the questionnaire or otherwise, that the prospective bidder is not fully qualified and able to perform the intended work, the Department will, after affording the prospective bidder an opportunity to be heard and if still of the opinion that the bidder is not fully qualified to perform the work, refuse to receive or consider any bid offered by the prospective bidder. All information contained in the answers to the questionnaire shall be kept confidential. Questionnaire so submitted shall be returned to the bidders after serving their purpose.

No person, firm or corporation may bid where (1) the person, firm, or corporation, or (2) a corporation owned substantially by the person, firm, or corporation, or (3) a substantial stockholder or an officer of the corporation, or (4) a partner or substantial investor in the firm is in arrears in payments owed to the State or its political subdivisions or is in default as a surety or failure to do faithfully and diligently previous contracts with the State.

102.02 Contents of Proposal Forms. The Department will furnish prospective bidders with proposal forms posted in HIePRO stating:

(1) The location,

(2) Description of the proposed work,

(3) The approximate quantities,

(4) Items of work to be done or materials to be furnished,

(5) A schedule of items, and

(6) The time in which the work shall be completed.

Papers bound with or attached to the proposal form are part of the proposal. The bidder shall not detach or alter the papers bound with or attached to the proposal when the bidder submits its proposal through HIePRO.

Also, the bidder shall consider other documents including the plans and specifications a part of the proposal form whether attached or not.

102.03 (Unassigned).

102.04 Estimated Quantities. The quantities shown in the contract are approximate and are for the comparison of bids only. The actual quantity of work may not correspond with the quantities shown in the contract. The Department will make payment to the Contractor for unit price items in accordance with the contract for only the following:

(1) Actual quantities of work done and accepted, not the estimated quantities; or

(2) Actual quantities of materials furnished, not the estimated quantities.

The Department may increase, decrease, or omit each scheduled quantities of work to be done and materials to be furnished. When the Department increases or decreases the estimated quantity of a contract item by more than 15% the Department will make payment for such items in accordance with Subsection 104.06 - Methods of Price Adjustment.

102.05 Examination of Contract and Site of Work. The bidder shall examine carefully the site of the proposed work and contract before submitting a proposal.

By the act of submitting a bid for the proposed contract, the bidder warrants that:

(1) The bidder and its Subcontractors have reviewed the contract documents and found them free from ambiguities and sufficient for the purpose intended;

(2) The bidder and its workers, employees and subcontractors have the skills and experience in the type of work required by the contract documents bid upon;

(3) Neither the bidder nor its employees, agents, suppliers or subcontractors have relied upon verbal representations from the Department, its employees or agents, including architects, engineers or consultants, in assembling the bid figure; and

(4) The basis for the bid figure are solely on the construction contract documents.

Also, the bidder warrants that the bidder has examined the site of the work. From its investigations, the bidder acknowledges satisfaction on:

(1) The nature and location of the work;

(2) The character, quality, and quantity of materials;

(3) The difficulties to be encountered; and

(4) The kind and amount of equipment and other facilities needed;

Subsurface information or hydrographic survey data furnished are for the bidders' convenience only. The data and information furnished are the product of the Department's interpretation gathered in investigations made at the specific locations. These conditions may not be typical of conditions at other locations within the project area or that such conditions remain unchanged. Also, conditions found at the time of the subsurface explorations may not be the same conditions when work starts. The bidder shall be solely responsible for assumptions, deductions, or conclusions the bidder may derive from the subsurface information or data furnished.

If the Engineer determines that the natural conditions differ from that originally anticipated or contemplated by the Contractor in the items of excavation, the State may treat the difference in natural conditions, as falling within the meaning of Subsection 104.02 – Changes.

102.06 Preparation of Proposal. The submittal of its proposal shall be on forms furnished by the Department. The bidder shall specify in words or figures:

(1) A unit price for each pay item with a quantity given;

(2) The products of the respective unit prices and quantities

(3) The lump sum amount; and

(4) The total amount of the proposal obtained by adding the amounts of the several items.

The words and figures shall be in ink or typed. If a discrepancy occurs between the prices written in words and those written in figures, the prices written in words shall govern.

When an item in the proposal contains an option to be made, the bidder shall choose in accordance with the contract for that particular item. Determination of an option will not permit the Contractor to choose again.

The bidder shall sign the proposal properly in ink. A duly authorized representatives of the bidder or by an agent of the bidder legally qualified and acceptable to the Department shall sign, including one or more partners of the bidder and one or more representatives of each entity comprising a joint venture.

When an agent, other than the officer(s) of a corporation authorized to sign contracts for the corporation or a partner of a partnership, signs the proposals, a 'Power of Attorney' shall be on file with the Department or submitted with the proposal. Otherwise, the Department will reject the proposal as irregular and unauthorized.

The bidder shall submit acceptable evidence of the authority of the partner, member(s) or officer(s) to sign for the partnership, joint venture, or corporation respectively with the proposal. Otherwise, the Department will reject the proposal as irregular and unauthorized.

102.07 Irregular Proposals. The Department may consider proposals irregular and may reject the proposals for the following reasons:

(1) The proposal is a form not furnished by the Department, altered, or detached;

(2) The proposal contains unauthorized additions, conditions, or alternates. Also, the proposal contains irregularities that may tend to make the proposal incomplete, indefinite, or ambiguous to its meaning;

(3) The bidder adds provisions reserving the right to accept or reject an award. Also, the bidder adds provisions into a contract before an award;

(4) The proposal does not contain a unit price for each pay item listed except authorized optional pay items; and

(5) Prices for some items are out of proportion to the prices for other items.

(6) If in the opinion of the Director, the bidder and its listed subcontractors do not have the Contactor's licenses or combination of Contractor's licenses necessary to complete the work.

Where the prospective bidder is bidding on multiple projects simultaneously and the proposal limits the maximum gross amount of awards that the bidder can accept at one bid letting, the proposal is not irregular if the limit on the gross amount of awards is clear, and the Department selects the awards that can be given.

102.08 Proposal Guaranty. The Department will not consider a proposal of $25,000 or more unless accompanied by:

(1) A deposit of legal tender; or

(2) A valid surety bid bond, underwritten by a company licensed to issue bonds in the State of Hawaii, in the form and composed, substantially, with the same language as provided herewith and signed by both parties; or

(3) A certificate of deposit, share certificate, cashier's check, treasurer's check, teller's check, or official check drawn by, or a certified check accepted by and payable on demand to the State by a bank, savings institution, or credit union insured by the Federal Deposit Insurance Corporation (FDIC) or the National Credit Union Administration (NCUA).

(a) The bidder may use these instruments 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 acceptable.

(c) The instrument shall be made payable at sight to the Department.

(d) If bidder elects options (1) or (3) above for its bid security, said bid security shall be in its <u>original form</u> and shall be <u>submitted before the bid deadline</u> to the Contract Office, Department of Transportation, Aliiaimoku Hale, 869 Punchbowl Street, Room 105, Honolulu, Hawaii 96813. Original surety bid bonds do <u>not</u> need to be submitted to the Contracts Office. Bidders are reminded that a copy of its surety bid bond shall be <u>included with its bid</u> submitted and uploaded to HIePRO.

In accordance with HRS Chapter 103D-323, the above shall be in a sum not less than 5% of the amount bid.

102.09 Delivery of Proposal. Bidders shall submit and upload the complete proposal to HIePRO prior to the bid opening date and time. Proposals received after said due date and time shall not be considered. Any additional support documents explicitly designated as confidential and/or proprietary shall be uploaded as a separate file to HIePRO. Bidders shall not include confidential and/or proprietary documents with the proposal. The record of each bidder and respective bid shall be open to public inspection. Original (wet ink, hard copy) proposal documents are not required to be submitted. **Contract award shall be based on evaluation of proposals submitted and uploaded to HIePRO.**

FAILURE TO UPLOAD THE COMPLETE PROPOSAL TO HIePRO SHALL BE GROUNDS FOR REJECTION OF THE BID.

If there is a conflict between the specification document and the HIePRO solicitation, the specifications shall govern and control, unless otherwise specified.

102.10 Withdrawal or Revision of Proposals. Bids may be modified or withdrawn prior to the bid opening date and time. Withdrawal or revision of proposal shall be completed, and submitted and uploaded to HIePRO prior to the bid opening date and time."

102.11 Public Opening of Proposals. Not applicable.

102.12 Disqualification of Bidders. The Department may disqualify a bidder and reject its proposal for the following reasons:

(1) Submittal of more than one proposal whether under the same or different name.

(2) Evidence of collusion among bidders. The Department will not recognize participants in collusion as bidders for any future work of the Department until such participants are reinstated as qualified bidders.

(3) Lack of proposal guaranty.

(4) Submittal of an unsigned or improperly signed proposal.

(5) Submittal of a proposal without a listing of subcontractors or containing only a partial or incomplete listing of subcontractors.

(6) Submittal of an irregular proposal in accordance with Subsection 102.07 - Irregular Proposals.

(7) Evidence of assistance from a person who has been an employee of the agency within the preceding two years and who participated while in State office or employment in the matter with which the contract is directly concerned, pursuant to HRS Chapter 84-15.

(8) Suspended or debarred in accordance with HRS Chapter 104-25.

(9) Failure to complete the prequalification questionnaire, if applicable.

(10) Failure to attend the mandatory pre-bid meeting, if applicable.

102.13 Material Guaranty. The successful bidder may be required to furnish a statement of the composition, origin, manufacture of materials, and samples.

102.14 Substitution of Materials and Equipment Before Bid Opening. See Subsection 106.13 for Substitution Of Materials and Equipment After Bid Opening.

(A) General. When brand names of materials or equipment are specified in the contract documents, they are to indicate a quality, style, appearance, or performance and not to limit competition. The bidder shall base its bid on one of the specified brand names unless alternate brands are qualified as equal or better in an addendum. Qualification of such proposed alternate brands shall be submitted via email to the Contact person listed in HIePRO for the solicitation and also post a question in HIePRO under the question/answer tab referencing the email with the request. The request must be posted in HIePRO no later than 14 calendar days before the bid opening date, not including the bid opening date.

An addendum will be issued to inform all prospective bidders of any accepted substitution in accordance with Subsection 102.17 – Addenda.

(B) Statement of Variances. The statement of variances must list all features of the proposed substitution that differ from the contract documents and must further certify that the substitution has no other variant features. The brochure and information submitted shall be clearly marked showing make, model, size, options, and any other features requested by the Engineer and must include sufficient evidence to evaluate each feature listed as a variance. A request will be denied if submitted without sufficient evidence. If after installing the substituted product, an unlisted variance is discovered, the Contractor shall immediately replace the product with a specified product at no increase in contract price and contract time.

(C) Substitution Denial. Any substitution request not complying with the above requirements will be denied.

102.15 Preferences. Preferences shall not apply to this project.

102.16 Certification for Safety and Health Program for Bids in excess of $100,000. In accordance with HRS Chapter 396-18, the bidder or offeror, by signing and submitting this proposal, certifies that a written safety and health plan for this project will be available and implemented by the notice to proceed date for this project. Details of the requirements of this plan may be obtained from the State Department of Labor and Industrial Relations, Occupational Safety and Health Division (HIOSH).

102.17 Addenda. Addenda issued shall become part of the contract documents. Addenda to the bid documents will be provided to all prospective bidders via HIePRO. Each addendum shall be an addition to the contract documents. The terms and requirements of the bid documents (i.e., drawings, specifications and other bid and contract documents) cannot be changed prior to the bid opening except by a duly issued addendum."

END OF SECTION 102

Make this section a part of the Standard Specifications:

"SECTION 103 - AWARD AND EXECUTION OF CONTRACT

103.01 Consideration of Proposals. The Department will compare the proposals in terms of the summation of the products of the approximate quantities and the unit bid prices after the submittal date and time established in HIePRO. If a discrepancy occurs between the unit bid price and the bid price, the unit bid price shall govern.

The "Buy America" provisions in the Surface Transportation Assistance Act of 1982 is applicable to Federal-aid projects. Bidders may submit a bid based upon the furnishing and use of domestic steel or foreign steel. Manufacturing processes for domestic steel shall occur in the United States.

The Department reserves the right to reject proposals, waive technicalities or advertise for new proposals, if the rejection, waiver, or new advertisement favors the Department.

103.02 Award of Contract. The award of contract, if it be awarded, will be made within 60 calendar days after the opening of bids, to the lowest responsible and responsive bidder whose proposal complies with all the prescribed requirements. The Department may request the bidders to allow the Department to consider the bids for the issuance of an award beyond the 60-calendar day period. Agreement to such an extension must be made by a bidder in writing. Only bidders who have agreed to such an extension will be eligible for the award.

(1) Requirement for Award. The Bidder, as proof of compliance with the requirements of section 103D-310(c), HRS, upon award of a contract made pursuant to section 103D-302, HRS, shall provide the documents listed below. The documents shall be submitted promptly to the Department. If a valid certificate/clearance is not submitted on a timely basis upon award, the Bidder may be deemed non-responsible. See also Subsection 108.03 – Preconstruction Data Submittal.

(A) Tax Clearance. Pursuant to §103D-310(c), 103-53 and 103D-328, HRS, the bidder shall submit a tax clearance certificate from the State of Hawaii Department of Taxation (DOTAX) and the Internal Revenue Service (IRS), subject to section 103D-328, HRS, current within six months of issuance date.

FORM A6, TAX CLEARANCE CERTIFICATE, is available at the following website:

https://tax.hawaii.gov/

To receive DOTAX Forms by fax or mail, phone (808) 587-4242 or 1-800-222-3229.

The application for the Tax Clearance Certificate is the responsibility of the bidder. Bidder shall submit directly to the DOTAX or IRS. The approved certificate may then be submitted to the Department.

(B) DLIR Certificate of Compliance. Pursuant to §103D-310(c), HRS, the bidder shall submit a certificate of compliance for Hawaii Employment Security Law (Chapter 383, HRS), Workers' Compensation Law (Chapter 386, HRS), Temporary Disability Insurance (Chapter 392, HRS), and Prepaid Health Care Act (Chapter 393, HRS), from the State of Hawaii Department of Labor and Industrial Relations (DLIR), current within six months of issuance date.

FORM LIR#27, APPLICATION FOR CERTIFICATE OF COMPLIANCE WITH SECTION 3-122-112, HAR, is available at the following website:

http://labor.hawaii.gov/

Contact the DLIR Unemployment Insurance Division at (808) 586-8926 for additional information.

Inquiries regarding the status of a LIR#27 Form may be made by calling the DLIR Disability Compensation Division at (808) 586-9200.

The application for the Certificate of Compliance is the responsibility of the bidder. Bidder shall submit directly to the DLIR. The approved certificate may then be submitted to the Department.

(C) DCCA Certificate of Good Standing. Pursuant to §103D-310(c), HRS, the bidder shall submit a certificate of good standing from the business registration division (BREG) of the State of Hawaii Department of Commerce and Consumer Affairs (DCCA), current within six months of issuance date, to demonstrate it is either:

(1) Incorporated or organized under the laws of the State; or

(2) Registered to do business in the State as a separate branch or division that is capable of fully performing under the contract.

A Hawaii business that is a sole proprietorship, is not required to register with the BREG, and therefore not required to submit a

certificate of good standing. Bidders are advised of costs associated with registering and obtaining a Certificate of Good Standing from the DCCA.

To purchase a CERTIFICATE OF GOOD STANDING, go to On-Line Services at the following website:

http://cca.hawaii.gov/

The application for the Certificate of Good Standing is the responsibility of the bidder. Bidder shall submit directly to the DCCA. The approved certificate may then be submitted to the Department.

(D) Hawaii Compliance Express (HCE). In lieu of the certificates referenced in subsection A, B, and C, the bidder may make available proof of compliance through a state procurement office designated certification process.

103.03 Cancellation of Award. The Department reserves the right to cancel the award of contracts before the execution of said contract by the parties. There will be no liability to the awardee and to other bidders.

103.04 Return of Proposal Guaranty. The Department will return the proposal guaranties, except those of the three lowest bidders, after the Department checks the proposals. The Department will return the proposal guaranties of the remaining two lowest bidders, not awarded the contract, within five working days following the execution of the contract. The Department will return the successful bidder's proposal guaranty after the successful bidder furnishes a bond and executes the contract.

103.05 Requirement of Contract Bond. At the time of execution of the contract, the successful bidder shall file a good and sufficient performance bond and a payment bond on the forms furnished by the Department conditioned for the full and faithful performance of the contract in accordance with the terms and intent thereof and for the prompt payment to all others for all labor and material furnished by them to the bidder and used in the prosecution of the work provided for in the contract. The bonds shall be of an amount equal to 100 percent of the amount of the contract price and include 5 percent of the contract amount estimated to be required for extra work. The bidder shall limit the acceptable performance and payment bonds to the following:

(a) Legal tender;

(b) Surety bond underwritten by a company licensed to issue bonds in the State of Hawaii; or

(c) A certificate of deposit; share certificate; cashier's check; treasurer's check, teller's check drawn by or a certified check accepted by and payable on demand to the State by a bank savings institution or credit union insured by the Federal Deposit Insurance Corporation (FDIC) or the National Credit Union Administration (NCUA).

1. The bidder may use these instruments only to a maximum of $100,000.

2. 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 acceptable.

Such bonds shall also by the terms insure to the benefit of any and all persons entitled to file claims for labor done or material furnished in the work so as to give them a right of action as contemplated by HRS Section 103D-324.

103.06 Execution of the Contract. The contract bond and HRS Chapter 104 - Compliance Certificate, similar to a copy of the same annexed hereto, shall be executed by the successful bidder and returned within ten days after the award of the contract or within such further time as the Director may allow after the bidder has received the contract for execution.

The contract shall not bind the Department unless said parties execute the contract and the Director of Finance endorses the bidder's certificate in accordance with HRS Section 103-39.

103.07 Failure to Execute Contract. Failure to execute the contract and file acceptable bonds shall be cause for the cancellation of the award in accordance with Subsection 103.06 - Execution of the Contract. Also, the Contractor forfeits the proposal guaranty which becomes the property of the Department. This is not a penalty, but liquidated damages sustained by the State. The Department may then make award to the next lowest responsible and responsive bidder or the Department may readvertise and construct the work under contract."

END OF SECTION 103

SECTION 104 – SCOPE OF WORK

Make the following amendment to said Section:

(I) Amend **Section 104.06 Methods of Price Adjustment** as follows:

"104.06 Methods of Price Adjustment. Any adjustment in the contract price pursuant to a change or claim shall be made in one or more of the following ways:

(1) By written agreement on a fixed price adjustment before commencement of the pertinent performance.

(2) By unit prices or other price adjustments specified in the contract or subsequently agreed upon before commencement of the pertinent performance.

(3) The Engineer may base the adjustment for a lump sum item on a calculated proportionate unit price. The Engineer will calculate the proportionate unit price by dividing the original contract lump sum price by the actual or original estimated quantity established by the contract documents.

(4) In any other lawful manner as the parties may mutually agree upon before commencement of the pertinent performance.

(5) At the sole option of the Engineer, work may be paid for on a force account basis in accordance with Subsection 109.06 - Force Account Provisions and Compensation.

(6) By the cost variations attributable to the events or situations with adjustment of profit and fee, all as specified in the contract or subsequently agreed upon before commencement of the pertinent performance.

(7) In the absence of agreement by the parties:

(A) For change orders with value not exceeding $50,000 by documented actual costs of the work, allowing for overhead and profit as set forth in Section 109.05 - Allowances for Overhead and Profit. A change order shall be issued within fifteen days of submission by the contractor of proper documentation of completed force account work, whether periodic (conforming to the applicable billing cycle) or final. The Engineer shall return any documentation that is defective, to the contractor within fifteen days after receipt, with a statement identifying the defect; or

(B) For change orders with value exceeding $50,000 by a unilateral determination by the Engineer of the costs attributable to the events or situations with adjustment of profit and fee, all as computed by the Engineer in accordance with applicable sections of HAR Chapters 3-123 and 3-126, and Section 109.05 - Allowances for Overhead and Profit. When a unilateral determination has been made, a unilateral change order shall be issued within ten days. Upon receipt of the unilateral change order, if the contractor does not agree with any of the terms or conditions, or the adjustment or nonadjustment of the contract time or contract price, the contractor shall file a notice of intent to claim within thirty days after the receipt of the written unilateral change order. Failure to file a protest within the time specified shall constitute agreement on the part of the contractor with the terms, conditions, amounts, and adjustment or nonadjustment of the contract time or the contract price set forth in the unilateral change order.

The Contractor shall be required to submit cost or pricing data if any adjustment in contract price is subject to the provisions of HAR Chapter 3-122, Subchapter 15. A fully executed change order or other document permitting billing for the adjustment in price under any method listed in Subsections 104.06(1) through 104.06(7) shall be issued within ten days after agreement on the method of adjustment."

(II) Amend **Section 104.11(A) Contractor's Duty to Coordinate Utility Work** by adding the following after line 276:

"The Contractor shall be made aware that there are overhead utility lines along the mauka-side of Nanue Stream Bridge. The Contractor shall be responsible for coordinating with the utility companies for temporary relocation or adjustment of the utility lines for its convenience at no increase in contract price or contract time. The Contractor shall be responsible for all temporary relocation costs, including the utility companies' costs."

(II) Amend **Section 104.11(B) Contractor's Duty to Locate and Protect Utility** by adding the following after line 291:

"**(4)** The Contractor shall contact the Hawaii One Call Center at 811 prior to any execution in a public right of way or on private property."

(II) Amend by adding the following **Section 104.13 Staging Area** after line 319:

“104.13 Staging Area. The Contractor shall be responsible for securing staging area(s) outside of the HDOT right-of-way. Securing a staging area includes obtaining property owners consent and all necessary permits to utilize the site.

Note that property TMK (3) 3-2-001:008 has been cleared for Section 106 and HRS 6E-8.

Payment for securing staging area(s) is considered incidental to the various contract pay items.”

END OF SECTION 104

SECTION 105 – CONTROL OF WORK

Make the following amendments to said Section:

(I) Amend **105.01 – Authority** to read as follows:

"**105.01 Authority.**

(A) Authority of the Engineer. The Engineer is the representative of the Director and has all the authority of the Director with respect to the contract. The Engineer will make decisions on all questions that may arise regarding the contract, such as, but not limited to:

(1) Interpretation of the contract documents.

(2) Acceptability of the materials furnished and work performed.

(3) Manner of performance and rate of progress of the work.

(4) Acceptable fulfillment of the contract on the part of the Contractor.

(5) Compensation under the contract.

The Engineer's decisions on questions, claims, and disputes will be final and conclusive subject to Subsection 107.15 – Disputes and Claims.

The Engineer may delegate specific authority to act for the Engineer to a specific person or persons. Such delegation of authority shall be established in writing and shall become effective upon delivery to the Contractor.

(B) Authority of the Inspectors. Inspectors, as a representative of the Engineer or other agencies, will inspect the work done and materials furnished. Such inspection may extend to the preparation, fabrication or manufacture of the materials to be used. The Inspector does not have authority vested in the Engineer unless specifically delegated in writing. The Inspector may not alter or waive the provisions of the contract, issue instructions contrary to the contract, or act as agent or representative of the Contractor.

Failure of an Inspector at any time to reject non-conforming work shall not be considered a waiver of the State's right to require work in strict conformity with the contract documents as a condition of final acceptance.

(C) Authority of the Consultant and Construction Management. The State may engage consultants and construction managements to perform duties in connection with the work. Unless otherwise specified in writing to the Contractor, such retained consultants and construction managements shall have no greater authority than an Inspector."

(II) Amend **Subsection 105.02 - Submittals** by revising the first paragraph from lines 52 to 61 to read as follows:

"**105.02 Submittals.** The contract contains the description of various items that the Contractor must submit to the Engineer for review and acceptance. The Contractor shall review all submittals for correctness, conformance with the requirements of the contract documents and completeness before submitting them to the Engineer. The submittal shall indicate the contract items and specifications subsections for which the submittal is provided. The submittal shall be legible and clearly indicate what portion of the submittal is being submitted for review. The Contractor shall provide six copies of the required submissions at the earliest possible date."

(III) Amend **Subsection 105.08(A) - Furnishing Drawings and Special Provisions** to read as follows:

"**(A) Furnishing Drawings and Special Provisions.** The State will furnish the Contractor an electronic set of the special provisions and plans. The Contractor shall have and maintain at least one set of plans and specifications on the work site at all times."

(IV) Amend **Subsection 105.14(D) – No Designated Storage Area** from lines 421 to 432 to read as follows:

"**(D) No Designated Storage Area.** If no storage area is designated within the contract documents, materials and equipment may be stored anywhere within the State highway right-of-way, provided such storage and access to and from such site, within the sole discretion of the Engineer, does not create a public or traffic hazard or an impediment to the movement of traffic."

(V) Amend **105.16(A) – Subcontract Requirements** by adding the following paragraph after line 483:

"The 'Specialty Items' of work for this project are as follows:

Section No.	Description
629	All Contract Items under Section 629 - Pavement Markings
632	All Contract Items under Section 632 - Markers
645	Contract Item No. 645.1000 under Section 645 – Work Zone Traffic Control”

(VI) Amend **Subsection 105.16(B) – Substituting Subcontractors** from line 487 to line 494 to read:

“**(B) Substituting Subcontractors.** Under HRS Chapter 103D-302, the Contractor is required to list the names of persons or firms to be engaged by the Contractor as a subcontractor or joint contractor in the performance of the contract. No subcontractor may be added or deleted, unless authorized by the Engineer. Substitutions will be allowed only if the subcontractor:”

END OF SECTION 105

Make the following amendment to said Section:

SECTION 106 – MATERIAL RESTRICTIONS AND REQUIREMENTS

(I) Amend **106.05(B) – Deviation** by revising the third sentence from line 106 to 108 to read as follows:

"Any deviations will be subject to Subsection 102.14 – Substitution of Materials and Equipment Before Bid Opening."

(II) Amend **Section 106 – Material Restrictions and Requirements** by adding the following after line 334:

"106.14 Construction Materials.

(A) Buy America requirements apply to the following construction materials if permanently incorporated into the project unless otherwise specified:

(1) Non-ferrous metals.

(2) Plastic and polymer-based products such as:

(a) High Density Polyethylene

(b) Polyvinylchloride.

(c) Composite building materials.

(d) Polymers used in fiber optic cables.

(3) Glass (including optic glass).

(4) Fiber optic cable (including drop cable).

(5) Optical fiber.

(6) Lumber.

(7) Engineered wood.

(8) Drywall.

(9) Manufactured products containing steel and iron material

Where one or more of these construction materials have been combined by a manufacturer with other materials through a manufacturing process, Buy America requirements do not apply unless otherwise specified. Furnish construction materials to be incorporated into the work with certificates of compliance with each project delivery. Manufacturer's certificate of compliance must identify where the construction material was manufactured and attest specifically to Buy America compliance. All manufacturing processes for these materials must occur in the United States.

Non-ferrous metals, such as aluminum, copper, lead, nickel, tin, titanium, zinc, brass, and bronze, are subject to Buy America requirements if used as construction materials in various shapes, sizes, and gauges including channels, bars, pipe, couplers, fittings, bolts, nuts, and products made of 100 percent of the non-ferrous metal. If the non-ferrous metal is combined with other construction materials during a manufacturing process, the product is considered a manufactured product and not subject to Buy America requirements.

One hundred percent plastic or polymer materials are subject to Buy America requirements. This includes high-density polyethylene or polyvinyl chloride pipe and fittings. Plastics or polymers that are combined with other construction materials in a manufacturing process are considered a manufactured product and not subject to these requirements.

Glass construction materials subject to Buy America requirements are composed solely of glass. This includes glass beads incorporated into pavement striping and 100 percent Fiberglass material.

Fiber optic cable (including drop cable) and optical fiber are subject to Buy America requirements.

Lumber products including engineered lumber are subject to Buy America requirements.

Manufactured products containing steel or iron including pre-cast concrete products are subject to Buy America requirements."

END OF SECTION 106

SECTION 107 - LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

Make the following amendments to said Section:

(I) Amend **Section 107.01 Insurance Requirements** from lines 5 to 81 to read as follows:

"(A) Obligation of Contractor. Contractor shall not commence any work until it obtains, at its own expense, all required insurance described herein. Such insurance shall be provided by an insurance company authorized by the laws of the State to issue such insurance in the State of Hawaii. Coverage by a "Non-Admitted" carrier is permissible provided the carrier has a Best's Rating of "A-VII" or better. The Contractor shall maintain and ensure all insurance policies are current for the full period of the contract until final acceptance of the work by the State.

The Certificate of Insurance shall contain: a clause that it is agreed that any insurance maintained by the State of Hawaii will apply in excess of, and not contribute with, insurance provided by this policy; and shall be accompanied by endorsement form CG2010 or equivalent naming the State as an additional insured to the policy which status shall be maintained for the full period of the contract until final acceptance of the work by State.

The Contractor shall obtain all required insurance as part of the contract price. Where there is a requirement for the State of Hawaii and its officers and employees to be named as additional insureds under any Contractor's insurance policy, before the State of Hawaii issues the Notice to Proceed, the Contractor shall obtain and submit to the Engineer a Certificate of Insurance and a written policy endorsement that confirms the State of Hawaii and its officers and employees are additional insureds for the specific State project number and project title under such insurance policies. The written policy endorsement must be issued by the insurance company insuring the Contractor for the specified policy type or by an agent of such insurance company who is vested with the authority to issue a written policy endorsement. The insurer's agent shall also submit written confirmation of such authority to bind the insurer. Any delays in the issuance of the Notice to Proceed attributed to the failure to obtain the proof of the State of Hawaii and its officers and employees' additional insured status shall be charged to the Contractor.

A mere Certificate of Insurance issued by a broker who represents the Contractor (but not the Contractor's insurer), or by any other party who is not authorized to contractually name the State as an additional insured under the Contractor's insurance policy, is not sufficient to meet the Contractor's insurance obligations.

Certificates shall contain a provision that coverages being certified will not be cancelled or materially changed without giving the Engineer at least thirty (30) days prior written notice. Contractor will immediately provide written notice to the Director should any of the insurance policies evidenced on its Certificate of Insurance form be cancelled, reduced in scope or coverage, or not renewed upon expiration. Should any policy be canceled before final acceptance of the work by the State, and the Contractor fails to immediately procure replacement insurance as specified, the State, 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 or to become 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 State harmless pursuant to other provisions of this contract. In no instance will the State'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 be primary and cover the insured for all work to be performed under the contract, all work performed incidental thereto or directly or indirectly connected therewith, including but not limited to traffic detour work, barricades, warnings, diversions, lane closures, and 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 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.

(B) Types of Insurance. 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 any subcontractor or by anyone directly or indirectly employed by any of them or by anyone for whose acts any of them may be liable.

(1) Workers' Compensation. The Contractor shall obtain worker's compensation insurance for all persons whom they 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.

(2) Auto Liability. The Contractor shall obtain Auto Liability Insurance covering all owned, non-owned and hired autos with a Combined single Limit of not less than $1,000,000 per occurrence for bodily injury and property damage with the State of Hawaii named as additional insured. Refer to SPECIAL CONDITIONS for any additional requirements.

(3) General Liability. The Contractor shall obtain General Liability insurance with a limit of not less than $2,000,000 per occurrence and in the Aggregates for each of the following:

(a) Products - Completed/Operations Aggregate,

(b) Personal & Advertising Injury, and

(c) Bodily Injury & Property Damage

The General Liability insurance shall include the State as an Additional Insured. The required limit of insurance may be provided by a single policy or with a combination of primary and excess policies. Refer to SPECIAL CONDITIONS for any additional requirements.

(4) Builders Risk For All Work. The Contractor shall take out a policy of builder's risk insurance for the full replacement value of the project work; from a company licensed or otherwise authorized to do business in the State of Hawaii; naming the State as an additional insured under each policy; and covering all work, labor, and materials furnished by such Contractor and all its subcontractors against loss by fire, windstorm, tsunamis, earthquakes, lightning, explosion, other perils covered by the standard Extended Coverage Endorsement, vandalism, and malicious mischief. Refer to SPECIAL CONDITIONS for any additional requirements."

END OF SECTION 107

Amend **Section 108** – **PROSECUTION AND PROGRESS** to read as follows:

"SECTION 108 – PROSECUTION AND PROGRESS

108.01 Notice to Proceed (NTP). A Notice To Proceed will be issued to the Contractor not more 30 calendar days after the contract certification date. The Engineer may suspend the contract before issuing the Notice To Proceed, in which case the Contractor's remedies are exclusively those set forth in Subsection 108.10 – Suspension of Work.

The Contractor shall be allowed up to 14 calendar days after the Notice to Proceed to begin physical work. The Start Work Date will be established when this period ends or on the actual day that physical work begins, whichever is first. Charging of Contract Time will begin on the Start Work Date. The Contractor shall notify the Engineer, in writing, at least five working days before beginning physical work.

In the event that the Contractor fails to start physical work within the time specified, the Engineer may terminate the contract in accordance with Subsection 108.11 – Termination of Contract for Cause.

During the period between the Notice to Proceed and the Start Work Date the Contractor should adjust work forces, equipment, schedules, and procure materials and required permits, prior to beginning physical work.

Any physical work done prior to the Start Work Date will be considered unauthorized work. If the Engineer does not direct that the unauthorized work be removed, it shall be paid for after the Start Work Date and only if it is acceptable.

In the event that the Engineer establishes, in writing, a Start Work Date that is beyond 60 calendar days from the Notice to Proceed date, the Contractor may submit a claim in accordance with, Subsection 107.15 – Disputes and Claims for increased labor and material costs which are directly attributable to the delay beyond the first 60 calendar days after the Notice to Proceed date.

The Contractor shall notify the Engineer at least 24 hours before restarting physical work after a suspension of work pursuant to Subsection 108.10 – Suspension of Work.

Once physical work has begun, the Contractor shall work expeditiously and pursue the work diligently to completion with the contract time. If a portion of the work is to be done in stages, the Contractor shall leave the area safe and usable for the user agency and the public at the end of each stage.

108.02 Prosecution of Work. Unless otherwise permitted by the Engineer, in writing, the Contractor shall not commence with physical construction unless sufficient materials and equipment are available for either continuous construction or completion of a specified portion of the work.

108.03 Preconstruction Submittals. The awardee shall submit to the Engineer for information and review the pre-construction submittals within 21 calendar days from award. Until the items listed below are received and found acceptable by the Engineer, the Contractor shall not start physical work unless otherwise authorized to do so in writing and subject to such conditions set by the Engineer. Charging of Contract Time will not be delayed, and additional contract time will not be granted due to Contractor delay in submitting acceptable preconstruction submittals. No progress payment will be made to the Contractor until the Engineer acknowledges, in writing, receipt of the following preconstruction submittals acceptable to the Engineer:

(1) List of the Superintendent and other Supervisory Personnel, and their contact information.

(2) Name of person(s) authorized to sign for the Contractor.

(3) Work Schedule including hours of operation.

(4) Initial Progress Schedule (See Subsection 108.06 – Progress Schedule).

(5) Water Pollution and Siltation Control Submittals, including Site-Specific Best Management Practice Plan.

(6) Solid Waste Disposal form.

(7) Tax Rates.

(8) Insurance Rates.

(9) Certificate of Insurance, satisfactory to the Engineer, indicating that the Contractor has in place all insurance coverage required by the contract documents.

(10) Schedule of agreed prices.

(11) List of suppliers.

(12) Traffic Control Plan, if applicable.

108.04 Character and Proficiency of Workers. The Contractor shall at all times provide adequate supervision and sufficient labor and equipment for prosecuting the work to full completion in the manner and within the time required by the contract. The superintendent and all other representatives of the Contractor shall act in a civil and honest manner in all dealings with the Engineer, all other State officials and representatives, and the public, in connection with the work.

All workers shall possess the proper license, certification, job classification, skill, training, and experience necessary to properly perform the work assigned to them.

The Engineer may direct the removal of any worker(s) who does not carry out the assigned work in a proper and skillful manner or who is disrespectful, intemperate, violent, or disorderly. The worker shall be removed forthwith by the Contractor and will not work again without the written permission of the Engineer.

108.05 Contract Time.

(A) Calculation of Contract Time. When the contract time is on a working day basis, the total contract time allowed for the performance of the work will be the number of working days shown in the contract plus any additional working days authorized in writing as provided hereinafter. The count of elapsed working days to be charged against contract time, will begin from the Start Work Date and will continue consecutively to the date of Substantial Completion. When multiple shifts are used to perform the work, the State will not consider the hours worked over the normal eight working hours per day or night as an additional working day.

When the contract is on a calendar day basis, the total contract time allowed for the performance of the work will be the number of days shown in the contract plus any additional days authorized in writing as provided hereinafter. The count of elapsed days to be charged against contract time will begin from the Start Work Date and will continue consecutively to the date of Substantial Completion. The Engineer will exclude days elapsing between the orders of the Engineer to suspend work and resume work for suspensions not the fault of the Contractor.

(B) Modifications of Contract Time. Whenever the Contractor believes that an extension of contract time is justified, the Contractor shall serve written notice on the Engineer not more than five working days after the occurrence of the event that causes a delay or justifies a contract time extension. Contract time may be adjusted for the following reasons or events, but only if and to the extent the critical path has been affected:

(1) Changes in the Work, Additional Work, and Delays Caused by the State. If the Contractor believes that an extension of time is justified on account of any act or omission by the State, and is not adequately provided for in a field order or change order, it must request the additional time as provided above. At the request of the Engineer, the Contractor must show how the critical path will be affected and must also support the time extension request with schedules, as well as statements from its subcontractors, suppliers, or manufacturers, as necessary. Claims for compensation for any altered or additional work will be determined pursuant to Subsection 104.02 – Changes.

Additional time to perform the extra work will be added to the time allowed in the contract without regard to the date the change directive was issued, even if the contract completion date has passed. A change requiring time issued after contract time has expired will not constitute an excusal or waiver of pre-existing Contractor delay.

(2) Delay for Permits. For delays in the routine application and processing time required to obtain necessary permits, including permits to be obtained from State agencies, the Engineer may grant an extension provided that the permit takes longer than 30 days to acquire and the delay is not caused by the Contractor, and provided that as soon as the delay occurs, the Contractor notifies the Engineer in writing that the permits are not available. Permits required by the contract that take less than 30 days to acquire from the time which the appropriate documents are granted shall be acquired between Notice to Proceed and Start Work Date or accounted for in the contractor's progress schedule. Time extensions will be the exclusive relief granted on account of such delays.

(3) Delays Beyond Contractor's Control. For delays caused by acts of God, a public enemy, fire, inclement weather days or adverse conditions resulting therefrom, earthquakes, floods, epidemics, quarantine restrictions, labor disputes impacting the Contractor or the State, freight embargoes and other reasons beyond the Contractor's control, the Contractor may be granted an extension of time provided that:

(a) In the written notice of delay to the Engineer, the Contractor describes possible effects on the completion date of the contract. The description of delays shall:

1. State specifically the reason or reasons for the delay and fully explain in a detailed chronology how the delay affects the critical path.

2. Include copies of pertinent documentation to support the time extension request.

3. Cite the anticipated period of delay and the time extension requested.

4. State either that the above circumstances have been cleared and normal working conditions restored as of a certain day or that the above circumstances will continue to prevent completion of the project.

(b) The Contractor shall notify the Engineer in writing when the delay ends. Time extensions will be the exclusive relief granted and no additional compensation will be paid the Contractor for such delays.

(4) Delays in Delivery of Materials or Equipment. For delays in delivery of materials or equipment, which occur as a result of unforeseeable causes beyond the control and without fault of the Contractor, its subcontractor(s) or supplier(s), time extensions shall be the exclusive relief granted and no additional compensation will be paid the Contractor on account of such delay. The delay shall not exceed the difference between the originally scheduled delivery date and the actual delivery date. The Contractor may be granted an extension of time provided that it complies with the following procedures:

(a) The Contractor's written notice to the Engineer must describe the delays and state the effect such delays may have on the critical path.

(b) The Contractor, if requested, must submit to the Engineer within five days after a firm delivery date for the material and equipment is established, a written statement regarding the delay. The Contractor must justify the delay as follows:

1. State specifically all reasons for the delay. Explain in a detailed chronology the effect of the delay on the critical path.

2. Submit copies of purchase order(s), factory invoice(s), bill(s) of lading, shipping manifest(s), delivery tag(s), and any other documents to support the time extension request.

3. Cite the start and end date of the delay and the time extension requested.

(5) Delays for Suspension of Work. When the performance of the work is totally suspended for one or more days (calendar or working days, as appropriate) by order of the Engineer in accordance with Subsections 108.10(A)(1), 108.10(A)(2), or 108.10(A)(5) the number of days from the effective date of the Engineer's order to suspend operations to the effective date of the Engineer's order to resume operations shall not be counted as contract time and the contract completion date will be adjusted. During periods of partial suspensions of the work, the Contractor will be granted a time extension only if the partial suspension affects the critical path. If the Contractor believes that an extension of time is justified for a partial suspension of work, it must request the extension in writing at least five working days before the partial suspension will affect the critical operation(s) in progress. The Contractor must show how the critical path was increased based on the status of the work and must also support its claim if requested, with statements from its subcontractors. A suspension of work will not constitute a waiver of pre-existing Contractor delay.

(6) Contractor Caused Delays. No time extension will be granted under the following circumstances:

(a) Delays within the Contractor's control in performing the work caused by the Contractor, subcontractor, supplier, or any combination thereof.

(b) Delays within the Contractor's control in arrival of materials and equipment caused by the Contractor, subcontractor, supplier, or any combination thereof, in ordering, fabricating, and delivery.

(c) Delays requested for changes which do not affect the critical path.

(d) Delays caused by the failure of the Contractor to make submittals in a timely manner for review and acceptance by the Engineer, such as but not limited to shop drawings, descriptive sheets, material samples, and color samples except as covered in Subsection 108.05(B)(3) – Delays Beyond Contractor's Control and 108.05(B)(4) – Delays in Delivery of Materials or Equipment.

(e) Delays caused by the failure to submit sufficient information and data in a timely manner in the proper form in order to obtain necessary permits related to the work.

(f) Failure to follow the procedure within the time allowed by contract to request a time extension.

(g) Failure of the Contractor to provide evidence sufficient to support the time extension request.

(7) Reduction in Time. If the State deletes or modifies any portion of the work, an appropriate reduction of contract time may be made in accordance with Subsection 104.02 - Changes.

108.06 Progress Schedules.

(A) Forms of Schedule. All schedules shall be submitted using the specific computer program designated in the bid documents. If no such scheduling software program is designated, then all schedules shall be submitted using the latest version of Microsoft Project by Microsoft or approved equivalent software program.

Schedule submittals shall be as follows:

(1) For Contracts $2,000,000 or less or For Contract Time 100 Working Days or 140 Calendar Days or Less. For contracts of $2,000,000 or less or for contract time of 100 working days or 140 calendar days or less, the progress schedule will be a Time Scaled Logic Diagram (TSLD). The Contractor shall submit a TSLD submittal package meeting the following requirements and having these essential and distinctive elements:

(a) The major features of work, such as but not limited to BMP installation, grubbing, roadway excavation, structure excavation, structure construction, shown in the chronological order in which the Contractor proposes to work that feature or work and its location on the project. The schedule shall account for normal inclement weather, unusual soil or other

conditions that may influence the progress of the work, schedules, and coordination required by any utility, off or on site fabrications, and other pertinent factors that relate to progress;

(b) All features listed or not listed in the contract documents that the Contractor considers a controlling factor for the timely completion of the contract work.

(c) The time span and sequence of the activities or events for each feature, and its interrelationship and interdependencies in time and logic to other features in order to complete the project.

(d) The total anticipated time necessary to complete work required by the contract.

(e) A chronological listing of critical intermediate dates or time periods for features or milestones or phases that can affect timely completion of the project.

(f) Major activities related to the location on the project.

(g) Non-construction activities, such as submittal and acceptance periods for shop drawings and material, procurement, testing, fabrication, mobilization, and demobilization or order dates of long lead material.

(h) Set schedule logic for out of sequence activities to retain logic. In addition, open ends shall be non-critical.

(i) Show target bars for all activities.

(j) Vertical and horizontal sight lines both major and minor shall be used as well as a separator line between groups. The Engineer will determine frequency and style.

(k) The file name, print date, revision number, data and project title and number shall be included in the title block.

(l) Have columns with the appropriate data in them for activity ID, description, original duration, remaining duration, early start, early finish, total float, percent complete, resources. The resource column shall list who is responsible for the work to be done in the activity. These columns shall be to the left of the bar chart.

(2) For Contracts Which Have A Contract Amount More Than $2,000,000 Or Having A Contract Time Of More Than 100 Working Days Or 140 Calendar Days. For contracts which have a contract amount more than $2,000,000 or contract time of more than 100 working days or 140 calendar days, the Contractor shall submit a Timed-Scaled Logic Diagram (TSLD) meeting the following requirements and having these essential and distinctive elements:

(a) The information and requirements listed in Subsection 108.06(A)(1) – For Contracts $2,000,000 or Less or For Contract Time 100 Working Days or 140 Calendar Days or Less.

(b) Additional reports and graphics available from the software as requested by the Engineer.

(c) Sufficient detail to allow at least weekly monitoring of the Contractor and subcontractor's operations.

(d) The time scaled schematic shall be on a calendar or working days basis. What will be used shall be determined by how the contract keeps track of time. It will be the same. Plot the critical calendar dates anticipated.

(e) Breakdown of activity, such as forming, placing reinforcing steel, concrete pouring and curing, and stripping in concrete construction. Indicate location of work to be done in such detail that it would be easily determined where work would be occurring within approximately 200 feet.

(f) Latest start and finish dates for critical path activities.

(g) Identify responsible subcontractor, supplier, and others for their respective activity.

(h) No individual activity shall have duration of more than 20 calendar days unless requested and approved by the Engineer.

(i) All activities shall have work breakdown structure codes and activity codes. The activity codes shall have coding that incorporates information for phase, location, who is responsible for doing work and type of operation and activity description.

(j) Incorporate all physical access and availability restraints.

(B) Inspection and Testing. All schedules shall provide reasonable time and opportunity for the Engineer to inspect and test each work activity.

(C) Engineer's Acceptance of Progress Schedule. The submittal of, and the Engineer's receipt of any progress schedule, shall not be deemed an agreement to modify any terms or conditions of the contract. Any modifications to the contract terms and conditions that appear in or may be inferred from an acceptable schedule will not be valid or enforceable unless and until the Engineer exercises discretion to issue an appropriate change order. Nor shall any submittal or receipt imply the Engineer's approval of the schedule's breakdown, its individual elements, any critical path that may be shown, nor shall it obligate the State to make its personnel available outside normal working hours or the working hours established by the Contract in order to accommodate such schedule. The Contractor has the risk of all elements (whether or not shown) of the schedule and its execution. No claim for additional compensation, time, or both, shall be made by the Contractor or recognized by the Engineer for delays during any period for which an acceptable progress schedule or an updated progress schedule as required by Subsection 108.06(E) – Contractor's Continuing Schedule Submittal Requirements had not been submitted. Any acceptance or approval of the schedule shall be for general format only and shall not be deemed an agreement by the State that the construction means, methods, and resources shown on the schedule will result in work that conforms to the contract requirements or that the sequences or durations indicated are feasible.

(D) Initial Progress Schedule. The Contractor shall submit an initial progress schedule. The initial progress schedule shall consist of the following:

(1) Four sets of the TSLD schedule.

(2) All the software files and data to re-create the TSLD in a computerized software format as specified by the Engineer.

(3) A listing of equipment that is anticipated to be used on the project. Including the type, size, make, year of manufacture, and all information necessary to identify the equipment in the Rental Rate Blue Book for Construction Equipment.

(4) An anticipated manpower requirement graph plotting contract time and total manpower requirement. This may be superimposed over the payment graph.

(5) A Method Statement that is a detailed narrative describing the work to be done and the method by which the work shall be accomplished for each major activity. A major activity is an activity that:

(a) Has a duration longer than five days.

(b) Is a milestone activity.

(c) Is a contract item that exceeds $10,000 on the contract cost proposal.

(d) Is a critical path activity.

(e) Is an activity designated as such by the Engineer.

Each Method Statement shall include the following items needed to fulfill the schedule:

(a) Quantity, type, make, and model of equipment.

(b) The manpower to do the work, specifying worker classification.

(c) The production rate per eight hour day, or the working hours established by the contract documents needed to meet the time indicated on the schedule. If the production rate is not for eight hours, the number of working hours shall be indicated.

(6) Two sets of color time-scaled project evaluation and review technique charts ("PERT") using the activity box template of Logic – Early Start or such other template designated by the Engineer.

If the contract documents establish a sequence or order for the work, the initial progress schedule shall conform to such sequence or order.

(E) Contractor's Continuing Schedule Submittal Requirements. After the acceptance of the initial TSLD and when construction starts, the Contractor shall submit four plotted progress schedules, two PERT charts, and reports on all construction activities every two weeks (bi-weekly). This scheduled bi-weekly submittal shall also include an updated version of the project schedule in a computerized software format as specified by the Engineer. The submittal shall have all the information needed to re-create that time period's TSLD plot and reports. The bi-weekly submittal shall include, but not limited to, an update of activities based on actual durations,

all new activities and any changes in duration or start or finish dates of any activity.

The Contractor shall submit with every update, in report form acceptable to the Engineer, a list of changes to the progress schedule since the previous schedule submittal. The Engineer may change the frequency of the submittal requirements but may not require a submittal of the schedule to be more than once a week. The Engineer may decrease the frequency of the submittal of the bi-weekly schedule.

The Contractor shall submit updates of the anticipated work completion graph, equipment listing, manpower requirement graph or method statement when requested by the Engineer. The Contractor shall submit such updates within 4 calendar days from the date of the request by the Engineer.

The Engineer may withhold progress payment until the Contractor is in compliance with all schedule update requirements

(F) Float. All float appearing on a schedule is a shared commodity. Float does not belong to or exist for the exclusive use or benefit of either the State or the Contractor. The State or the Contractor has the opportunity to use available float until it is depleted. Float has no monetary value.

(G) Scheduled Meetings. The Contractor shall meet on a bi-weekly basis with the Engineer to review the progress schedule. The Contractor shall have someone attending the meeting that can answer all questions on the TSLD and other schedule related submittals.

(H) Accelerated Schedule; Early Completion. If the Contractor submits an accelerated schedule (shorter than the contract time), the Engineer's review and acceptance of an accelerated schedule does not constitute an agreement or obligation by the State to modify the contract time or completion date. The Contractor is solely responsible for and shall accept all risks and any delays, other than those that can be directly and solely attributable to the State, that may occur during the work, until the contract completion date. The contract time or completion date is established for the benefit of the State and cannot be changed without an appropriate change order or Substantial Completion granted by the State. The State may accept the work before the completion date is established, but is not obligated to do so.

If the TSLD indicates an early completion of the project, the Contractor shall, upon submittal of the schedule, cooperate with the Engineer in explaining how it will be achieved. In addition, the Contractor shall submit the above explanation in writing which shall include the State's part, if any, in achieving the early completion date. Early completion of the project shall not rely on changes to the Contract Documents unless approved by the Engineer.

(l) Contractor Responsibilities. The Contractor shall promptly respond to any inquiries from the Engineer regarding any schedule submission. The Contractor shall adjust the schedule to address directives from the Engineer and shall resubmit the TSLD package to the Engineer until the Engineer finds it acceptable.

The Contractor shall perform the work in accordance with the submitted TSLD. The Engineer may require the Contractor to provide additional work forces and equipment to bring the progress of the work into conformance with the TSLD at no increase in contract price or contract time whenever the Engineer determines that the progress of the work does not insure completion within the specified contract time.

108.07 Weekly Meeting. In addition to the bi-weekly schedule meetings, the Contractor shall be available to meet once a week with the Engineer at the time and place as determined by the Engineer to discuss the work and its progress including but not limited to, the progress of the project, potential problems, coordination of work, submittals, erosion control reports, etc. The Contractor's personnel attending shall have the authority to make decisions and answer questions.

The Contractor shall bring to weekly meetings a detailed work schedule showing the next three weeks' work. Number of copies of the detailed work schedule to be submitted will be determined by the Engineer. The three-week schedule is in addition to the TSLD and shall in no way be considered as a substitute for the TSLD or vice versa. The three-week schedule shall show:

(a) All construction events, traffic control and BMP related activities in such detail that the Engineer will be able to determine at what location and type of work will be done for any day for the next three weeks. This is for the State to use to plan its manpower requirements for that time period.

(b) The duration of all events and delays.

(c) The critical path clearly marked in red or marked in a manner that makes it clearly distinguishable from other paths and is acceptable to the Engineer.

(d) Critical submittals and requests for information (RFI's).

(e) The project title, project number, date created, period the schedule covers, Contractor's name and creator of the schedule on each page.

Two days prior to each weekly meeting, the Contractor shall submit a list of outstanding submittals, RFIs and issues that require discussion.

108.08 Liquidated Damages for Failure to Complete the Work or Portions of the Work on Time. The actual amount of damages resulting from the Contractor's failure to complete the contract in a timely manner is difficult to accurately determine. Therefore, the amount of such damages shall be liquidated damages as set forth herein and in the special provisions. The State may, at its discretion, deduct the amount from monies due or that may become due under the contract.

When the Contractor fails to reach substantial completion of the work for which liquidated damages are specified, within the time or times fixed in the contract or any extension thereof, in addition to all other remedies for breach that may be available to the State, the Contractor shall pay liquidated damages to the State, in the amount of $5,000.00 per working day.

(A) Liquidated Damages Upon Termination. If the State terminates on account of Contractor's default, liquidated damages may be charged against the defaulting Contractor and its surety until final completion of work.

(B) Liquidated Damages for Failure to Complete the Punchlist. The Contractor shall complete the work on any punchlist created after the pre-final inspection, within the contract time or any extension thereof.

When the Contractor fails to complete the work on such punchlist within the contract time or any extension thereof, the Contractor shall pay liquidated damages to the State of 20 percent of the amount of liquidated damages established for failure to substantially complete the work within contract time. Liquidated damages shall not be assessed for the period between:

(1) Notice from the Contractor that the project is substantially complete and the time the punchlist is delivered to the Contractor.

(2) The date of the completion of punchlist as determined by the Engineer and the date of the successful final inspection, and

(3) The date of the Final Inspection that results in Substantial Completion and the receipt by the Contractor of the written notice of Substantial Completion.

(C) Actual Damages Recoverable If Liquidated Damages Deemed Unenforceable. In the event a court of competent jurisdiction holds that any liquidated damages assessed pursuant to this contract are unenforceable, the State will be entitled to recover its actual damages for Contractor's failure to complete the work, or any designated portion of the work within the time set by the contract.

108.09 Rental Fees for Unauthorized Lane Closure or Occupancy. In addition to all other remedies available to the State for Contractor's breach of the terms of the contract, the Engineer will assess the rental fees in the amount of $500 for every one-to fifteen-minute increment for each roadway lane closed to public use or occupied beyond the time periods authorized in the contract or by the Engineer. The maximum amount assessed per day shall be $5,000. The State may, at its discretion, deduct the amount from monies due or that may become due under the contract. The rental fee may be waived in whole or part if the Engineer determines that the unauthorized period of lane closure or occupancy was due to factors beyond the control of the Contractor. Equipment breakdown is not a cause to waive liquidated damages.

108.10 Suspension of Work.

(A) Suspension of Work. The Engineer may, by written order, suspend the performance of the work, either in whole or in part, for such periods as the Engineer may deem necessary, for any cause, including but not limited to:

(1) Weather or soil conditions considered unsuitable for prosecution of the work.

(2) Whenever a redesign that may affect the work is deemed necessary by the Engineer.

(3) Unacceptable noise or dust arising from the construction even if it does not violate any law or regulation.

(4) Failure on the part of the Contractor to:

(a) Correct conditions unsafe for the general public or for the workers.

(b) Carry out orders given by the Engineer.

(c) Perform the work in strict compliance with the provisions of the contract.

(d) Provide adequate supervision on the jobsite.

(5) The convenience of the State.

(B) Partial and Total Suspension. Suspension of work on some but not all items of work shall be considered a "partial suspension". Suspension of work on all items shall be considered "total suspension". The period of suspension shall be computed from the date set out in the written order for work to cease until the date of the order for work to resume.

(C) Reimbursement to Contractor. In the event that the Contractor is ordered by the Engineer in writing as provided herein to suspend all work under the contract for the reasons specified in Subsections 108.10(A)(2), 108.10(A)(3), or 108.10(A)(5) of the "Suspension of Work" paragraph, the Contractor may be reimbursed for actual direct costs incurred on work at the jobsite, as authorized in writing by the Engineer, including costs expended for the protection of the work. An allowance of 5 percent for indirect categories of delay costs will be paid on any reimbursed direct costs, including extended branch and home-office overhead and delay impact costs. No allowance will be made for anticipated profits. Payment for equipment which is ordered to standby during such suspension of work shall be made as described in Subsection 109.06(H) - Idle and Standby Equipment.

(D) Cost Adjustment. If the performance of all or part of the work is suspended for reasons beyond the control of the Contractor except an adjustment shall be made for any increase in cost of performance of this contract (excluding profit) necessarily caused by such suspension, and the contract modified in writing accordingly.

However, no adjustment to the contract price shall be made for any suspension, delay, or interruption:

(1) For weather related conditions.

(2) To the extent that performance would have been so suspended, delayed, or interrupted by any other cause, including the fault or negligence of the Contractor.

(3) Or, for which an adjustment is provided for or excluded under any other provision of this Contract.

(E) Claims for Adjustment. Any adjustment in contract price made shall be determined in accordance with Subsections 104.02 – Changes and 104.06 – Methods of Price Adjustment.

Any claims for such compensation shall be filed in writing with the Engineer within 30 days after the date of the order to resume work or the claim will not be considered. The claim shall conform to the requirements of Subsection 107.15(D) – Making of a Claim. The Engineer will take the claim under consideration, may make such investigations as are deemed necessary and will be the sole judge as to the equitability of the claim. The Engineer's decision will be final.

(F) No Adjustment. No provision of this clause shall entitle the Contractor to any adjustments for delays due to failure of its surety, the cancellation or expiration of any insurance coverage required by the contract documents, for suspensions made at the request of the Contractor, for any delay required under the contract, for suspensions, either partial or whole, made by the Engineer under Subsection 108.10(A)(4) of the "Suspension of work" paragraph.

108.11 Termination of Contract for Cause.

(A) Default. If the Contractor refuses or fails to perform the work, or any separable part thereof, with such diligence as will assure its completion within the time specified in this contract, or any extension thereof, or commits any other material breach of this contract, and further fails within seven days after receipt of written notice from the Engineer to commence and continue correction of the refusal or failure with diligence and promptness, the Engineer may, by written notice to the Contractor, declare the Contractor in breach and terminate the Contractor's right to proceed with the work or the part of the work as to which there has been delay or other breach of contract. In such event, the State may take over the work, perform the same to completion, by contract or otherwise, and may take possession of, and utilize in completing the work, the materials, appliances, and plants as may be on the site of the work and necessary therefore. Whether or not the Contractor's right to proceed with the work is terminated, the Contractor and the Contractor's sureties shall be liable for any damage to the State resulting from the Contractor's refusal or failure to complete the work within the specified time.

(B) Additional Rights and Remedies. The rights and remedies of the State provided in this contract are in addition to any other rights and remedies provided by law.

(C) Costs and Charges. All costs and charges incurred by the State, together with the cost of completing the work under contract, will be

deducted from any monies due or which would or might have become due to the Contractor had it been allowed to complete the work under the contract. If such expense exceeds the sum which would have been payable under the contract, then the Contractor and the surety shall be liable and shall pay the State the amount of the excess.

In case of termination, the Engineer will limit any payment to the Contractor to the part of the contract satisfactorily completed at the time of termination. Payment will not be made until the work has satisfactorily been completed and all required documents, including the tax clearance required by Subsection 109.11 – Final Payment are submitted by the Contractor. Termination shall not relieve the Contractor or Surety from liability for liquidated damages.

(D) Erroneous Termination for Cause. If, after notice of termination of the Contractor's right to proceed under this section, it is determined for any reason that good cause did not exist to allow the State to terminate as provided herein, the rights and obligations of the parties shall be the same as, and the relief afforded the Contractor shall be limited to, the provisions contained in Subsection 108.12 – Termination for Convenience.

108.12 Termination For Convenience.

(A) Terminations. The Director may, when the interests of the State so require, terminate this contract in whole or in part, for the convenience of the State. The Director will give written notice of the termination to the Contractor specifying the part of the contract terminated and when termination becomes effective.

(B) Contractor's Obligations. The Contractor shall incur no further obligations in connection with the terminated work and on the date set in the notice of termination the Contractor shall stop work to the extent specified. The Contractor shall also terminate outstanding orders and subcontracts as they relate to the terminated work. The Contractor shall settle the liabilities and claims arising out of the termination of subcontracts and orders connected with the terminated work subject to the State's approval. The Engineer may direct the Contractor to assign the Contractor's right, title, and interest under terminated orders or subcontracts to the State. The Contractor must still complete the work not terminated by the notice of termination and may incur obligations as necessary to do so.

(C) Right to Construction and Goods. The Engineer may require the Contractor to transfer title and to deliver to the State in the manner and to the extent directed by the Engineer, the following:

(1) Any completed work.

(2) Any partially completed construction, goods, materials, parts, tools, dies, jigs, fixtures, drawings, information, and contract rights (hereinafter called "construction material") that the Contractor has specifically produced or specially acquired for the performance of the terminated part of this contract.

(3) The Contractor shall protect and preserve all property in the possession of the Contractor in which the State has an interest. If the Engineer does not elect to retain any such property, the Contractor shall use its best efforts to sell such property and construction materials for the State's account in accordance with the standards of HRS Chapter 490:2-706.

(D) Compensation.

(1) The Contractor shall submit a termination claim specifying the amounts due because of the termination for convenience together with cost or pricing data, submitted to the extent required by HAR Subchapter 15, Chapter 3-122. If the Contractor fails to file a termination claim within one year from the effective date of termination, the Engineer may pay the Contractor, if at all, an amount set in accordance with Subsection 108.12(D)(3).

(2) The Engineer and the Contractor may agree to a settlement provided the Contractor has filed a termination claim supported by cost or pricing data submitted as required and that the settlement does not exceed the total contract price plus settlement costs reduced by payments previously made by the State, the proceeds of any sales of construction, supplies, and construction materials under Subsection 108.12(C)(3), and the proportionate contract price of the work not terminated.

(3) Absent complete agreement, the Engineer will pay the Contractor the following amounts less any payments previously made under the contract:

(a) The cost of all contract work performed prior to the effective date of the notice of termination work plus a 5 percent markup on the actual direct costs, including amounts paid to subcontractor, less amounts paid or to be paid for completed portions of such work; provided, however, that if it appears that the Contractor would have sustained a loss if the entire contract would have been completed, no markup shall be allowed or included and the amount of compensation shall

be reduced to reflect the anticipated rate of loss. No anticipated profit or consequential damage will be due or paid.

(b) Subcontractors shall be paid a markup of 10 percent on their direct job costs incurred to the date of termination. No anticipated profit or consequential damage will be due or paid to any subcontractor. These costs must not include payments made to the Contractor for subcontract work during the contract period.

(c) The total sum to be paid the Contractor shall not exceed the total contract price reduced by the amount of any sales of construction supplies, and construction materials.

(4) Cost claimed, agreed to, or established by the State shall be in accordance with HAR Chapter 3-123.

108.13 Pre-Final and Final Inspections.

(A) Inspection Requirements. Before the Engineer undertakes a final inspection of any work, a pre-final inspection must first be conducted. The Contractor shall notify the Engineer that the work has reached substantial completion and is ready for pre-final inspection.

(B) Pre-Final Inspection. Before notifying the Engineer that the work has reached substantial completion, the Contractor shall inspect the project and test all installed items with all of its subcontractors as appropriate. The Contractor shall also submit the following documents as applicable to the work:

(1) All written guarantees required by the contract.

(2) Two accepted final field-posted drawings as specified in Section 648 – Field-Posted Drawings;

(3) Complete weekly certified payroll records for the Contractor and Subcontractors.

(4) Certificate of Plumbing and Electrical Inspection.

(5) Certificate of building occupancy as required.

(6) Certificate of Soil and Wood Treatments.

(7) Certificate of Water System Chlorination.

(8) Certificate of Elevator Inspection, Boiler and Pressure Pipe Inspection.

(9) Maintenance Service Contract and two copies of a list of all equipment installed.

(10) Current Tax clearance. The contractor will be required to submit an additional tax clearance certificate when the final payment is made.

(11) And any other final items and submittals required by the contract documents.

(C) Procedure. When in compliance with the above requirements, the Contractor shall notify the Engineer in writing that the project has reached substantial completion and is ready for pre-final inspection.

The Engineer will then make a preliminary determination as to whether or not the project is substantially complete and ready for pre-final inspection. The Engineer may, in writing, postpone until after the pre-final inspection the Contractor's submittal of any of the items listed in Subsection 108.13(B) – Pre-Final Inspection, herein, if in the Engineer's discretion it is in the interest of the State to do so.

If, in the opinion of the Engineer, the project is not substantially complete, the Engineer will provide the Contractor a punchlist of specific deficiencies in writing which must be corrected or finished before the work will be ready for a pre-final inspection. The Engineer may add to or otherwise modify this punchlist from time to time. The Contractor shall take immediate action to correct the deficiencies and must repeat all steps described above including written notification that the work is ready for pre-final inspection.

After the Engineer is satisfied that the project appears substantially complete a final inspection shall be scheduled within ten working days after receipt of the Contractor's latest letter of notification that the project is ready for final inspection.

If, as a result of the pre-final inspection, the Engineer determines the work is not substantially complete, the Engineer will inform the Contractor in writing as to specific deficiencies which must be corrected before the work will be ready for another pre-final inspection. If the Engineer finds the work is substantially complete but finds deficiencies that must be corrected before the work is ready for final inspection, the Engineer will prepare in writing and deliver to the Contractor a punchlist describing such deficiencies.

At any time before final acceptance, the Engineer may revoke the determination of substantial completion if the Engineer finds that it was not warranted and will notify the Contractor in writing the reasons therefore together with a description of the deficiencies negating the declaration.

When the date of substantial completion has been determined by the State, liquidated damages for the failure to complete the punchlist, if due to the State will be assessed in pursuant to Subsection 108.08(B) - Liquidated Damages for Failure to Complete the Punchlist.

(D) Punchlist; Clean Up and Final Inspection. Upon receiving a punchlist after pre-final inspection, the Contractor shall promptly devote all required time, labor, equipment, materials and incidentals to correct and remedy all punchlist deficiencies. The Engineer may add to or otherwise modify this punchlist until substantial completion of the project.

Before final inspection of the work, the Contractor shall clean all ground occupied by the Contractor in connection with the work of all rubbish, excess materials temporary structures and equipment, shall remove all graffiti and defacement of the work and all parts of the work and the worksite must be left in a neat and presentable condition to the satisfaction of the Engineer.

Final inspection will occur within ten working days after the Contractor notifies the Engineer in writing that all punchlist deficiencies remaining after the pre-final inspection have been completed and the Engineer concurs. If the Engineer determines that deficiencies still remain at the final inspection, the work will not be accepted and the Engineer will notify the Contractor, in writing, of the deficiencies which shall be corrected and the steps above repeated.

If the Contractor fails to correct the deficiencies and complete the work by the established or agreed date, the State may correct the deficiencies by whatever method it deems appropriate and deduct the cost from any payments due the Contractor.

108.14 Substantial Completion and Final Acceptance.

(A) Substantial Completion. When the Engineer finds that the Contractor has satisfactorily completed all work for the project in compliance with the contract, with the exception of the planting period and the plant establishment period, the Engineer will notify the Contractor, in writing, of the project's substantial completion, effective as of the date of the final inspection. The substantial completion date shall determine end of contract time and relieve contractor of any additional accumulation of liquidated damages for failure to complete the punchlist.

(B) Final Acceptance. When the Engineer finds that the Contractor has satisfactorily completed all contract work in compliance with the contract including all plant establishment requirements, and all the materials have been accepted by the State, the Engineer will issue a Final Acceptance Letter. The Final Acceptance date shall determine the commencement of all guaranty periods subject to Subsection 108.16 – Contractor's Responsibility for Work; Risk of Loss or Damage.

108.15 Use of Structure or Improvement. The State has the right to use the structure, equipment, improvement, or any part thereof, at any time after it is considered by the Engineer as available. In the event that the structure, equipment or any part thereof is used by the State before final acceptance, the Contractor is not relieved of its responsibility to protect and preserve all the work until final acceptance.

108.16 Contractor's Responsibility for Work; Risk of Loss or Damage. Until the written notice of final acceptance has been received, the Contractor shall take every precaution against loss or damage to any part of the work by the action of the elements or from any other cause whatsoever, whether arising from the performance or from the non-performance of the work. The Contractor shall rebuild, repair, restore and make good all loss or damage to any portion of the work resulting from any cause before its receipt of the written notice of final acceptance and shall bear the risk and expense thereof.

The risk of loss or damage to the work from any hazard or occurrence that may or may not be covered by a builder's risk policy is that of the Contractor and Surety, unless such risk of loss is placed elsewhere by express language in the contract documents.

108.17 Guarantee of Work.

(1) Regardless of, and in addition to, any manufacturers' warranties, all work and equipment shall be guaranteed by the Contractor against defects in materials, equipment or workmanship for one year from the date of final acceptance or as otherwise specified in the contract documents.

(2) When the Engineer determines that repairs or replacements of any guaranteed work and equipment is necessary due to materials, equipment, or workmanship which are inferior, defective, or not in accordance with the terms of the contract, the Contractor shall, at no increase in contract price or contract time, and within five working days of receipt of written notice from the State, commence to all of the following:

(a) Correct all noted defects and make replacements, as directed by the Engineer, in the equipment and work.

(b) Repair or replace to new or pre-existing condition any damages resulting from such defective materials, equipment or installation thereof.

(3) The State will be entitled to the benefit of all manufacturers and installers warranties that extend beyond the terms of the Contractor's guaranty regardless of whether or not such extended warranty is required by the contract documents. The Contractor shall prepare and submit all documents required by the providers of such warranties to make them effective, and submit copies of such documents to the Engineer. If an available extended warranty cannot be transferred or assigned to the State as the ultimate user, the Contractor shall notify the Engineer who may direct that the warranted items be acquired in the name of the State as purchaser.

(4) If a defect is discovered during a guarantee period, all repairs and corrections to the defective items when corrected shall be guaranteed for a new duration equal to the original full guarantee period. The running of the guarantee period shall be suspended for all other work affected by any defect. The guarantee period for all other work affected by any such defect shall restart for its remaining duration upon confirmation by the Engineer that the deficiencies have been repaired or remedied.

(5) Nothing in this section is intended to limit or affect the State's rights and remedies arising from the discovery of latent defects in the work after the expiration of any guarantee period.

108.18 No Waiver of Legal Rights. The following will not operate or be considered as a waiver of any portion of the contract, or any power herein reserved, or any right to damages provided herein or by law:

(1) Any payment for, or acceptance of, the whole or any part of the work.

(2) Any extension of time.

(3) Any possession taken by the Engineer.

A waiver of any notice requirement or of any noncompliance with the contract will not be held to be a waiver of any other notice requirement or any other noncompliance with the contract.

108.19 Final Settlement of Contract.

(A) Closing Requirements. The contract will be considered settled after the project acceptance date and when the following items have been satisfactorily submitted, where applicable:

(1) All written guarantees required by the contract.

(2) Complete and certified weekly payrolls for the Contractor and its subcontractor's.

(3) Certificate of plumbing and electrical inspection.

(4) Certificate of building occupancy.

(5) Certificate for soil treatment and wood treatment.

(6) Certificate of water system chlorination.

(7) Certificate of elevator inspection, boiler and pressure pipe installation.

(8) Tax clearance.

(9) All other documents required by the Contract or by law.

(B) Failure to Meet Closing Requirements. The Contractor shall meet the applicable closing requirements within 60 days from the date of Project Acceptance or the agreed to Punchlist complete date. Should the Contractor fail to comply with these requirements, the Engineer may terminate the contract for cause."

END OF SECTION 108

SECTION 109 – MEASUREMENT AND PAYMENT

Make the following amendment to said Section:

(I) Amend **Subsection 109.05 Allowances for Overhead and Profit** by revising lines 101 to 110 to read as follows:

"**(1)** 20 percent of the direct cost for any work performed by the Contractor's own labor force.

(2) 20 percent of the direct cost for any work performed by each subcontractor's own labor force.

(3) For the Contractor or any subcontractor for work performed by their respective subcontractor or tier subcontractor, 10 percent of the amount due to the performing subcontractor or tier subcontractor."

(II) Amend **Subsection 109.08(B) Payment for Material On Hand** by revising lines 421 to 423 to read as follows:

"**(2)** The materials shall be stored and handled in accordance with Subsection 105.14 – Storage and Handling of Materials and Equipment."

(III) Amend **Subsection 109.11 Final Payment** by revising lines 568 to 576 to read as follows:

"**(3)** A current "Certificate of Vendor Compliance" issued by the Hawaii Compliance Express (HCE). The Certificate of Vendor Compliance is used to certify the Contractor's compliance with

(a) Section 103D-328, HRS (for all contracts $25,000 or more) which requires a current tax clearance certificate issued by the Hawaii State Department of Taxation and the Internal Revenue Service;

(b) Chapters 383, 386, 392, and 393, HRS; and

(c) Subsection 103D-310(c), HRS. The State reserves the right to verify that compliance is current prior to the issuance of final payment. Contractors are advised that non-compliance status will result in final payment being withheld until compliance is attained.

Sums necessary to meet the claims of any governmental agencies may be withheld from the sums due the Contractor until

said claims have been fully and completely discharged or otherwise satisfied."

END OF SECTION 109

SECTION 202 – REMOVAL OF STRUCTURES AND OBSTRUCTIONS

Make the following amendments to said Section:

(I) Amend **202.03 – Construction. (B) Removal of Concrete Structures** by revising lines 68 to 75 to read as follows:

"**(B) Removal of Concrete Structures.** Remove a portion of the existing concrete foundation pedestals as indicated in the contract documents.

Cut, with power-driven abrasive saw, a 1-inch-deep joint (unless as otherwise stipulated on the drawings) at interface of concrete that is to remain and that which is to be removed. Cut neat and true with no shattering or spalling of concrete to remain in place. Use demolition equipment no larger than allowed in the concrete drawings. Do not damage existing reinforcing steel to remain, unless otherwise explicitly shown.

Demolish concrete to the limits as shown on the plans using pneumatic breakers that do not exceed the weight limits as stipulated in the contract documents. When using electric breakers, use tools with equal energy to their pneumatic counterpart."

(II) Add the following paragraphs to Subsection **202.03(C) Removal of Bridges**, line 118, to read as follows:

"All concrete and/or reinforcing steel removed shall be recycled by an appropriately licensed or certified concrete recycling facility."

(III) Add the following paragraphs to Section **202.03 Construction** line 118 to read as follows:

"(D) Removal of Asphalt Concrete from Bridge Deck. Remove the AC pavement and asphalt membranes completely in a manner that will not damage the existing concrete deck. The concrete deck, to remain, shall be clean of all bituminous material. Limit the removal machinery that can fit on the deck during prescribed lane closures.

Do not damage the portion of the structure that is to remain during AC removal operations. If the top of existing concrete deck is damaged by an apparent cause of mechanical equipment during the AC removal operation, notify the Engineer and repair the damaged portion to the acceptance of the Engineer and no increase in contract time or contract price.

(E) Removal of Steel Structures. Remove existing steel structures by means of torching, cutting, or grinding that will not damage surrounding steel members that are to remain. In general, the removal of any steel member that is welded to

a member that is to remain shall have all welds removed and ground flush to the base metal. Plug weld all existing open holes or holes created through the removal of rivets/bolts, unless the plans explicitly call for the reuse of the hole. Plug welds shall be ground flush to the surface. Prior to plug welding, the surface of the base metal shall be sufficiently cleaned of all rust and other deleterious material that would otherwise inhibit the welding process. Plug welding of holes shall be included in the price of the various pay items.

Removal of steel structures in a phased manner shall be anticipated. In such case, a portion of the steel structure will be removed at a time. The remaining steel structure shall have the ends of the member prepared for temporary support and end bearing, as needed.

Steel scrap shall be disposed of at an appropriate metal recycle center."

(IV) Amend **202.04 – Measurement** by revising lines 119 to 120 to read as follows:

"**202.04 Measurement.** The Engineer will not measure the demolition and removal of structures and obstructions when contracted on a lump sum basis."

(V) Amend **202.05 – Payment** by revising lines 122 to 131 to read as follows:

"**202.05 Payment.** If the proposal does not show a contract item for the removal of structures and obstructions, the Engineer will not pay for the removal of structures and obstructions separately. The Contractor shall consider them incidental to the various contract items.

The Engineer will not pay for the removal of the steel trestles separately. This cost shall be included in the various pay items of Section 501 – Steel Structures.

The Engineer will pay for specific items stipulated for demolition, removal and disposal at the contract price bid per unit specified in the proposal. The price shall be full compensation for removal, hauling, and disposal of the items and salvage of materials removed. Salvaging of materials removed includes their custody, preservation, storage on the right-of-way. Also, the price shall be full compensation for equipment, tools, labor, materials and incidentals necessary to complete the work.

The Engineer will pay for the following pay item when included in the proposal schedule.

Pay Item	**Pay Unit**
Removal of _____	Lump Sum"

END OF SECTION 202

SECTION 205 – EXCAVATION AND BACKFILL FOR BRIDGE AND RETAINING STRUCTURES

Make the following amendments to said Section:

(I) Amend **205.01 Description** by revising subparagraph (A) between lines 5 and 8 to read as follows:

"**(A)** Excavating and backfilling to depths and lines established for bridge, overhead-mounted expressway sign, retaining (reinforced concrete or cement rubble masonry) structures, foundations, and box culverts."

(II) Amend **205.03(A)(1) General** by adding the following paragraph after line 47 to read as follows:

"The Contractor shall be responsible for protecting the sides of the excavations from cave-ins. The Contractor shall submit shop drawings and calculations for any bracing or shoring to be installed. The shop drawings and calculations shall be stamped by a registered Hawaii Structural Engineer and a registered Civil Engineer specializing in Geotechnical Engineering in the State of Hawaii. If the Contractor decides not to brace the cut slope, the Contractor shall submit when requested by the Engineer, calculations, showing the stability of the slope, stamped by a registered Civil Engineer specializing in Geotechnical Engineer in the State of Hawaii. The shop drawings and calculations shall be reviewed and accepted by the Engineer before proceeding with the construction."

(III) Amend **205.03(B) Structure Backfill** by revising lines 151 to 155 to read as follows:

"(B) Structure Backfill. Place structure backfill material A around bent foundation pedestals. Do not deposit fill material against foundation pedestals until the concrete has met the requirements in Subsection 503.03(E) – Loading.

In lieu of structure backfill material A, it is permitted to use the excavated soil material as structure backfill."

(IV) Amend **205.03(B) Structures Backfill** by revising the second sentence of the second paragraph at lines 158 and 159 to read as follows:

"Continue backfilling so that uneven or unsymmetrical lifts do not exceed 16 inches in height creating an unbalanced loading condition."

(V) Amend **205.03(B) Structure Backfill** by revising lines 184 to 194 to read as follows:

"Compact structure backfill in the following areas to a relative compaction of not less than 90 percent:

(1) Structure Backfill around and no higher than 4" below the top of the concrete foundation pedestals.

Structure backfill placed on the sloped face above the foundation pedestal shall be compacted so that it is firm and unyielding prior to placement of the shotcrete cover above.

(VI) Amend **205.03(B) Structure Backfill** by adding the following after line 203:

"**(D) CLSM Material.** CLSM shall be placed beneath bottom of grade beam where compaction is not possible."

(VII) Amend **205.04 – Measurement** by revising lines 206 to 214 to read as follows:

"**(A) Structure Excavation.** Structure excavation will be paid per cubic yard. The limits for payment of structure excavation shall be shown on the plans and contract documents.

(B) Structure Backfill. Structure backfill around bent foundation pedestals will be paid per cubic yard. The limits for payment of structure backfill shall be shown on the plans and contract documents.

(C) CLSM Backfill. CLSM backfill below grade beam will not be paid for separately. Measurement for payment will not apply"

(VIII) Amend **205.05 – Payment** by revising lines 216 to 230 to read as follows:

205.05 Payment. The Engineer will pay for the accepted pay items listed below per cubic yard as shown in the proposal schedule. Payment will be full compensation for the work prescribed in this section and the contract documents.

The Engineer will pay for each of the following pay items when included in the proposal schedule:

Pay Item	Pay Unit
Structure Excavation for _____	Cubic Yard
Structure Backfill for _____	Cubic Yard”

END OF SECTION 205

Amend **Section 209 - TEMPORARY WATER POLLUTION, DUST, AND EROSION CONTROL** to read as follows:

"SECTION 209 - TEMPORARY WATER POLLUTION, DUST, AND EROSION CONTROL

209.01 Description. This section describes the following:

(A) Including detailed plans, diagrams, and written Site-Specific Best Management Practices (BMP); constructing, maintaining, and repairing temporary water pollution, dust, and erosion control measures at the project site, including local material sources, work areas and haul roads; removing and disposing hazardous wastes at a DOH permitted facility; control of fugitive dust (defined as uncontrolled emission of solid airborne particulate matter from any source other than combustion); and complying with applicable State and Federal permit conditions.

(B) Work associated with construction stormwater, dewatering, and hydrotesting activities and complying with conditions of the National Pollutant Discharge Elimination System (NPDES) permit(s) authorizing discharges associated with construction stormwater, dewatering, and hydrotesting activities.

(C) Potential pollutant identification and mitigation measures are listed in Appendix A for use in the development of the Contractor's Site-Specific BMP.

Requirements of this section also apply to construction support activities including concrete or asphalt batch plants, rock crushing plants, equipment staging yards/areas, material storage areas, excavated material disposal areas, and borrow areas located outside the State Right-of-Way. For areas serving multiple construction projects, or operating beyond the completion of the construction project in which it supports, the Contractor shall be responsible for securing the necessary permits, clearances, and documents, and following the conditions of the permits and clearances, at no cost to the State.

209.02 Materials. Comply with applicable materials described in Chapters 2 and 3 of the current HDOT "Construction Best Management Practices Field Manual", the current "An Integrated Storm Water Management Approach and a Summary of Clear Water Diversion and Isolation Best Management Practices for Use in the State of Hawaii, by the Federal Highway Administration and Hawaii Department of Transportation, Practitioners Guide" hereafter called "Practitioners Guide", and .the manufacturers specifications and/or the project's contract documents. In addition, the materials shall comply with the following:

(A) Grass. Grass shall be a quick growing species such as rye grass, Italian rye grass, or cereal grasses. Grass shall be suitable to the area and provide a temporary cover that will not compete later with permanent cover. Alternative grasses are allowable if acceptable to the Engineer.

(B) Fertilizer and Soil Conditioners. Fertilizer and soil conditioners shall be a standard commercial grade acceptable to the Engineer. Fertilizer shall conform to Subsection 619.02(H)(1) - Commercial Fertilizer.

(C) Hydro-mulching. Hydro-mulching used as a temporary vegetative stabilization measure shall consist of materials in Subsections 209.02(A) - Grass, and 209.02(B) – Fertilizer and Soil Conditioners. Mulches shall be recycled materials including bagasse, hay, straw, wood cellulose bark, wood chips, or other material acceptable to the Engineer. Mulches shall be clean and free of noxious weeds and deleterious materials. Potable water shall meet the requirements of Subsection 712.01 - Water. Submit alternate sources of irrigation water for the Engineer's acceptance if deviating from 712.01 - Water. Installation and other requirements shall be in accordance with portions of Section 641- Hydro-Mulch Seeding including 641.02(D) - Soil and Mulch Tackifier, 641.03(A) – Seeding, and 641.03(B) - Planting Period. Install non-vegetative controls including mulch or rolled erosion control products while the vegetation is being established. Water and fertilize grass. Apply fertilizer as recommended by the manufacturer. Replace grass the Engineer considers unsuitable or sick. Remove and dispose of trash and debris. Remove invasive species. Mow as needed to prevent site or signage obstructions, fire hazard, or nuisance to the public. Do not remove down stream sediment control measures until the vegetation is uniformly established, including no large bare areas, and provides 70 percent of the density of pre-disturbance vegetation. Temporary vegetative stabilization shall not be used longer than one year.

(D) Silt Fences. Comply with ASTM D6462, Standard Practice for Silt Fence Installation.

Alternative materials or methods to control, prevent, remove and dispose pollution are allowable if acceptable to the Engineer.

209.03 Construction.

(A) Preconstruction Requirements.

(1) SWPPP Meeting(s). HDOT will schedule In-Water Pollution Prevention Plan (SWPPP/IWPPP) meeting(s) with the Contractor and his Qualified Environmental Professional to discuss HDOT's SWPPP/IWPPP comments, status to resolve the SWPPP/IWPPP comments, and timeline to finalize the SWPPP/IWPPP. The

Contractor shall make himself available within 48 hours of the meeting requested by HDOT. At this meeting, the Contractor and his Qualified Environmental Professional shall identify HDOT's comments and how the HDOT's comments will be addressed, including when the next SWPPP submittal will be sent to HDOT.

(2) Water Pollution, Dust, and Erosion Control Meeting. Schedule a water pollution, dust, and erosion control meeting with the Engineer after Site-Specific BMP is accepted in writing by the Engineer. Meeting shall be scheduled a minimum of 7 calendar days prior to the Start Work Date. Discuss sequence of work, plans and proposals for water pollution, dust, and erosion control.

(3) Water Pollution, Dust, and Erosion Control Submittals. Submit a completed SWPPP for the first ninety (90) days of construction activities or for duration of the entire construction project within 21 calendar days of contract award as accepted in writing by the Engineer and the Contractor. The SWPPP/In-Water Pollution Prevention Plan (IWPPP) is applicable to projects with a NPDES Permit for Construction Activities and for all projects on Oahu. The SWPPP/IWPPP is applicable to projects with an Army Corps 404 Permit. Submission of complete and acceptable Site-Specific BMP Plan and SWPPP or SWPPP/IWPPP is the sole responsibility of the Contractor and additional contract time will not be issued for delays due to incompleteness. Any changes to the SWPPP shall be done in MS Word using tracked changes (to allow for HDOT to clearly identify the Contractor's updates to the SWPPP). Any changes made to the SWPPP by the Contractor not done in MS Word using tracked changes will not be accepted by HDOT, and the Contractor shall resubmit to HDOT in MS Word using tracked changes at the expense of the Contractor Include the following:

(a) Written description of activities to reduce erosion and minimize water pollutants entering State waters, drainage or sewer systems. BMP shall include the following:

1. An identification of potential pollutants and their sources.

2. A list of all materials and heavy equipment to be used during construction.

3. Descriptions of the methods and devices used to minimize the discharge of pollutants into State waters, drainage or sewer systems.

4. Details of the procedures used for the maintenance and subsequent removal of any erosion or siltation control devices.

5. Methods of removing and disposing hazardous wastes encountered or generated during construction.

6. Methods of removing and disposing concrete and asphalt pavement cutting slurry, concrete curing water, and hydrodemolition water.

7. Spill Control and Prevention and Emergency Spill Response Plan.

8. Fugitive dust control, including dust from grinding, sweeping, or brooming off operations or combination thereof.

9. Methods of storing and handling of oils, paints and other products used for the project.

10. Material storage and handling areas, and other staging areas.

11. Concrete truck washouts.

12. Concrete waste control.

13. Fueling and maintenance of vehicles and other equipment.

14. Tracking of sediment offsite from project entries and exits.

15. Litter management.

16. Toilet facilities.

17. Other factors that may cause water pollution, dust and erosion control.

(b) Provide Site-Specific BMP plans, SWPPP or SWPPP/IWPPP for the first ninety (90) days of construction activities indicating location of water pollution, dust and erosion control devices; provide plans and details of BMPs to be installed or utilized; show areas of soil disturbance in cut and

fill, indicate areas used for construction staging and storage including items (1) through (17) above, storage of aggregate (indicate type of aggregate), asphalt cold mix, soil or solid waste, equipment and vehicle parking, and show areas where vegetative practices are to be implemented. Indicate intended drainage pattern on plans. Include flow arrows. Include separate drawing for each phase of construction that alters drainage patterns or Contractor's sequencing for In-Water work. Indicate approximate date when device will be installed and removed.

(c) Construction schedule.

(d) Name(s) of specific individual(s) designated responsible for water pollution, dust, and erosion controls on the project site. Include home, cellular, and business telephone numbers, fax numbers, and e-mail addresses. Individual(s) shall have authority to resolve complaints and inquiries. The Engineer will forward public complaints and inquiries regarding dust from construction activities to the representative(s).

The Contractor shall employ the services of a qualified Environmental Professional responsible for populating the information, developing and completing a SWPPP for either a design project or a project in construction. The Qualified Environmental Professional shall have a minimum experience of 1 project in the last 5 years and whereby he has attended a Construction BMP workshop within the last 3 years.

The Contractor shall provide the resume and the list of projects that support the qualification of the Qualified Environmental Professional to the Engineer for approval

(e) Description of fill material to be used.

(f) For projects with an NPDES Permit for Construction Activities, submit information to address all sections in the Storm Water Pollution Prevention Plan (SWPPP).

(g) For projects with an Army Corps 404 Permit, complete all sections in the SWPPP/IWPPP.

(h) For projects with an NPDES Permit, information required for compliance with the conditions of the Notice of General Permit Coverage (NGPC)/NPDES Permit and for projects with a Section 404 permit/Nationwide Verification including the

general and regional conditions.

(i) Site-Specific BMP Review Checklist. The checklist may be downloaded from HDOT's Stormwater Management website at http://stormwaterhawaii.com.

Complete, date and sign Site-Specific BMP Plan, SWPPP or SWPPP/IWPPP. The Site-Specific BMP Review Checklist will be an attachment of the SWPPP. Keep a certified copy of Site-Specific BMP Plan or SWPPP or SWPPP/IWPPP on-site or at an accessible location so that it can be made available at the time of an on-site inspection or upon request by the Engineer, HDOT Third-Party Inspector, and/or DOH/EPA Representative. Amendments to the Site-Specific BMP Plan or SWPPP or SWPPP/IWPPP shall be included with the original Site-Specific BMP Plan or SWPPP or SWPPP/IWPPP. Modify Site-Specific BMP Plan or SWPPP or SWPPP/IWPPP if necessary to conform to revisions. Include date of installation and removal of Site-Specific BMP measures. Obtain certified Site-Specific Plan or SWPPP or SWPPP/IWPPP or certified Site-Specific BMP Plan or SWPPP Amendment or SWPPP/IWPPP Amendment from the Engineer before implementing revised Site-Specific BMPs in the field.

Follow the guidelines in the current HDOT "Construction Best Management Practices Field Manual", in developing, installing, and maintaining land-based Site-Specific BMPs for all projects.

Follow the guidelines in the current HDOT "Practitioners Guide" in developing, installing, and maintaining in-water or over water Site-Specific BMPs. BMPs in sections 5.5 to 5.13 of the Practitioners Guide describe BMPs which are authorized clear water isolation techniques within the Temporary Impact Area described in the Army Corps 404 Permit application and/or other contract documents. Notify the Engineer of request to include other clear water isolation techniques not included in the manual when submitting SWPPP/IWPPP.

For any conflicting requirements between the Manual and applicable bid documents, the applicable bid documents will govern. Should a requirement not be clearly described within the applicable bid documents, notify the Engineer immediately for interpretation. For the purposes of clarification "applicable bid documents" include the construction plans, standard specifications, special provisions, permits, and the

SWPPP or SWPPP/IWPPP when applicable.

Use respective Soil Erosion Guidelines for Oahu, Maui, Kauai and Hawai‘i projects.

(4) Additional Pre-construction in-water work requirements. For projects with an Army Corps 404 Permit, pre-construction in-water inspections shall be completed at least 10 calendar days prior to the start of in-water construction activities. Pre-construction in-water inspections are intended to create a baseline for water quality and indicate the USACE jurisdiction.

(B) Construction Requirements. Do not begin work until all submittals detailed in Subsection 209.03(A)(2) - Water Pollution, Dust, and Erosion Control Submittals are completed and accepted in writing by the Engineer. The SWPPP (for projects with an NPDES permit for construction activities greater than 1 acre NGPC) or SWPPP/IWPPP for all Oahu projects is certified by the Duly Authorized Representative. Upon the certification of the SWPPP or SWPPP/IWPPP for the first 90 days of construction activities, the Contractor shall submit an amendment to the SWPPP or SWPPP/IWPPP within 21 calendar days of the approved SWPPP or SWPPP/IWPPP to update the SWPPP or SWPPP/IWPPP for the next 90 days of construction activities or for the remainder of construction activities at the Contractor’s discretion. The work associated with the proposed Site-Specific BMP plan shall not start until the SWPPP amendment or SWPPP/IWPPP amendment has been certified. This amendment process will recur for the remainder of construction.

Install, maintain, monitor, repair and replace site-specific BMP measures, such as for water pollution, dust and erosion control; installation, monitoring, and operation of hydrotesting activities; removal and disposal of hazardous waste indicated on plans, concrete cutting slurry, concrete curing water; or hydrodemolition water. Site-Specific BMP measures shall be in place, functional and accepted by HDOT personnel prior to initiating any ground disturbing activities.

If necessary, furnish and install rain gage in a secure location prior to field work including installation of site-specific BMP. Provide rain gage with a tolerance of at least 0.05 inches of rainfall. Install rain gage on project site in an area that will not deter rainfall from entering the gate opening. Do not install in a location where rainwater may splash into rain gage. The rain gage installation shall be stable and plumbed. Maintain rain gage and replace rain gage that is stolen, does not function properly or accurately, is worn out, or needs to be relocated. Do not begin field work until rain gage is installed and Site-Specific BMPs are in place. Rain gage data logs shall be readily available. Submit rain gage data logs weekly to the Engineer.

Prior to the start of authorized construction activities either by certified Site-Specific BMP Plan or SWPPP or SWPPP/IWPPP or certified Site-Specific BMP Plan amendments or SWPPP or SWPPP/IWPPP amendments, the Contractor shall address all comments received from the Engineer

Sediment and Erosion Control measures shown in the Contract Documents are minimum BMP requirements and do not constitute an acceptable and/or complete Sediment and Erosion Control Plan. The Contractor shall incorporate additional BMPs based upon their means and methods considering site conditions and construction sequence in accordance with the Contract Documents including applicable permit document requirements. Cost shall be included with the applicable pay items in this specifications section.

The Contractor shall modify, update and resubmit plans and construction schedules to correct conditions that develop during construction which were unforeseen during the design and pre-construction stages. Include changes in the SWPPP.

BMP measures shall be in place and operational at the end of workday or as required by Section 209.03(B) – Construction Requirements.

Install and maintain either or both stabilized construction entrances and wheel washes to minimize tracking of dirt and mud onto roadways. Restrict traffic to stabilized construction areas only. Clean dirt, mud, or other material tracked onto the road, sidewalk, or other paved area by the end of the same day in which the track-out occurs. Modify stabilized construction entrances to prevent mud from being tracked onto road. Stabilize entire access roads if necessary.

Coordinate temporary control provisions with permanent control features throughout the construction and post-construction period.

Limit maximum surface area of earth material exposed at any time to 300,000 square feet. Do not expose or disturb surface area of earth material (including clearing and grubbing) until BMP measures are properly installed and accepted in writing by the Engineer. Protect temporarily or permanently disturbed soil surface from rainfall impact, runoff and wind before end of the workday.

(1) Stabilization. Immediately initiate stabilizing exposed soil areas upon completion of earth disturbing activities for areas permanently or temporarily ceased on any portion of the site. Earth-disturbing activities have permanently ceased when clearing and

excavation within any area of the construction site that will not include permanent structures has been completed. Earth-disturbing activities have temporarily ceased when clearing, grading, and excavation within any area of the site that will not include permanent structures will not resume for a period of 14 or more calendar days, but such activities will resume in the future. The term “immediately” is used in this section to define the deadline for initiating stabilization measures. “Immediately” means as soon as practicable, but no later than the end of the next workday, following the day when the earth-disturbing activities have temporarily or permanently ceased.

(a) For projects with an NPDES Permit for Construction activities or all Oahu projects:

1. For construction areas not including Oahu projects discharging into waters not impaired for nutrients or sediments, complete initial stabilization within 14 calendar days after the temporary or permanent cessation of earth-disturbing activities.

2. For construction areas discharging into nutrient or sediment impaired waters and for all projects on Oahu, complete initial stabilization within 7 calendar days after the temporary or permanent cessation of earth-disturbing activities.

(b) For projects without an NPDES Permit for Construction activities on the outer islands (not Oahu), complete initial stabilization within 14 calendar days after the temporary or permanent cessation of earth-disturbing activities. For projects on Oahu, complete initial stabilization within 7 calendar days after the temporary or permanent cessation of earth-disturbing activities.

(c) Any of the following types of activities constitutes initiation of stabilization:

1. Prepping the soil for vegetative or non-vegetative stabilization;

2. Applying mulch or other non-vegetative product to the exposed area;

3. Seeding or planting the exposed area;

4. Starting any of the activities in items (1) – (3) above on a portion of the area to be stabilized, but not on the entire area; and

5. Finalizing arrangements to have stabilization product fully installed in compliance with the deadline for completing initial stabilization activities.

(d) Any of the following types of activities constitutes completion of initial stabilization activities:

1. For vegetative stabilization, all activities necessary to initially seed or plant the area to be stabilized; and/or

2. For non-vegetative stabilization, the installation or application of all such non-vegetative measures.

(e) If the Contractor is unable to meet the deadlines above due to circumstances beyond the Contractor's control, and the Contractor is using vegetative cover for temporary or permanent stabilization, the Contractor may comply with the following stabilization deadlines instead as agreed to by the Engineer:

1. Immediately initiate, and complete within the timeframe shown above, the installation of temporary non-vegetative stabilization measures to prevent erosion;

2. Complete all soil conditioning, seeding, watering or irrigation installation, mulching, and other required activities related to the planting and initial establishment of vegetation as soon as conditions or circumstances allow it on the site; and

3. Notify and provide documentation to the Engineer the circumstances that prevent the Contractor from meeting the deadlines above for stabilization and the schedule the Contractor will follow for initiating and completing initial stabilization and as agreed to by the Engineer.

Follow the applicable requirements of the specifications and special provisions including Section 619 - Planting and Section 641 – Hydro-Mulch Seeding.

Immediately after seeding or planting the area to be vegetatively stabilized, to the extent necessary to prevent erosion on the seeded or planted area, select, design, and install non-vegetative erosion controls that provide cover (e.g., mulch, rolled erosion control products) to the area while vegetation is becoming established.

Protect exposed or disturbed surface area with mulches, grass seeds or hydromulch. Spray mulches at a rate of 2,000 pounds per acre. Add tackifier to mix at a rate of 85 pounds per acre. Apply grass seeds at a rate of 125 pounds per acre. For hydromulch, use the ingredients and rates required for mulches and grass seeds. Submit recommendations from a licensed Landscape Architect when deviating from the application rates above.

Apply fertilizer to mulches, grass seed or hydromulch per manufacturer's recommendations. Submit recommendations from a licensed Landscape Architect when deviating from the manufacturer's recommendations.

Install velocity dissipation measures when exposing erodible surfaces greater than 15 feet in height.

(2) Dust Control. Chemicals may be used as soil stabilizers for either or both erosion and dust control if acceptable to the Engineer. Chemicals may include mineral-based binders with surfactants to minimize water consumption.

If dust screens are required, maintain dust screens until permanent ground cover has been established. Revise dust screen installations, as necessary, to complete work and to meet environmental and climate changes.

When applying water for dust control comply with the following:

(a) Apply water uniformly by pressure-type tank truck equipped with spray system and adequate control apparatus. Ensure uniform application of water. Use watering systems such as pipe, hose, and spray apparatus, only if uniform application of water can be ensured.

(b) Apply water as conditions require. Prevent water from wetting vehicles, pedestrians, and existing pavements. Repair or compensate for damages caused by watering.

(c) Employ best management practices (BMP's) with regard to dust control water leaving project site or entering into drainage or sewer systems, or State waters. Washing down of debris or dirt into drainage or sewer systems, or State waters will not be allowed.

Continue monitoring for dust until the Substantial Completion Date.

Cover exposed surface of materials completely with tarpaulin or similar device when transporting aggregate, soil, excavated material or material that may be source of fugitive dust.

(3) Maintenance and Inspection. Install or modify Site-Specific BMP measures due to change in the Contractor's means and methods, or for omitted condition that should have been allowed for in the accepted SWPPP, SWPPP/IWPPP or a Site-Specific BMP that replaces an accepted Site-Specific BMP that is not satisfactorily performing. Modifications to Site-Specific BMP measures shall be accepted in writing by the Engineer and updated in the SWPPP or SWPPP/IWPPP prior to implementation at no additional cost to the State.

Properly maintain all Site-Specific BMP measures.

Obtain Engineer's acceptance prior to removing BMPs.

Cleanup and remove any pollutant that can be attributed to the Contractor.

(a) For all project, Construction Activities:

1. For construction areas discharging into nutrient or sediment impaired waters, inspect, prepare a written report, and make repairs to BMP measures at the following intervals:

a. Weekly.

b. Within 24 hours of any rainfall of 0.25 inch or greater which occurs in a 24-hour period.

c. When existing erosion control measures are damaged or not operating properly as required by Site-Specific BMP.

2. For construction areas discharging to waters not impaired for nutrients or sediments, inspect, prepare a written report, and make repairs to BMP measures at the following intervals:

a. Weekly.

b. When existing erosion control measures are damaged or not operating properly as required by Site-Specific BMP.

(b) For projects without an NPDES Permit for Construction activities, inspect, prepare a written report, and make repairs to BMP measures at the following intervals:

1. Weekly.

2. When existing erosion control measures are damaged or not operating properly as required by Site-Specific BMP.

Temporarily remove, replace or relocate any Site-Specific BMP that must be removed, replaced or relocated due to potential or actual flooding, or potential danger or damage to project or public as directed by the Engineer. Re-install once flooding, or potential danger or damage to project or public is no longer a risk.

Maintain records of inspections of Site-Specific BMP work in the SWPPP. Keep continuous records for duration of the project. Submit copy of Inspection Report to the Engineer within 24 hours after each inspection. Inspection reports shall be completed after initial inspection and after deficiencies have been corrected. Keep copies on-site or at an accessible location so that it can be made available at the time of an on-site inspection or upon request by the Engineer, HDOT Third-Party Inspector, and/or DOH/EPA Representative.

The Contractor's designated representative specified in Subsection 209.03(A)(3)(d) shall address any Site-Specific BMP deficiencies brought up by the Engineer immediately, including weekends and holidays, and complete work to fix the deficiencies by the close of the next work day if the problem does not require significant repair or replacement, or if the problem can be corrected through routine maintenance. Address any Site-Specific BMP deficiencies brought up by the State's Third-Party Inspector in the timeframe above or as specified in the MS4 NPDES Permit or

Enforcement Response Plan Construction Site Runoff Control, whichever is more stringent. The MS4 NPDES Permits only apply to Oahu and Maui (Kahului). The Enforcement Response Plan Construction Site Runoff Control only applies to Oahu and Maui. In this section, "immediately" means the Contractor shall take all reasonable measures to minimize or prevent discharge of pollutants until a permanent solution is installed and made operational. If a problem is identified at a time in the day in which it is too late to initiate repair, initiation of repair shall begin on the following workday.

When installation of a new pollution prevention control or a significant repair is needed, complete installation or repair no later than seven calendar days from the time of notification/Contractor discovery. Notify the Engineer and document why it is infeasible to complete the installation or repair within seven calendar days and complete the work as soon as practicable and as agreed to by the Engineer. Address Site-Specific BMP deficiencies discovered by the Contractor within the timeframe above. Address any inquiries or complaints forwarded by the Engineer from the public regarding dust from construction activities and correct deficiencies in dust control methods immediately or by the next working day if a problem is identified at a time in the day in which it is too late to respond or initiate correcting deficiencies or as directed by the Engineer. If the Contractor fails to satisfactorily address these Site-Specific BMP deficiencies, the Engineer reserves the right to employ outside assistance or use the Engineer's own labor forces to provide necessary corrective measures. The Engineer will charge the Contractor such incurred costs plus any associated project engineering costs. The Engineer will make appropriate deductions from the Contractor's monthly progress estimate. Failure to apply Site-Specific BMP measures or failure to follow any other guidelines in this section may result in one or more of the following: assessment of liquidated damages, suspension, or cancellation of Contract with the Contractor being fully responsible for all additional costs incurred by the State.

(C) Additional Construction Requirements for In-Water Work. Coordinate site access, schedule of construction activities, Site-Specific BMP measures, erosion and sediment control measures, and document visual observations, and comply with all requirements and conditions of the Section 401 WQC/Army Corps 404 Permit.

Obtain site photographs of the construction site including the in-water work area daily. All photographs shall be prepared, labeled and annotated with appropriate captions on 8 ½" x 11" sheet(s). Submit the photographs to the Engineer weekly within 2 working days of the end of the weekly period.

A site plan showing the location and orientation of the photographs shall also be included. The digital files of the photographs and/or documents containing the photographs, the site plan and other accompanying documents, if necessary, shall be placed on a CD and submitted to the Engineer. The file format shall be acceptable to the Engineer.

Obtain and submit to the Engineer post-construction site photographs within five (5) working days after the completion of each phase of the proposed construction activities. The photographs, site plan, digital files and other accompanying documents shall be submitted to the Engineer.

The Contractor shall be responsible for the effectiveness and adequacy of the implemented Site-Specific BMP measures, and other environmental protection measures. The Contractor shall review and assess these measures daily or as required by the permits. If there are any indications of a discharge at any time, including a turbidity plume, stop work immediately and investigate the source of the plume. If possible, contain the area where the plume is emanating from. If the discharge poses an immediate threat to the public or environment, call 911 immediately.

(1) If the BMPs require reinstallation in accordance with the accepted Site-Specific BMP Plan, the Contractor shall cease activities, take immediate corrective action, document the corrective action taken, and provide a written report to the Engineer by the close of the workday.

(2) If the BMPs do not require repair or modification, determine what activities are causing the discharges and provide a report to the Engineer proposing corrective action. Monitor following corrective action to ensure the effectiveness of the corrective action.

(3) If the BMPs require modification, the Contractor shall cease activities, and submit an amendment to the SWPPP/IWPPP (Site-Specific BMP Plan) within 24 hours to the Engineer for review. Do not resume work until the proposed SWPPP/IWPPP amendments are certified in writing by the Engineer. Upon the Engineer's acceptance, the Contractor shall take immediate corrective action, and document the corrective action taken.

Section 404 Department of the Army Permit.

Implement only the Site-Specific BMPs on the Site-Specific BMP Plan/Erosion Control Plan accepted by the Engineer. Immediately notify the Engineer if the BMPs are insufficient for preventing discharge of pollutants. The Contractor shall be responsible for any revisions required to modify the 404 Permit at no additional cost to the State and no extension of time if the

Contractor discharges unauthorized fill.

Notify the Engineer immediately if BMPs have been damaged or displaced, or result in a discharge of material. The Engineer must notify the USACE and obtain approval prior to recovery of discharged materials outside the Temporary Impact Area.

Severe Storm Contingency Plan.

Provide a Severe Storm Contingency Plan and implement each response appropriately.

(D) Discharges of Storm Water Associated with Construction Activities. If work includes disturbance of one acre or more, an NPDES Permit authorizing Discharges of Storm Water Associated with Construction Activity (CWB-NOI Form C) or Individual Permit authorizing storm water discharges associated with construction activity is required from the Department of Health Clean Water Branch (DOH-CWB).

Do not begin construction activities until all required conditions of the permit are met and submittals detailed in Subsection 209.03(A)(3) – Water Pollution, Dust, and Erosion Control Submittals are completed and accepted in writing by the Engineer.

(E) Discharges Associated with Hydrotesting Activities. If hydrotesting activities require effluent discharge into State waters or drainage systems, an NPDES Hydrotesting Waters Permit (CWB-NOI Form F) or Individual Permit authorizing discharges associated with hydrotesting from DOH-CWB is required from the DOH-CWB.

Do not begin hydrotesting activities until the DOH-CWB has issued an Individual NPDES Permit or Notice of General Permit Coverage (NGPC). Conduct Hydrotesting operations in accordance with the conditions of the permit or NGPC.

(F) Discharges Associated with Dewatering Activities. If dewatering activities require effluent discharge into State waters or drainage systems, an NPDES Dewatering Permit (CWB-NOI Form G) or Individual Permit authorizing discharges associated with dewatering from DOH-CWB is required from the DOH-CWB.

Do not begin dewatering activities until the DOH-CWB has issued an Individual NPDES Permit or Notice of General Permit Coverage (NGPC). Conduct dewatering operations in accordance with the conditions of the permit or NGPC.

(G) Solid Waste. Submit the Solid Waste Disclosure Form for Construction Sites to the Engineer within 30 calendar days of contract certification date. Keep copies on-site or at an accessible location so that it can be made available at the time of an on-site inspection or upon request by the Engineer, HDOT Third-Party Inspector, and/or DOH/EPA Representative. Provide a copy of all the disposal receipts from the facility permitted by the Department of Health to receive solid waste to the Engineer by the last day of the month. This should also include documentation from any intermediary facility where solid waste is handled or processed, haul tags as applicable, or any documentation as requested by the Engineer. Solid Waste generated by the project shall be taken directly to a solid waste DOH-Solid and Hazardous Waste Branch permitted facility as indicated on the Solid Waste Disclosure Form. Notify Engineer at minimum 48 hours prior to removal of material from site. All material not used on the project shall be considered solid waste. No material from the project shall be classified as inert fill material for re-use without testing, obtaining required approvals/permits, proving disposal locations/quantities, and obtaining prior written authorization from the Engineer.

(H) Construction BMP Training. The Contractor's representative responsible for development of the Site-Specific BMP Plan and implementation of Site-Specific BMPs in the field shall attend the State's Construction Best Management Practices Training. The Contractor shall keep training logs updated and readily available.

(I) Underdeck Work Platform. The Contractor shall install, maintain, monitor, and remove Underdeck Work Platform needed for construction.

209.04 Measurement.

(A) Installation, maintenance, monitoring, and removal of BMP will be paid on a lump sum basis. Measurement for payment will not apply.

(B) Installation, maintenance, monitoring, and removal of Underdeck Work Platform will be paid on a lump sum basis. Measurement for payment will not apply.

(C) The Engineer will only measure additional water pollution, dust and erosion control required and requested by the Engineer on a force account basis in accordance with Subsection 109.06 – Force Account Provisions and Compensation.

209.05 Payment. The Engineer will pay for accepted pay items listed below at contract price per pay unit, as shown in the proposal schedule. Payment will be full compensation for work prescribed in this section and contract documents.

The Engineer will pay for each of the following pay items when included in proposal schedule:

Pay Item	**Pay Unit**
Installation, Maintenance, Monitoring, and Removal of BMP for General Construction Activities	Lump Sum

Payment for all work prescribed in this section including: submittals, sampling, testing, reporting, dust control measures, installation, maintenance, monitoring, removal of BMP's, all items as detailed in 209.03(A)(2) including all items to submit a clean SWPPP or SWPPP/IWPPP, SWPPP amendments or SWPPP/IWPPP amendments, BMPs for those SWPPP and SWPPP/IWPPP amendments, Grading/Stockpiling Permit Submittal and fees, submittal of complete Solid Waste Disclosure form, shall be paid for under the lump sum pay item shown in the proposal schedule. This includes payment for the installation or modification of Site-Specific BMP measures due to change in the Contractor's means and methods, or for omitted condition that should have been allowed for in the required Site-Specific BMP or a Site-Specific BMP that requires repair or replacement of an accepted Site-Specific BMP that is not satisfactorily performing.

Installation, Maintenance, Monitoring, and Removal of Underdeck Platform	Lump Sum
Additional Water Pollution, Dust, and Erosion Control	Force Account

An estimated amount for force account is allocated in proposal schedule under 'Additional Water Pollution, Dust, and Erosion Control', but actual amount to be paid will be the sum shown on accepted force account records, whether this sum be more or less than estimated amount allocated in proposal schedule. The Engineer will pay for BMP measures requested by the Engineer that are beyond scope of accepted Site-Specific BMP on a force account basis. changes dictated by DOH/EPA/Third Party Inspectors, Washouts from large storm events, litter attributed to public liked dumped furniture or litter clearly shown not coming from the Contractor or Subcontractors in the work area, contaminated soil remediation and for the services of a Qualified Environmental Professional to prepare and complete the SWPPP and SWPPP amendments.

No progress payment will be authorized until the Engineer accepts in writing Site-Specific BMP or when the Contractor fails to maintain project site in accordance with accepted BMP.

For all citations or fines received by the Department for non-compliance, including compliance with NPDES Permit conditions, the Contractor shall reimburse State within 30 calendar days for full amount of outstanding cost State has incurred,

or the Engineer will deduct cost from progress payment.

The Engineer will assess liquidated damages up to $27,500 per day for non-compliance of each BMP requirement and all other requirements in this section as deemed commensurate with the non-compliance.

Appendix A

The following list identifies potential pollutant sources and corresponding BMPs used to mitigate the pollutants. Each BMP is referenced to the corresponding section of the current HDOT Construction Best Management Practices Field Manual or appropriate Supplemental Sheets. The Manual may be obtained from the HDOT Statewide Stormwater Management Program Website at *http://www.stormwaterhawaii.com/resources/contractors-and-consultants/* under Construction Best Management Practices Field Manual. Supplemental BMP sheets are located at *http://www.stormwaterhawaii.com/resources/contractors-and-consultants/storm-water-pollution-prevention-plan-swppp/* under Concrete Curing and Irrigation Water.

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Pollutant Source	***Appropriate Site-Specific BMP to be Implemented***	***BMP Requirements***
Construction debris, green waste, general litter	• *Separate contaminated clean up materials from construction and demolition (C&D) wastes.* • *Provide waste containers (e.g., dumpster or trash receptacle) of sufficient size and number to contain construction and domestic wastes.* • *Inspect construction waste and recycling areas regularly.* • *Schedule solid waste collection regularly.* • *Schedule recycling activities based on construction/demolition phases.* • *Empty waste containers weekly or when they are two-thirds full, whichever is sooner.* • *Do not allow containers to overflow. Clean up immediately if they do.* • *On workdays, clean up and dispose of waste in designated waste containers.* • *See Solid Waste Management Section SM-6 for additional requirements.* • *Provide Storm Drain Inlet Protection and/or Perimeter Sediment Controls as applicable.* • *Collect and dispose of all waste materials in trash dumpsters. Place dumpsters, with secure watertight lids, away from storm water conveyances and drains, in a covered materials storage area.* • *Dispose of construction and non- construction solid waste in accordance with State DOH regs.* • *Load removed non- recyclable vegetation directly onto trucks; cover and transport to a licensed facility*	*See Solid Waste Management Section SM-6. Storm Drain Inlet Protection SC-1, and Perimeter Sediment Controls where applicable.*

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Pollutant Source	***Appropriate Site-Specific BMP to be Implemented***	***BMP Requirements***
Materials associated with the operation and maintenance of equipment, such as oil, fuel, and hydraulic fluid leakage	• *Use off-site wash racks, repair and maintenance facilities, and fueling sites when practical.* • *Designate bermed wash area if cleaning on site is necessary.* • *Place drip pans or drop cloths under vehicles and equipment to absorb spills or leaks.* • *Provide an ample supply of readily available spill cleanup materials.* • *Clean up spills immediately, using dry clean-up methods where possible, and dispose of used materials properly.* • *Do not clean surfaces or spills by hosing the area down.* • *Eliminate the source of the spill to prevent a discharge or a continuation of an ongoing discharge.* • *Inspect on-site vehicles and equipment regularly and immediately repair leaks.* • *Regularly inspect fueling areas and storage tanks.* • *Train employees on proper maintenance and spill practices and procedures and fueling and cleanup procedures.* • *Store diesel fuel, oil, hydraulic fluid, or other petroleum products or other chemicals in water-tight containers and provide cover or secondary containment.* • *Do not remove original product labels and comply with manufacturer's labels for proper disposal.* • *Dispose of containers only after all the product has been used.* • *Dispose of or recycle oil or oily wastes according to Federal, State, and Local requirements.* • *Store soaps, detergents, or solvents under cover or other means to prevent contact with rainwater.* • *See Vehicle and Equipment Cleaning, Maintenance, and Refueling, Sections SM-11, SM-12, and SM-13 and Material Storage and Handling Section SM-2 for additional requirements.*	*See Vehicle and Equipment Cleaning, Maintenance, and Refueling, Sections SM-11, SM-12, and SM-13, and Material Storage and Handling, Section SM-2, and Spill Prevention and Control SM-10.*

Pollutant Source	***Appropriate Site-Specific BMP to be Implemented***	***BMP Requirements***
Soil erosion from the disturbed areas	• *Provide Soil Stabilization, Slope Protection, Storm Drain Inlet Protection SC-1, Perimeter Controls and Sediment Barriers, Sediment Basins and Detention Ponds, Check Dams SC-3 ,Level Spreader EC-6, Paving Operations SM-20, Construction Roads and Parking Area Stabilization SC-10, Controlling Storm Water Flowing Onto and Through the Project, Post-Construction BMPs, and Non-Structural BMPs (Construction BMP Training SM-1, Scheduling SM-14, Location of Potential Sources of Sediment SM-15, Preservation of Existing Vegetation SM-17).* • *Delineate, and clearly mark off, with flags, tape, or other similar marking device all natural buffer areas defined in the SWPPP.* • *Preserve native topsoil where practicable.* • *In areas where vegetative stabilization will occur, restrict vehicle/equipment use in areas to avoid soil compaction or condition soil to promote vegetative growth.* • *For Storm Drain Inlet Protection, clean, or remove and replace, the protection measures as sediment accumulates, the filter becomes clogged, and/or performance is compromised.* • *Where there is evidence of sediment accumulation adjacent to the inlet protection measure, remove the deposited sediment by the end of the same day in which it is found or by the end of the following work day if removal by the same day is not feasible.* • *Sediment basins shall be designed and maintained in accordance with HAR Chapter 11-55.* • *Minimize disturbance on steep slopes (Greater than 15% in grade).* • *If disturbance of steep slopes are unavoidable, phase disturbances and use stabilization techniques designed for steep grades.* • *For temporary drains and swales use velocity dissipation devices within and at the outlet to minimize erosive flow velocities.*	*Soil Stabilization* *1. SM-22 Topsoil Management* *2. EC-12 Seeding and Planting* *3. EC-14 Mulching* *4. EC-11 Geotextiles and Mats* *Slope Protection* *1. EC-12 Seeding and Planting* *2. EC-14 Mulching* *3. EC-11 Geotextiles and Mats* *4. EC-4 Slope Roughening, Terracing, and Rounding* *5. EC-7 Slope Drains and Subsurface Drains* *6. EC-9 Slope Interceptor or Diversion Ditches/Berms* *SC-1 Storm Drain Inlet Protection*

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Pollutant Source	***Appropriate Site-Specific BMP to be Implemented***	*BMP Requirements*
		Perimeter Controls and Sediment Barriers *1. SC-7 Silt Fence or Filter Fabric Fence* *2. SC-2 Vegetated Filter Strips and Buffers* *3. SC-6 Compost Filter Berm/Sock* *4. SC-8 Sandbag Barrier* *5. SC-9 Brush or Rock Filter* *Sediment Basins and Detention Ponds* *1. SC-4 Sediment Trap* *2. SC-5 Sediment Basin* *SC-3 Check Dams* *EC-6 Level Spreader* *SM-20 Paving Operations* *SC-10 Construction Roads and Parking Area Stabilization*

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Pollutant Source	*Appropriate Site-Specific BMP to be Implemented*	*BMP Requirements*
		Controlling Storm Water Flowing onto and Through the Project *1. EC-3 Run-On Diversion* *2. EC-5 Earth Dike, Swales and Ditches* *Post Construction BMPs* *1. EC-2 Flared Culvert End Sections* *2. EC-10 Rip-Rap and Gabion Inflow Protection* *3. EC-8 Outlet Protection and Velocity Dissipation Devices* *4. SM-22 Topsoil Management* *Non-Structural BMPs* *1. SM-1 Construction BMP Training* *2. SM-14 Scheduling* *3. SM-15 Location of Potential Sources of Sediment* *4. SM-17 Preservation of Existing Vegetation*

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Pollutant Source	***Appropriate Site-Specific BMP to be Implemented***	***BMP Requirements***
Sediment from soil stockpiles	• *Locate stockpiles a minimum of 50 feet or as far as practicable from concentrated runoff or outside of any natural buffers identified on the SWPPP.* • *Place bagged materials on pallets and under cover.* • *Provide physical diversion to protect stockpiles from concentrated runoff.* • *Cover stockpiles with plastic or comparable material when practicable.* • *Place silt fence, fiber filtration tubes, or straw wattles around stockpiles.* • *Do not hose down or sweep soil or sediment accumulated on pavement or other impervious surfaces into any storm water conveyance (unless connected to a sediment basin, sediment trap, or similarly effective control), storm drain inlet, or state water.* • *Unless infeasible, contain and securely protect stockpiles from the wind.* • *Provide Storm Drain Inlet Protection and/or Perimeter Sediment Controls as applicable.* *See Stockpile Management Section SM-3 for additional requirements.*	*See Stockpile Management Section SM-3. Storm Drain Inlet Protection SC-1, and Perimeter Sediment Controls where applicable.*
Emulsified asphalt or prime/tack coat	• *Provide training for employees and contractors on proper material delivery and storage practices and procedures.* • *Restrict paving operations during wet weather to prevent paving materials from being discharged.* • *Use asphalt emulsions such as prime coat when possible.* • *Protect drain inlet structures and manholes during application of tack coat, seal coat, slurry seal, and fog seal.* • *Keep ample supplies of drip pans and absorbent materials on site.* • *Inspect inlet protection devices.* • *See Material Storage and Handling Section SM-2 and Paving Operations Section SM-20 for additional requirements.* • *Provide Storm Drain Inlet Protection and/or Perimeter Sediment Controls as applicable.*	*See Material Storage and Handling Section SM-2,* and Stockpile Management Section SM-3, *Paving Operations Section SM-20, Storm Drain Inlet Protection SC-1, and Perimeter Sediment Controls where applicable.*

Pollutant Source	***Appropriate Site-Specific BMP to be Implemented***	***BMP Requirements***
Materials associated with painting, such as paint and paint wash solvent	• *Hazardous chemicals shall be well-labeled and stored in original containers.* • *Keep ample supply of cleanup materials on site.* • *Dispose container only after all of the product has been used.* • *Remove as much paint from brushes on painted surface.* • *Rinse from water-based paints shall be discharged into the sanitary sewer system where possible. If not, direct all washwater into a leak-proof container or leak-proof pit. The container or pit must be designed so that no overflows can occur due to inadequate sizing or precipitation.* • *Locate on-site wash area a minimum of 50 feet away or as far as practicable from storm drain inlets, open drainage facilities, or water bodies.* • *Do not dump liquid wastes into the storm drainage system.* • *Filter and re-use solvents and thinners.* • *Dispose of oil-based paints and residue as a hazardous waste.* • *Ensure collection, removal, and disposal of hazardous waste complies with regulations.* • *Immediately clean up spills and leaks.* • *Properly store paints, solvents, and epoxy compounds.* • *Properly store and dispose waste materials generated from painting and structure repair and construction activities.* • *Mix paints in a covered and contained area, when possible, to minimize adverse impacts from spills.* • *Do not apply traffic paint or thermoplastic if rain is forecasted.* • *See Material Storage and Handling Use SM-2, Hazardous Materials and Waste Management Section SM-9, Spill Prevention and Control Section SM-10, and Structure Construction and Painting Section SM-21 for additional requirements.* *Provide Storm Drain Inlet Protection and/or Perimeter Sediment Controls as applicable.*	*See Material Storage and Handling Use Section SM-2, Stockpile Management Section SM-3, Hazardous Materials and Waste Management Section SM-9, Waste Management, Spill Prevention and Control Section SM-10, and Structure Construction and Painting Section SM-21, Storm Drain Inlet Protection SC-1, and Perimeter Sediment Controls where applicable.*

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Pollutant Source	***Appropriate Site-Specific BMP to be Implemented***	***BMP Requirements***
Industrial chemicals, fertilizers, and/or pesticides	• *Hazardous chemicals shall be well-labeled and stored in original containers.* • *Keep ample supply of cleanup materials on site.* • *Clean up spills immediately, using dry clean-up methods where possible, and dispose of used materials properly.* • *Do not clean surfaces or spills by hosing the area down.* • *Eliminate the source of the spill to prevent a discharge or a furtherance of an ongoing discharge.* • *Dispose container only after all of the product has been used.* • *Retain a complete set of safety data sheets (formerly MSDS) on site.* • *Store industrial chemicals in water-tight containers and provide either cover or secondary containment.* • *Provide cover when storing fertilizers or pesticides to prevent these chemicals from coming into contact with rainwater.* • *Restrict amount of pesticide prepared to quantity necessary for the current application.* • *Do not apply fertilizers or pesticides during or just before a rain event.* • *Do not apply to stormwater conveyance channels with flowing water.* • *Comply with fertilizer and pesticide manufacturer's recommended usage and disposal instructions. Document departures from manufacturer's specifications in Attachment J.* • *Apply fertilizers at the appropriate time of year for the location, and preferably timed to coincide as closely as possible to the period of maximum vegetation uptake and growth.* • *Follow federal, state, and local laws regarding fertilizer application.* • *Do not dispose of toxic liquid wastes (solvents, used oils, and paints) or chemicals (additives, acids, and curing compounds) in dumpsters allocated for construction debris.*	*See Material Storage and Handling Use Section SM-2, Stockpile Management Section SM-3, and Hazardous Materials and Waste Management Section SM-9, and Spill Prevention and Control SM-10*

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Pollutant Source	***Appropriate Site-Specific BMP to be Implemented***	***BMP Requirements***
	• *Ensure collection, removal, and disposal of hazardous waste complies with regulations. Hazardous waste that cannot be reused or recycled shall be disposed of by a licensed hazardous waste hauler.* *See Material Storage and Handling Use SM-2, and Hazardous Materials and Waste Management Section SM-9 for additional requirements.*	
Hazardous waste (Batteries, Solvents, Treated Lumber, etc.)	• *Do not dispose of toxic materials in dumpsters allocated for construction debris.* • *Ensure collection, removal, and disposal of hazardous waste complies with regulations.* • *Hazardous waste that cannot be reused or recycled shall be disposed of by a licensed hazardous waste hauler.* • *Segregate and recycle wastes from vehicle/equipment maintenance activities such as used oil or oil filters, greases, cleaning solutions, antifreeze, automotive batteries, and hydraulic and transmission fluids.* • *Store waste in sealed containers, which are constructed of suitable materials to prevent leakage and corrosion, and which are labeled in accordance with applicable Resource Conservation and Recovery Act (RCRA) requirements and all other applicable federal, state, and local requirements.* • *All containers stored outside shall be kept away from surface waters and within appropriately sized secondary containment (e.g., spill berms, decks, spill containment pallets). Provide cover if possible.* • *Clean up spills immediately, using dry clean-up methods where possible, and dispose of used materials properly.* • *Do not clean surfaces or spills by hosing the area down.* • *Eliminate the source of the spill to prevent a discharge or a continuation of an ongoing discharge.*	*See Hazardous Materials and Waste Management Section SM-9 and Vehicle and Equipment Maintenance SM-12*

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Pollutant Source	***Appropriate Site-Specific BMP to be Implemented***	***BMP Requirements***
	• *Ensure collection, removal, and disposal of hazardous waste complies with manufacturer's recommendations and is in compliance with federal, state, and local requirements.* • *See Hazardous Materials and Waste Management Section SM-9 and Vehicle and Equipment Management, Vehicle and Equipment Maintenance SM-12 for additional requirements.*	
Metals and Building Materials	• *Inspect construction waste and recycling areas regularly.* • *Schedule solid waste collection regularly.* • *If building materials or metals are stored on site (such as rebar or galvanized poles) store under cover under tarps or in containers.* • *Minimize the amount of material stored on site.* • *Do not stockpile uncovered metals or other building materials in close proximity to discharge points.* • *See Solid Waste Management Section SM-6 for additional requirements.*	*See Solid Waste Management Section SM-6*
Contaminated Soil	• *See Waste Management, Contaminated Soil Management Section SM-8 and/or Hazardous Materials and Waste Management Section SM-9 for additional requirements.* • *At minimum contain contaminated material soil by surrounding with impermeable lined berms or cover exposed contaminated material with plastic sheets.*	*See Waste Management, Contaminated Soil Management Section SM-8 and/or Hazardous Materials and Waste Management Section SM-9*

Pollutant Source	***Appropriate Site-Specific BMP to be Implemented***	***BMP Requirements***
Fugitive Dust Control and Dust Control Water	• *Do not over spray water for dust control purposes which will result in runoff from the area.* • *Apply water as conditions require.* • *Washing down of debris or dirt into drainage, sewage systems, or State waters is not allowed.* • *Minimize exposed areas through the schedule of construction activities.* • *Utilize vegetation, mulching, sprinkling, and stone/gravel layering to quickly stabilize exposed soil.* • *Direct construction vehicle traffic to stabilized roadways.* • *Cover dump trucks hauling material from the site with a tarpaulin.* *See Dust Control Section SM-19 for additional requirements.*	*See Dust Control Section SM-19*
Concrete Truck Wash Water	• *Disposal of concrete truck wash water via percolation is prohibited.* • *Wash concrete-coated vehicles or equipment off-site or in the designated wash area.* • *Locate on-site wash area a minimum of 50 feet away or as far as practicable from storm drain inlets, open drainage facilities, or water bodies.* • *Runoff from the on-site concrete wash area shall be contained in a temporary pit or level bermed area where the concrete can set.* • *Design the area so that no overflow can occur due to inadequate wash area sizing or precipitation.* • *The temporary pit shall be lined with plastic to prevent seepage of wash water into the ground.* • *Allow wash water to evaporate or collect wash water and all concrete debris in a concrete washout system bin.* • *Do not dump liquid wastes into storm drainage system.* • *Dispose of liquid and solid concrete wastes in compliance with federal, state, and local standards.* • *See Waste Management, Concrete Wash and Waste Management Section SM-4 for additional requirements.*	*See Waste Management, Concrete Wash and Waste Management Section SM-4*

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Pollutant Source	***Appropriate Site-Specific BMP to be Implemented***	***BMP Requirements***
Sediment Track-Out	• *Include Stabilized Construction Entrance at all points that exit onto paved roads.* • *A sediment trapping device is required if a wash rack is used in conjunction with the stabilized construction entrance/exit.* • *The pavement shall not be cleaned by washing down the street.* • *If sweeping is ineffective or it is necessary to wash the streets, wash water must be contained either by construction of a sump, diverting the water to an acceptable disposal area, or vacuuming the wash water.* • *Use BMPs for adjacent drainage structures.* • *Remove sediment tracked onto the street by the end of the day in which the track-out occurs.* • *Restrict vehicle use to properly designated exit points.* • *Include additional BMPs that remove sediment prior to exit when minimum dimensions cannot be met.* *See Stabilized Construction Entrance/Exit Section SC-11 for additional requirements.*	*See Stabilized Construction Entrance/Exit Section SC-11*
Irrigation Water	• *Consider irrigation requirements.* • *Where possible, avoid species which require irrigation.* • *Design, timing and application methods of irrigation water to eliminate the runoff of excess irrigation water into the storm water drainage system.* *See Seeding and Planting Section EC-12 and California Stormwater BMP Handbook SD-12 Efficient Irrigation included in SWPPP Attachment A for additional requirements.*	*See Seeding and Planting Section EC-12 and California Stormwater BMP Handbook SD-12 Efficient Irrigation*
Hydrotesting Effluent	• *If work includes removing, relocation or installing waterlines, and Contractor elects to flush waterline or discharge hydrotesting effluent into State waters or drainage systems, the Contractor shall prepare and obtain HDOT acceptance of a NOI/NPDES Permit Form F application for HDOT submittal to DOH CWB at least 30 calendar days prior to the start of Hydrotesting Activities if necessary. Site specific BMPs will be included in the NOI/NPDES Permit Form F submittal.*	*Site specific BMPs will be included in the NOI/NPDES Permit Form F submittal.*

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Pollutant Source	***Appropriate Site-Specific BMP to be Implemented***	***BMP Requirements***
Dewatering Effluent	*If excavation or backfilling operations require dewatering, and Contractor elects to discharge dewatering effluent into State waters or existing drainage systems, Contractor shall prepare and obtain HDOT acceptance of a NOI/NPDES Permit Form G application for HDOT submittal to DOH CWB at least 30 calendar days prior to the start of Dewatering Activities if necessary. See Site Planning and General Practices, Dewatering Operations Section SM-18 for additional requirements.*	*See Dewatering Operations SM-18. Site specific BMPs will be included in the NOI/NPDES Permit Form G submittal.*
Saw-cutting Slurry	• *Saw cut slurry shall be removed from the site by vacuuming.* • *Provide storm drain protection during saw cutting. See Paving Operations Section SM-20 for additional requirements.* *Provide Storm Drain Inlet Protection and/or Perimeter Sediment Controls as applicable.*	*See Paving Operations Section SM-20, Storm Drain Inlet Protection SC-1, Perimeter sediment controls where applicable*
Concrete Curing Water	• *Avoid overspraying of curing compounds.* • *Apply an amount of compound that covers the surface, but does not allow any runoff of the compound.* *See California Stormwater BMP Handbook NS-12 Concrete Curing included in SWPPP Attachment A for additional requirements.*	*See California Stormwater BMP Handbook NS-12 Concrete Curing*

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Pollutant Source	***Appropriate Site-Specific BMP to be Implemented***	***BMP Requirements***
Plaster Waste Water	• *Direct all washwater into a leak-proof container or leak-proof pit. The container or pit must be designed so that no overflows can occur due to inadequate sizing or precipitation.* • *Locate on-site wash area a minimum of 50 feet away or as far as practicable from storm drain inlets, open drainage facilities, or water bodies.* • *Any significant residual materials remaining on the ground after the completion of construction shall be removed and properly disposed. If the residual materials contaminate the soil, then the contaminated soil shall also be removed and properly disposed of.* • *Plaster waste water shall not be allowed to flow into drainage structures or State waters. See Material, Storage and Handling Use SM-2, Stockpile Management Use Section SM-3, and Hazardous Materials and Waste Management Section SM-9 for additional requirements.*	*See Material, Storage and Handling Use Section SM-2, Stockpile Management Use Section SM-3, and Hazardous Materials and Waste Management Section SM-9*
Water-Jet Wash Water	• *For Water-Jet Wash Water used to clean vehicles, use off site wash racks or commercial washing facilities when practical.* • *See Vehicle and Equipment Cleaning Section SM-11 for additional information.* • *For Water-Jet Wash Water used to clean impervious surfaces, the runoff shall not be allowed to flow into drainage structures or State Waters.*	*See Vehicle and Equipment Cleaning Section SM-11*
Sanitary/Septic Waste	• *Locate Sanitary facilities in a convenient place away from drainage facilities.* • *Position sanitary facilities so they are secure and will not be tipped over or knocked down.* • *Wastewater shall not be discharged to the ground or buried.* • *A licensed service provider shall maintain sanitary/septic facilities in good working order.* • *Schedule regular waste collection by a licensed transporter.* • *See Sanitary Waste Section SM-7 for additional requirements.*	*See Sanitary Waste Section SM-7.*

"

END OF SECTION 209

Amend Section 401- HOT MIX ASPHALT (HMA) PAVEMENT to read as follows:

"SECTION 401 – HOT MIX ASPHALT (HMA) PAVEMENT

401.01 Description. This section describes furnishing and placing dense graded HMA pavement (herein referred to as HMA) on a prepared surface.

401.02 Materials.

Asphalt Cement (PG 64-16) 702.01(A)

Use for non-surface mixes, unless otherwise specified in the project documents.

Asphalt Cement (PG 64E-22) 702.01(B)

Use for all surface mixes, except for on Lanai and Molokai, and unless otherwise specified in the project documents. Polymer modified asphalt (PMA) pavement refers to asphalt mix using PG 64E-22, unless otherwise indicated.

Emulsified Asphalt 702.04

Warm Mix Asphalt Additive 702.06

Aggregate for Hot Mix Asphalt Pavement 703.09

Filler 703.15

Hydrated Lime or a liquid anti-strip approved by the engineer 712.03

(A) General. HMA pavement shall be plant mixed and shall include mixture of aggregate and asphalt binder and may include reclaimed asphalt pavement (RAP) or filler, or both.

The manufacture of HMA may include warm mix asphalt (WMA) processes in accordance with these specifications. WMA processes include combinations of organic additives, chemical additives, and foaming.

HMA pavement shall include surface course and may include one or more binder courses, depending on HMA pavement thickness indicated in the contract documents.

RAP is defined as removed or reprocessed pavement materials containing asphalt and aggregates. Process RAP by crushing until 100 percent of RAP passes 3/4-inch sieve. Size, grade uniformly, and combine materials such that blend of RAP and aggregate material conforms to grading

requirements of Subsection 703.09 - Aggregate for Hot Mix Asphalt Pavement.

In surface and binder courses, aggregate for HMA may include RAP quantities up to 20 percent of total mix weight.

Quantity of filler material to correct deficiencies in aggregate gradation passing the No. 200 sieve shall not exceed 3 percent by weight of fine aggregates.

(B) Job-Mix Formula and Tests. Design job-mix formula in accordance with procedures contained in current edition of Asphalt Institute's *Mix Design Methods for Asphalt Concrete and Other Hot Mix Types,* Manual Series No. 2 (MS-2) for either Marshall Method or Hveem Method of Mix Design.

Limit compacted lift thickness and asphalt content of job-mix formula as specified in Table 401.02-1 - Limits of Compacted Lift Thickness and Asphalt Content.

TABLE 401.02-1 - LIMITS OF COMPACTED LIFT THICKNESS AND ASPHALT CONTENT

MIX NO.	II	III	IV	V
Minimum to Maximum Compacted Thickness for Individual Lifts (Inches)	2-1/4 to 3	2 to 3	1-1/2 to 3	1-1/4 to 3
Asphalt Content Limits (Percent of Total Weight of Mix)	3.8 to 6.1	4.3 to 6.1	4.3 to 6.5	4.8 to 7.0

Asphalt content limits for porous aggregate may be exceeded only if it is requested ahead of placement and is reviewed then accepted in writing by the Engineer.

Meet job-mix formula design criteria specified in Table 401.02-2 - Job-Mix Formula Design Criteria.

TABLE 401.02-2 - JOB-MIX FORMULA DESIGN CRITERIA	
Hveem Method Mix Criteria (AASHTO T 246 and AASHTO T 247)	
Stability, minimum	37
Air Voids (percent)[1]	3 - 5
Marshall Method Mix Criteria (AASHTO T 245)	
Compaction (number of blows each end of specimen)	75
Stability, minimum (pounds)	1,800
Flow (x 0.01 inch)	8 - 16
Air Voids (percent)[1]	3 - 5
Notes: 1. Air Voids: AASHTO T 166 or AASHTO T 275; AASHTO T 209, AASHTO T 269.	

Minimum percent voids in mineral aggregates (VMA) of job-mix formula shall be as specified in Table 401.02-3 - Minimum Percent Voids in Mineral Aggregates (VMA).

TABLE 401.02-3 - MINIMUM PERCENT VOIDS IN MINERAL AGGREGATES (VMA)					
Nominal Maximum Particle Size, (Inches)	1-1/2	1	3/4	1/2	3/8
VMA, (percent)[1]	11.0	12.0	13.0	14.0	15.0
Notes: 1. VMA: See Asphalt Institute Manual MS-2					

(C) Submittals. Establish and submit job-mix formula for each type of HMA pavement mix indicated in the contract documents a minimum of 30 days before paving production. Job mix shall include the following applicable information:

(1) Design percent of aggregate passing each required sieve size.

(2) Design percent of asphalt binder material (type determined by type of mix) added to the aggregate (expressed as % by weight of total mix),

(3) Design proportion of processed RAP.

(4) Design temperature of mixture at point of discharge at paver.

(5) Source of aggregate.

(6) Grade of asphalt binder.

(7) Test data used to develop job-mix formula.

Except for item (4) in this subsection, if design requirements are modified after the Engineer accepts job-mix formula, submit new job-mix formula before using HMA produced from modified mix design. Submit any changes to the design temperature of mixture at point of discharge for acceptance by the Engineer.

Submit a certificate of compliance for the asphalt binder, accompanied by substantiating test data from a certified testing laboratory.

(D) Range of Tolerances for HMA. Provide HMA within allowable tolerances of accepted job mix formula as specified in Table 401.02-4 - Range of Tolerances HMA. These tolerances are not to be used for the design of the job mix, they are solely to be used during the testing of the production field sample of the HMA mix.

TABLE 401.02-4 - RANGE OF TOLERANCES HMA	
Passing No. 4 and larger sieves (percent)	± 7.0
Passing No. 8 to No. 100 sieves (inclusive) (percent)	± 4.0
Passing No. 200 sieve (percent)	± 3.0
Asphalt Content (percent)	± 0.4
Mixture Temperature (degrees F)	± 20

The tolerances shown are the allowable variance between the physical characteristics of laboratory job mix submitted mix design and the production or operational mix, i.e., field samples.

401.03 Construction.

(A) Weather Limitations. Placement of HMA shall not be allowed under the following conditions:

(1) On wet surfaces, e.g., surface with ponding or running water, surface that has aggregate or surface that appears beyond surface saturated dry, as determined by the Engineer.

(2) When air temperature is below 50 degrees F and falling. HMA may be applied when air temperature is above 40 degrees F and rising. Air temperature will be measured in shade and away from artificial heat.

(3) When weather conditions prevent proper method of construction.

(B) Equipment.

(1) Mixing Plant. Use mixing plants that conform to AASHTO M 156, supplemented as follows:

(a) All Plants.

1. Automated Controls. Control proportioning, mixing, and mix discharging automatically. When RAP is incorporated into mixture, provide positive controls for proportioning processed RAP.

2. Dust Collector. AASHTO M 156, Requirements for All Plants, Emission Controls is amended as follows:

Equip plant with dust collector. Dispose of collected material. In the case of baghouse dust collectors, dispose of collected material or return collected material uniformly.

3. Modifications for Processing RAP. When RAP is incorporated into mixture, modify mixing plant in accordance with plant manufacturer's recommendations to process RAP.

(b) Drum Dryer-Mixer Plants.

1. Bins. Provide separate bin in cold aggregate feeder for each individual aggregate stockpile in mix. Use bins of sufficient size to keep plant in continuous operation and of proper design to prevent overflow of material from one bin to another.

2. Stockpiling Procedures. Separate aggregate for Mix II, Mix III and Mix IV into at least three stockpiles with different gradations as follows: coarse, intermediate, and fine. Separate aggregates for Mix V into at least two stockpiles. Stockpile RAP separately from virgin aggregates.

3. Checking Aggregate Stockpile. Check condition of the aggregate stockpile often enough to ensure that the aggregate is in optimal condition.

(c) Batch and Continuous Mix Plants.

1. Hot Aggregate Bin. Provide bin with three or more separate compartments for storage of screened aggregate fractions to be combined for mix. Make partitions between compartments tight and of sufficient height to prevent spillage of aggregate from one compartment into another.

2. Load Cells. Calibrated load cells may be used in batch plants instead of scales.

(2) Hauling Equipment. Use trucks that have tight, clean, smooth metal beds for hauling HMA.

Thinly coat truck beds with a minimum quantity of non-stripping release agent to prevent mixture from adhering to beds. Diesel or petroleum-based liquid release agents, except for paraffin oil, shall not be used. Drain excess release agent from truck bed before loading with HMA.

Provide a designated clean up area for the haul trucks.

Equip each truck with a tarpaulin conforming to the following:

(a) In good condition, without tears and holes.

(b) Large enough to be stretched tightly over truck bed, completely covering mix. The tarpaulin shall be secured in such a manner that it remains stretched tightly over truck bed and HMA mix until the bed is about to be raised up in preparation for discharge.

(3) Asphalt Pavers. Use asphalt pavers that are:

(a) Self-contained, power-propelled units.

(b) Equipped with activated screed or strike-off assembly, heated if necessary.

(c) Capable of spreading and finishing courses of HMA mixtures in lane widths applicable to typical section and thicknesses indicated in the contract documents.

(d) Equipped with receiving hopper having sufficient capacity for uniform spreading operation.

(e) Equipped with automatic feed controls to maintain uniform depth of material ahead of screed.

(f) Equipped with automatic screed controls with sensors capable of sensing grade from outside reference line, sensing transverse slope of screed, and providing automatic signals to control screed grade and transverse slope.

(g) Capable of operating at constant forward speeds consistent with satisfactory laying of mixture.

(h) Equipped with a means of preventing the segregation of the coarse aggregate particles from the remainder of the bituminous plant mix when that mix is carried from the paver hopper back to the paver augers. The means and methods used shall be approved by the paver manufacturer and may consist of chain curtains, deflector plates, or other such devices and any combination of these.

The following specific requirements shall apply to the identified bituminous pavers:

1. Blaw-Knox Bituminous Pavers. Blaw-Knox bituminous pavers shall be equipped with the Blaw-Knox Materials Management Kit (MMK).

2. Cedarapids Bituminous Pavers. Cedarapids bituminous pavers shall be those that were manufactured in 1989 or later.

3. Barber-Green/Caterpillar Bituminous Pavers. Barber-Green/Caterpillar bituminous pavers shall be equipped with deflector plates as identified in the December 2000 Service Magazine entitled "New Asphalt Deflector Kit {6630, 6631, 6640}".

Bituminous pavers not listed above shall have similar attachments or designs that shall make them equivalent to the bituminous pavers listed above. The Engineer will solely decide if it is equal to or better that the setups described for the equipment listed above.

Submit for review and acceptance, prior to the start of using the paver for the placing of plant mix, a full description in writing of the means and methods that will be used to prevent the bituminous paver from having both aggregate and temperature segregation. Use of any paver that has not been accepted is prohibited until acceptance of the paver is received from the Engineer. Any pavement placed with an unaccepted paver will be regarded as not compliant work and may not be paid for and may require removal.

Supply a Certificate of Compliance that verifies that the manufacturer's approved means and methods used to prevent bituminous paver from having both aggregate and temperature segregation have been implemented on all pavers used on the project and are working in accordance with the manufacturer's requirements and Contract Documents.

(4) Rollers. Rollers shall be self-propelled, steel-tired tandem, pneumatic-tired, or vibratory-type rollers capable of reversing without shoving or tearing the just placed HMA mixture. Provide sufficient number, sequencing, type, and rollers of sufficient weight to compact the mixture to required density while mixture is still in workable condition. Equipment shall not excessively crush aggregate. Operate rollers in accordance with manufacturer's recommendations and Contract Documents. The use of intelligent compaction is encouraged and may be required elsewhere in the Contract Documents.

(a) Steel-Tired Tandem Rollers. Steel-tired tandem rollers used for initial breakdown or intermediate roller passes shall have minimum gross weight of 12 tons and shall provide minimum 250-pound weight per linear inch of width on drive wheel.

Steel-tired tandem rollers used for finish roller passes

shall have minimum total gross weight of 3 tons.

Do not use roller with grooved or pitted rolling drum or worn scrapers or wetting pads. Replace excessively worn scrapers and wetting pads before use.

(b) Pneumatic-Tired Rollers. Pneumatic-tired rollers shall be oscillating-type, equipped with smooth-tread pneumatic tires of equal size and diameter. Maintain tire pressure within 5 pounds per square inch of designated operational pressure when hot. Space tires so that gaps between adjacent tires are covered by following set of tires.

Pneumatic-tired rollers used for breakdown or intermediate roller passes shall have a ballast capable of establishing an operating weight per tire of not less than 3,000 pounds. Equip rollers with tires having minimum 20-inch wheel diameter with tires inflated to 70 to 75 pounds per square inch pressure when cold and 90 pounds per square inch when hot. Equip rollers with skirt-type devices to maintain temperature of tires during rolling operations.

Pneumatic-tired rollers used for kneading finished asphalt surfaces shall have a ballast capable of establishing an operating weight per tire of not less than 1,500 pounds. Equip rollers with tires having minimum 15-inch wheel diameter with tires inflated to 50 to 60 pounds per square inch pressure. If required, equip rollers with skirt-type devices to maintain temperature of tires during rolling operations.

(c) Vibratory Rollers. Vibratory rollers shall be steel-tired tandem rollers having minimum total weight of 3 tons. Equip vibratory rollers with amplitude and frequency controls and speedometer. Operate vibratory roller in accordance with manufacturer's recommendations. For very thin lifts, 1 inch or less in thickness, vibratory rollers shall not be used in the vibratory mode. Instead, operate the unit in the static mode.

(5) Hand Tools. Keep hand tools used in production, hauling, and placement of HMA clean and free of contaminants. Diesel or mineral spirits or other cleaning material that is potentially deleterious to HMA may be used to clean hand tools providing:

(a) It does not contaminate HMA with cleaning material.

(b) Clean hand tools over catch pan with capacity to hold all

the cleaning material.

(c) Remove all diesel or mineral spirits or other cleaning material that is potentially deleterious to HMA from hand tools before using with HMA.

(d) Hand tools used shall be in a condition such that it meets the requirements that it was manufactured for, e.g., a straightedge shall meet the straightness requirement of the manufacturer.

(6) Material Transfer Vehicle (MTV).

(a) Usage. MTV usage applies to surface courses of paving projects on all Islands except Lanai, unless otherwise indicated. When placing HMA surface course use MTV to independently deliver mixtures from hauling equipment to paving equipment. MTV usage will not be required for the following:

1. Projects with less than 1,000 tons of HMA.

2. Temporary pavements.

3. Bridge deck approaches.

4. Shoulders.

5. Tapers.

6. Turning lanes.

7. Driveways.

8. Areas with low overhead clearances.

(b) Equipment. When using MTV, install minimum 10-ton-capacity hopper insert in conventional paver hopper. Provide the following equipment:

1. High-capacity truck unloading system in MTV capable of receiving HMA from hauling equipment.

2. MTV storage bin with minimum 15-ton capacity.

3. An auger mixing system in one of the following: the MTV storage bin, or paver hopper insert, or paver

hopper to continuously mix HMA prior to discharging to the paver's conveyor system.

Avoid stop-and-go operations by coordinating plant production rate, number of haul units, and MTV and paver speeds to provide a continuous, uniform, segregation-free material flow and smooth HMA pavement. Maintain uniform paver speed to produce smooth pavements.

(c) Performance Evaluation. Evaluate the performance of MTV and mixing equipment by measuring mat temperature profile immediately behind paver screed on first day of paving and when it feels the need to do so due to perceived changes in performance or as directed by the Engineer.

Use a hand-held temperature device that has been calibrated within the past 12 months. It shall be an infrared temperature gun is capable of measuring in one degree or finer increments between the temperatures of 80 degrees to 400 degrees F with a laser to indicate where the temperature reading is being taken. Six temperature profile measurements shall be taken of mat surface using infrared temperature gun at 50-foot intervals behind paver. Each temperature profile shall consist of three surface temperature measurements taken transversely across the mat in approximately a straight line from screed while paver is operating. For each profile, temperatures shall be measured approximately 1 foot from each edge and in middle of mat. The difference between maximum and minimum temperature measurements for each temperature profile shall not exceed 10 degrees F. If any two or more temperature profiles exceeds the allowable 10-degree F temperature differential, halt paving operation and adjust MTV or mixing equipment to ensure that material placed by paver meets specified temperature requirements. Redo the measuring of mat temperature profile until adjustment of the MTV or mixing equipment is adequate. Submit all temperature profiles to the Engineer by next business day. Information on the report shall show location and temperature readings and time test was performed. Enough information shall be given, so the Engineer will be able to easily locate the test site of the individual measurement.

When requested temperature profile measurements shall be done in the presence of the Engineer.

Once adjustments are made, repeat measurement procedure for the next two placements to verify that material placed by paver meets specified temperature requirements. Terminate paving if temperature profile requirements are not met during repeated measurement procedure. If equipment fails to meet requirements after measurement procedure is repeated once, replace equipment before conducting any further temperature profile measurements

The Engineer may perform surface temperature profile measurements at any time during project. The Engineer may in lieu of a hand-held infrared temperature device use an infrared camera or device that is capable of measuring temperatures to locate cold spots. If such cold spots exist, the Engineer may require adjustments to the MTV.

If bleeding or fat spots occur in the pavement adjust means and methods to eliminate such pavement defects and perform remedial repair to pavement acceptable to the Engineer. Bleeding is defined as excess binder occurring on the surface of the pavement. It may create a shiny, glass-like, reflective appearance and may be tacky to the touch. Fat spots are localized bleeding.

(d) Transport.

1. Trailered MTV. Transport MTV by means of truck-tractor/trailer combination in accordance with Chapter 104 of Title 19, Department of Transportation, entitled “The Movement by Permit of Oversize and Overweight Vehicles on State Highways”.

2. Crossing Bridges for Self-Powered MTV. When self-powered MTV exceeds legal axle or total weight limits for vehicles under the HRS, Chapter 291, conform to the following when crossing bridges within project limits unless otherwise indicated in the Contract Documents:

a. Completely remove mix from MTV.

b. Move MTV at relatively constant speed not exceeding 5 miles per hour. MTV will not be allowed to stop on bridge.

c. No other vehicle or equipment will be allowed on bridge.

d. The MTV shall not attempt to cross a bridge where the posted load limit is less than or equal to the weight of the MTV empty. Permission to cross the bridge shall be obtained from the Engineer and HWY-DB in writing.

(C) Preparation of Surface. Clean existing pavement in accordance with Section 310 - Brooming Off. Apply tack coat in accordance with Section 407 - Tack Coat. Tack coat shall not be applied to surfaces to receive an application of joint adhesive.

Where indicated in the Contract Documents, bring irregular surfaces to uniform grade and cross section by furnishing and placing one or more leveling courses of HMA Mix V. Spread leveling course in variable thicknesses to eliminate irregularities in existing surface. Place leveling course such that maximum depth of each course, when thoroughly compacted, does not exceed 3 inches.

In multiple-lift leveling course construction, spread subsequent lifts beyond edges of previously spread lifts in accordance with procedures contained in current edition of the Asphalt Institute's *Construction of Hot Mix Asphalt Pavements,* Manual Series No. 22 (MS-22) for leveling wedges.

Notify the Engineer of existing surfaces that may not be in a condition that will have enough strength to be a good bonding surface or foundation and should be removed or have remedial repairs done before new pavement placement.

(D) Plant Operation.

(1) Preparation of Asphalt Binder. Uniformly heat asphalt binder and provide continuous supply of heated asphalt cement from storage to mixer. Do not heat asphalt binder above the recommendation of the supplier for modified binders or above 350 degrees F for neat binders.

(2) Preparation of Aggregate. Dry and heat aggregate material at temperature sufficient to produce design temperature of job-mix formula. Do not exceed 350 degrees F. Adjust heat source used for drying and heating to avoid damage to and contamination of aggregate. When dry, aggregate shall not contain more than 1 percent moisture by weight.

For batch plants, screen aggregates immediately after heating and drying into three or more fractions. Convey aggregates into separate compartments ready for batching and mixing with asphalt binder.

(3) Mixing. Measure aggregate and asphalt; or aggregate, RAP, and asphalt into mixer in accordance with an accepted job-mix formula. Mix until components are completely mixed and adequately coated with asphalt binder in accordance with AASHTO M 156. Percent of coated particles shall be 95 percent when tested in accordance with AASHTO T 195.

(4) Plant Inspection. For control and acceptance testing during periods of production, provide a testing laboratory that meets the requirements of AASHTO M 156. Provide space, utilities, and equipment required for performing specified tests.

(E) Spreading and Finishing. Prior to each day's paving operation, check screed or strike-off assembly surface with straight edge to ensure straight alignment and there is no damage or wear to the machine that will affect performance. Provide screed or strike-off assembly that produces finished surface without tearing, shoving, and gouging HMA. Discontinue using spreading equipment that leaves ridges, indentations, or other marks, or combination thereof in surface that cannot be eliminated by rolling or affects the final smoothness of the pavement or be prevented by adjustment in operation.

Maintain HMA at minimum 250 degrees F temperature at discharge to paver. The Engineer shall observe the contractor measuring the temperature of mix in hauling vehicle just before depositing into spreader or paver or MTV.

Deposit HMA in a manner that minimizes segregation. Raise truck beds with tailgates closed before discharging HMA.

Lay, spread, and strike off HMA upon prepared surface. Where practical, use asphalt pavers to distribute mixture.

Where practical, control horizontal alignment using automatic grade and slope controls from reference line, slope control device. Existing pavements or features shall not be used for grade control alone.

Obtain sensor grade reference, horizontal alignment by using established grade and slope controls. For subsequent passes, substitution of one ski with joint-matching shoe riding on finished adjacent pavement is acceptable. Use of a comparable non-contact mobile reference system and joint matching shoe is acceptable.

Avoid stop-and-go operation. Maintain a constant forward speed of paver during paving operation and minimize other methods that impact smoothness.

Offset longitudinal joint in successive lifts by approximately 6 inches. Incorporate into paving method an overlap of material of 1-inch +/- 0.5 inches at the longitudinal joint. The HMA overlap material shall be left alone when initially placed and shall not be bumped back or pushed back with a lute or any other hand-held device. If the overlap exceeds the maximum amount, remove the excess with a flat shovel, allowing recommended amount of overlap HMA material to remain in place to be compacted. Do not throw the removed excess HMA material on to the paving mat. The longitudinal joint in a surface course when total roadway width is comprised of two lanes shall be near the centerline of pavement or near lane lines when roadway is more than two lanes in width. The longitudinal joint shall not be constructed in the wheel path or under the longitudinal lane lines. Make a paving plan drawing showing how the longitudinal joint will not be located in these areas.

Control the horizontal alignment of the longitudinal edge of the HMA mat being installed so that the edge is parallel to the centerline or has a uniform alignment, e.g., the edge of the mat is straight line or uniform curve, no wavy edge, etc. to have a consistent amount of HMA material at the joint.

Check the compaction of the longitudinal joint during paving often enough to ensure that it will meet the compaction requirements.

If nuclear gauges and ground penetrating radar are used as the contractor’s quality control method, they shall be properly calibrated and periodically checked by comparison to cores taken from the pavement. The use of sand as an aid in properly seating the gauge may also be considered for improving the accuracy of the gauge.

In areas where irregularities or unavoidable obstacles make use of mechanical spreading and finishing equipment impracticable, spread, rake, and lute mixture by hand tools. For such areas, deposit, spread evenly, and screed mixture to required compacted thickness.

Demonstrate competence of personnel operating grade and crown control device before placing surface courses. If automatic control system becomes inoperative during the day's work, the Engineer will permit the Contractor to finish day's work using manual controls. The Engineer may also allow additional HMA to be ordered and placed using manual controls if it will provide a safer work site for the public to travel through. Do not resume work until automatic control system is made operative. The Engineer may waive requirement for electronic screed control device when paving gores,

shoulders, transitions, and miscellaneous reconstruction areas where the use of the devices is not practical.

When production of HMA can be maintained and when practicable, use pavers in echelon shall be used to place surface course in adjacent lanes.

At the end of each workday, HMA pavement that is open to traffic shall not extend beyond the panel of the adjacent new lane pavement by more than the distance normally placed in one workday. At end of each day's production, construct tapered transitions along all longitudinal and transverse pavement drop-offs; this shall apply to areas where existing pavement is to meet newly placed pavement. Use slopes of 6:1 for longitudinal taper transitions and 48:1 for transverse tapered transitions. Maximum drop-off height along the joints shall be 2 inches. Also, using a 48:1 slope provides a taper around any protruding object, e.g., manholes, drain boxes, survey monuments, inlets, etc., that may be above pavement surface when opened to the public. If the object is below the surface of the pavement then fill the depression until it is level with the surrounding pavement or raise depressed objects to the finish grade of the placed pavement. Remove and dispose of all transition tapers before placing adjoining panel or next layer of HMA. Notify traveling public of pavement drop-offs or raised objects with signs placed in every direction of traffic that may use and encounter pavement drop-offs or protruding objects or holes.

Use the same taper rates for areas where there is a difference in elevation due to construction work.

At end of each workweek, complete full width of the roadway's pavement, including shoulders, to same elevation with no drop-offs.

(F) Compaction. Immediately after spreading and striking off HMA and adjusting surface irregularities, uniformly compact mixture by rolling.

Initiate compaction at highest mix temperature allowing compaction without excessive horizontal movement. Temperature shall not be less than 220 degrees F.

Finish rolling using tandem roller while HMA temperature is at or above 175 degrees F.

On superelevated curves, begin rolling at lower edge and progress to higher edge by overlapping of longitudinal trips parallel to centerline.

If necessary, repair damage immediately using rakes and fresh mix. Do not displace line and grade of HMA edges during rolling.

Keep roller wheels properly moistened with water or water mixed with small quantities of detergent. Use of excess liquid, diesel, and petroleum-based liquids will not be allowed on rollers.

Along forms, curbs, headers, walls and other places not accessible to rollers, compact mixture with hot hand tampers, smoothing irons, or mechanical tampers. On depressed areas, trench roller or cleated compression strips under roller may be used to transmit compression.

Before the start of compaction or during compaction or both remove pavement that is loose, broken, or contaminated, or combination thereof; pavement that shows an excess or deficiency in asphalt binder content; and pavement that is defective in any way. Replace with fresh HMA pavement of same type, and compact. Remove and replace defective pavement and compact at no increase in contract price or contract time.

Operate rollers at slow and uniform speed with no sudden stops. The drive wheels shall be nearest to the paver. Continue rolling to attain specified density and until roller marks are eliminated.

Rollers shall not be parked on the pavement placed that day or shift.

(1) HMA Pavement Courses One and a Half Inches Thick or Greater. Where HMA pavement compacted thickness indicated in the Contract Documents is 1-1/2 inches or greater, compact to not less than 93.0 percent nor greater than 97.0 percent of the maximum specific gravity determined in accordance with AASHTO T 209, modified by deletion of Supplemental Procedure for Mixtures Containing Porous Aggregate.

Place HMA pavement in individual lifts that are within minimum and maximum allowable compacted thickness for various types of mixture as specified in Table 401.02-1 - Limits of Compacted Lift Thickness and Asphalt Content.

(2) HMA Pavement Courses Less Than One and a Half Inches Thick. Where HMA pavement compacted thickness indicated in the contract documents is less than 1-1/2 inches, compaction to a specified density will not be required.

Use only non-vibratory, steel-tired, tandem roller. Roll entire surface with minimum of two roller passes. A roller pass is defined as one trip of the roller in one direction over any one spot.

For intermediate rolling, roll entire surface with minimum of four

passes of roller.

Finish rolling using steel-tired, tandem roller. Continue rolling until entire surface has been compacted with minimum of three passes of roller, and roller marks have been eliminated.

Do not use rollers that will excessively crush aggregate.

(3) HMA Pavement Courses One and a Half Inches Thick or Greater In Special Areas Not Designated For Vehicular Traffic. For areas such as bikeways that are not part of roadway and other areas not subjected to vehicular traffic, compact to not less than 90.0 percent of maximum specific gravity determined in accordance with AASHTO T 209, modified by deletion of Supplemental Procedure for Mixtures Containing Porous Aggregate. Increase asphalt content by at least 0.5 percent above that used for HMA pavements designed for vehicular traffic. Paved shoulders shall be compacted in the same manner as pavements designed for vehicular traffic.

(G) Joints, Trimming Edges and Utility Marking. At HMA pavement connections to existing pavements, make joints vertical to depth of new pavement. Saw cut existing pavement and cold plane in accordance with Section 415 - Cold Planing of Existing Pavement to depth equal to thickness of surface course or as indicated in the Contract Documents.

At HMA connections to previously placed lifts, form transverse joints by cutting back on previous run to expose full depth of course. Dispose of material trimmed from edges. Protect end of freshly laid mixture from rollers.

Before and after paving, identify and mark location of existing utility manholes, valves, and handholes on finished surface. Adjust existing frames and covers and valve boxes to final pavement finish grade in accordance with Section 604 - Manholes, Inlets and Catch Basins and Section 626 - Manholes and Valve Boxes for Water and Sewer Systems.

(1) Longitudinal joints. Submit for review the means and methods that will be used to install longitudinal joints at the required compaction and density. Compact longitudinal joints to be not less than 91.0 percent of the maximum specific gravity determined in accordance with AASHTO T 209, modified by deletion of Supplemental Procedure for Mixtures Containing Porous Aggregate. Verify the compaction of the longitudinal joints meets requirements by using non-destructive testing methods during paving and submit the results on the daily quality control test reports.

Test for compaction and density regardless of layer thickness.

Compaction and density of the longitudinal joint shall be determined by using six-inch diameter cores. For longitudinal joints made using butt joints cores shall be taken over the joint with half of the core being on each side of the joint. For longitudinal joints using notched wedge joints, center core over the center of the wedge so that 50 percent of the material is from the most recently paved material and the remaining 50 percent of the core is from the material used to pave the previous layer. One core shall be taken at a maximum frequency of every 1,500 lineal feet (LF) of the second side of the longitudinal joint and any fraction of that length for each day of paving with a minimum of one core taken for each longitudinal joint per day. Cores taken for the testing of the longitudinal joint may be used to determine pavement thickness.

When the longitudinal joints are found to have less than 91.0 percent of the maximum specific gravity, overband all longitudinal joints within the entire lot represented by the non-compliant core, PG binder seal coat, or other type of joint enrichment accepted by the Engineer. The overband shall not decrease the skid resistance of the pavement under any ambient weather condition. Submit overband material's catalog cuts, test results and application procedure for review and acceptance by the Engineer before use. Center the overband over the longitudinal joint. The overband shall be placed in a uniform width and horizontal alignment. The overband shall have no holidays or streaking in its placement. The width of the overband shall be based on how the longitudinal joint was constructed or as directed by the Engineer. If a butt joint is used, the overband width shall be a minimum of 12-inches. For notch wedge or wedge joints the overband width shall be the width of the wedge plus an additional six-inches minimum. Replace any pavement markings damaged or soiled by the overband remedial repair process.

For longitudinal joints that have a compaction of less than 89 percent of the maximum specific gravity; removal may be required by the Engineer instead of overbanding the non-compliant joint.

Persistent low compaction results may be cause to suspend work and remove non-conforming work. During the suspension of paving, revise means and methods used in constructing longitudinal joints and submit to the Engineer for review and acceptance. Suspension may occur when:

(1) Two or more longitudinal joints tests fail to meet the minimum compaction

(2) One sample reveals that the joint compaction is 89 percent or less.

(H) HMA Pavement Samples. Obtain test samples from compacted HMA pavement within 72 hours of lay down. Provide minimum 4-inch diameter cores consisting of undisturbed, full-depth portion of compacted mixture taken at locations designated by the Engineer in accordance with the "Sampling and Testing Guide for Acceptance and Verification" in Hawaii DOT Highways Division, *Quality Assurance Manual for Materials*, Appendix 3. Cores shall be taken in the presence of the Engineer. Turn cores over to Engineer immediately after cores have been taken.

For pavement samples for longitudinal joints provide 6-inch diameter cores minimum. For pavement samples for other than longitudinal joints 4-inch diameter cores minimum shall be taken. All cores shall consist of undisturbed, full-depth of the lift of the compacted mixture taken at locations designated by the Engineer in accordance with the "Sampling and Testing Guide for Acceptance and Verification" in Hawaii DOT Highways Division, *Quality Assurance Manual for Materials*, appendix 3.

Cores that separate shall indicate to the Engineer that there is insufficient bonding of layers. Modify the previously used paving means and methods to prevent future debonding of layers. Debonding of a core sample after adjustment of the Contractor's methods will be an indication of continued non-conforming work and the Engineer may direct removal of the layer at no additional cost or contract time.

Restore HMA pavement immediately after obtaining samples. Clean core hole and walls of all deleterious material that will prevent the complete filling of the core hole and the bonding of the new HMA to the existing. Apply tack coat to vertical faces of sample holes. Fill sampled area with new HMA pavement of same type as that removed. If hand compaction is used; fill in layers not exceeding the minimum thickness stated in Table 401.02-1 - Limits of Compacted Lift Thickness And Asphalt Content. Compact each layer to compaction requirements. If Mechanical Compaction methods are used, then layers may be the maximum layer thickness stated in Table 401.02-1 - Limits of Compacted Lift Thickness And Asphalt Content. Using tires or hand tamping to compact the HMA material to restore the pavement shall not be considered as mechanical compaction.

Only sample and test leveling course if 1-1/2 inches or greater. No compaction requirements for less than 1-1/2 inches.

(I) HMA Pavement Thickness Tolerances.

Thickness of finished HMA pavement shall be within 0.25 inch of thickness indicated in the Contract Documents. Pavement not meeting the thickness requirements of the Contract Documents may be required by the Engineer to be removed and replaced.

Corrective methods taken on pavement exceeding specified tolerances, e.g., insufficient thickness by methods accepted by the Engineer, including removal and replacement, shall be at no increase in contract price or contract time.

The checking of pavement thickness shall be done after all remedial repairs, e.g., smoothness compliance repairs, compaction, have been completed, reviewed, and accepted by the Engineer.

(J) Quality Control Using New Technology. The Engineer and MTRB reserves the right to utilize new technology and methods to improve the detection of noncompliant work on the project. The technology or method may be used to locate defects in the work, e.g., ground penetrating radar to locate delaminations, moisture damage, thin sections, voids, non-compliant compaction, other non-destructive testing to locate flaws. The defect will be verified by the methods stated in the Contract Documents or by other established conventional means. If the technology or method has already been accepted elsewhere or has standardized testing procedures the results may be judged acceptable by the Engineer and no further testing will be required. These new technologies and methods may be used for the selection of sampling locations.

(K) Protection of HMA Pavement. Except for construction equipment directly connected with paving operations, keep traffic off HMA pavement.

Protect HMA pavement from damage until it has cooled and set.

Do not refuel equipment or clean equipment or hand tools over paved surfaces unless catch pan or device that will contain spilled fuel and other products is provided. After completion of refueling or cleaning, remove catch pan or device without spilling any of the collected content.

Do not park roller or other paving equipment on HMA pavement paved within 24 hours of laydown.

(L) Pavement Joint Adhesive

(1) Pavement Joint Adhesive on Joints. Use on all asphalt pavement construction where joints are formed at such locations but not limited to the following:

(a) Adjacent asphalt pavements, e.g., trafficked lanes, shoulders, etc.

(b) Asphalt pavement and adjacent concrete pavement or

curb and gutter or any other surface where the bonding of the asphalt pavement and concrete surface is desired,

(c) Transverse joints between asphalt pavements not placed at the same time or if the pavement's temperature on one side of the joint is below the minimum temperature the mix can be at, during asphalt pavement compaction or installation.

(d) Cut face of an existing pavement where it will have new HMA pavement placed against it, e.g., utility trenches, partial or full depth repairs, etc.

Pavement joint adhesive is not required on a longitudinal construction joint between adjacent hot mix asphalt pavements formed by echelon paving. Echelon paving is defined as paving multiple lanes side-by-side with adjacent pavers slightly offset at the same time.

A longitudinal construction joint between one shift's work and another shall have pavement joint adhesive applied at the joint. Any longitudinal construction joint formed, with the temperature on one side of the joint that is below the minimum temperature the mix can be when compacted to contract requirements during asphalt pavement installation, shall have pavement joint adhesive applied at the joint.

(2) Material requirements. Asphalt joint adhesive shall meet requirements as specified in Table 401.03-1 - Asphalt Joint Adhesive Specifications.

TABLE 401.03-1 – ASPHALT JOINT ADHESIVE SPECIFICATIONS

TEST		**SPECIFICATION**
Brookfield Viscosity, 204 °C [400 °F]	ASTM D 3236	4,000-10,000 cp
Cone Penetration, 25 °C [77 °F]	ASTM D 5329	60-100 dmm
Resilience, 25 °C [77 °F]	ASTM D 5329	30% minimum
Ductility, 25 °C [77 °F]	ASTM D 113	30 cm minimum
Ductility, 4 °C [39.2 °F]	ASTM D 113	30 cm minimum
Tensile Adhesion, 25 °C [77 °F]	ASTM D 5329	500% minimum
Softening Point	ASTM D 36	77 °C [170 °F] min.
Asphalt Compatibility	ASTM D 5329	Pass

(3) Construction Requirements for Asphalt Joint Adhesive

(a) Equipment Requirements. Use a jacketed double

boiler type melting unit, with both agitation and recirculation systems. Provide a pressure feed wand application system.

(b) Material Handling. Submit a copy of the manufacturer's recommendations for heating, re-heating, and applying the joint adhesive material. Follow manufacturer's recommendations. Do not remove the joint adhesive from the package until immediately before it is placed in the melter. Joint adhesive boxes must be clearly marked with the name of the manufacturer, the trade name of the adhesive, the manufacturer's batch and lot number, the application/pour temperature, and the safe heating temperature. Feed additional material into the melter at a rate equal to the rate of material used.

Verify the pouring temperature of the joint adhesive at least once per hour at the point of discharge. Stop production if the adhesive falls below the recommended application/pour temperature. When the temperature of the adhesive exceeds the maximum safe heating temperature, stop production, empty the melter, and dispose of that adhesive in an environmentally safe method. No payment will be made for this material or its disposal.

Do not blend or mix different manufacturer’s brands or different types of adhesives.

(c) Joint Adhesive Application: The face of the joint that the new asphalt pavement will bind to shall be clean and dry before the joint adhesive is applied. Apply the pavement joint adhesive material to the entire face of the surface where HMA pavement shall be installed. The thickness of the asphalt adhesive application shall be approximately 1/8 inch. Use an application shoe attached to the end of application wand. Do not overlap the joint by greater than 1/2-inch at the top of the joint or two-inches at the bottom of the joint. Apply the joint adhesive immediately in front of the paving operation. If the adhesive is tracked by construction vehicles, repair the damaged area, and restrict traffic from driving on the adhesive.

(d) Field Sampling. Take a sample from the application wand during the first 20 minutes of placing sealant. One sample should be taken per manufacturer’s batch or minimum of every 6 months on the Project in the presence of the Engineer.

Each sample shall consist of one quart in an aluminum or steel sample container. The sampling container shall be labeled with Contractor's name; project name and number; date and time sample taken; location of where material was used at, e.g., from where to where it was used at in stations; manufacturer and lot number of the sealant. Turn over samples to Engineer without Engineer losing sight of the sample. The Engineer reserves the right to conduct supplementary sampling and testing of the sealant material.

(M) Pavement Smoothness Rideability Test. Perform surface profile tests frequently to ensure that the means and methods being used produces pavement that is compliant with the surface profile smoothness requirement. Test the pavement surface for smoothness with High-Speed Inertial Profiler to determine the International Roughness Index (IRI) of the pavement. For the locations determined by the Engineer, a 10-foot straightedge shall be used to measure smoothness.

All smoothness testing must be performed with the presence of the Engineer. The High-Speed Inertial Profiler operator shall be a certified operator by MTRB or the manufacturer.

The High-Speed Inertial Profiler operator's certification shall be no older than five years old at the date of the Notice to Proceed and at the day of the pavement profile measurement.

The finished pavement shall comply to all the following requirements:

(a) Smoothness Test using 10-Foot Straightedge (Manual or rolling) The 10-foot straightedge is used to identify the locations that vary more than 3/16 inch from the lower edge when the 10-foot straightedge is laid on finished pavement on the direction parallel with the centerline or perpendicular to centerline. Remove the high points that cause the surface to exceed that 3/16 inch tolerance by grinding.

The Contractor shall use a 10-foot straightedge for the following locations:

1. Longitudinal profiling parallel to centerline, when within 15 feet of a bridge approach or existing pavement which is being joined.

2. Transverse profiling of cross slopes, approaches, and as otherwise directed. Lay the straightedge in a direction perpendicular to the centerline.

3. When pavement abuts bridge approaches or pavement not under this Contract, ensure that the longitudinal slope deviations of the finished pavement comply with Contract Document's requirements.

4. Short pavement sections up to 600 feet long, including both mainline and non-mainline sections on tangent sections and on horizontal curves with a centerline radius of curve less than 1,000 feet.

5. Within a superelevation transition on horizontal curves having centerline curve radius less than 1,000 feet, e.g., curves, turn lanes, ramps, tapers, and other non-mainline pavements.

6. Within 15 feet of transverse joint that separates pavement from existing pavement not constructed under the contract, or from bridge deck or approach slab for longitudinal profiling.

7. At miscellaneous areas of improvement where width is less than 11 feet, such as medians, gore areas, and shoulders.

8. As otherwise directed by the Engineer. The Engineer may confine the checking of through traffic lanes with the straightedge to joints and obvious irregularities or choose to use it at locations not specifically stated in this Section.

(b) High-Speed Inertial Profiler. There shall be a minimum 3 profile runs per lane, for each wheel path (left and right) which is approximately three feet from edge lane line. The segment length shall be 0.1 mi. The final segments in a lane that are less than 0.1 mi shall be evaluated as an independent segment and pay adjustments will be prorated for length. The profiles shall be taken in the direction of traffic only.

The latest version of FHWA ProVAL software shall be used to conduct profile analysis to determine IRI and areas of localized roughness. The IRI values shall be reported in units of in/mi.

Areas of localized roughness will be identified by using ProVAL's "Smoothness Assurance" analysis, calculating IRI with a continuous short interval of 25 feet and the 250-mm filter applied.

Additional runs may be required by the Engineer if the data indicate a lack of repeatability of results. A 92% agreement is required

for repeatability and IRI values shall have at minimum a 95% confidence level.

(N) Required Pavement Smoothness. The IRI for the left and right wheel paths in an individual lane will be computed and then averaged to determine the Mean Roughness Index (MRI) values. The MRI will be used to determine acceptance and pay adjustment as specified in Table 401.03-2 – PAVEMENT SMOOTHNESS CATEGORIES. Each lane shall be tested and evaluated separately.

There are three (3) categories of target MRI values:

TABLE 401.03-2 – PAVEMENT SMOOTHNESS CATEGORIES

Category	Description	MRI
Type A	Three or more opportunities for improving ride	Shall not exceed 60 in/mi
Type B	Two opportunities for improving ride	Shall not exceed 70 in/mi
Type C	One opportunity for improving ride	Shall not exceed 75 in/mi

An opportunity for improving ride is considered as one (1) lift of asphalt pavement, including but not limited to HMAB, HMA, PMA, and SMA.

For the location where a 10-foot manual straightedge is required, the surface shall not vary more than 3/16 inch from the lower edge of a straightedge.

No pre-final inspection, final inspection, and substantial completion granted will be made until the pavement meets smoothness requirement and all required profile reports are submitted to the Engineer and MTRB and are accepted.

(O) Request for Profile Testing by the Department.

For Type C, prior to pavement activities, the Engineer will measure the smoothness of the existing pavement.

The Contractor shall submit a written request to the Engineer to perform all required profile tests.

The request shall be made at least 30 days before desired testing date and shall include an approximate acceptance profile testing date, a plan view drawing of the area to be tested with the limits of the test area highlighted.

The Contractor shall reimburse HDOT for any incurred cost related to any Contractor-caused cancellation or a deduction to the monthly payment will be made.

(P) Department Requirements for Profile Testing. When a request for testing is made, the requested area to be tested shall be 100% of the total area indicated to be paved in the Contract Documents unless the requirement is waived by the Engineer and MTRB.

Department acceptance surface tests will not be performed earlier than 14 days after HMA placement.

Clean debris and clear obstructions from area to be tested, as well as a minimum of 100 feet before and beyond the area to be tested before testing starts for use as staging areas. Provide traffic control for all profile testing.

The Engineer or MTRB or both may cancel the profile testing if the test area is not sufficiently clean, traffic control is unsatisfactory, or the area is not a safe work environment or test area does not meet Contract Document requirements. This canceled profile test will count as one profile test.

(Q) Cost of Acceptance Profile Testing by The Department. The Engineer, MTRB, or State's Third-Party Consultant will perform one initial profile test, at no cost to the Contractor for each area to be tested.

The Department's High-Speed Inertial Profiler pavement profile will be used to determine if the pavement's profile, i.e., smoothness is acceptable.

If the profile of the pavement does not meet the requirements of the Contract Documents, the Contractor shall perform remedial work, i.e. corrective work then retest the area to ensure that the area has the required MRI, i.e., smoothness, before requesting another profile test by the Engineer.

(1) Additional testing. Additional testing, by the Department beyond the initial test will be performed at cost to the Contractor as follows:

(a) $2,500 per test will be required when Department personnel or State's Third-Party Consultant is used.

(R) Remedial Work for Pavements.

(1) Corrective work shall be required for any 25 ft interval with a localized roughness in excess of 160 in/ mi. The Engineer may waive localized roughness requirements for deficiencies resulting from manholes or other similar appurtenances. Adjust manholes or other

similar appurtenances so that using a 10-ft. straightedge the area around that manhole or other similar appurtenance shall not have more than 3/16-in. variation between any 2 contacts on the straightedge.

If corrective action is not successful, the Engineer may require continued corrective action, or apply a payment adjustment of $250 per occurrence.

(2) Corrective work shall also be required for any 0.1 mile interval with an average MRI above 95.0 in/mi for Types A and B. For Type A, correct the deficient section to an MRI of 60 in/mi or less. For Type B, correct the deficient section to an MRI of 70 in/mi or less. For Type C, corrective work may be required by the Engineer for 0.1 mile intervals that have an average MRI above the threshold shown in Table 401.03-4 - SMOOTHNESS PAY DISINCENTIVES WITH MRI and Table 401.03-5 - SMOOTHNESS PAY DISINCENTIVES FOR PERCENT IMPROVEMENT as applicable.

If corrective action does not produce the required improvement, the Engineer may require continued corrective action, or apply payment adjustment as shown in Tables 401.03-4- SMOOTHNESS PAY DISINCENTIVES WITH MRI and Table 401.03-5 - SMOOTHNESS PAY DISINCENTIVES FOR PERCENT IMPROVEMENT.

(3) The Contractor shall notify the Engineer at least 24 hours prior to commencement of the corrective work. The Contractor shall not commence corrective work until the methods and procedure have been approved in writing by the Engineer.

(4) All smoothness corrective work for areas of localized roughness shall be for the entire lane width. Pavement cross slope shall be maintained through corrective areas.

(5) The remedial repair areas shall be neat, rectangular areas having a uniform surface appearance.

(6) If grinding is used on HMA pavement, the surface shall have nearly invisible grinding marks to passing motorist.

(7) Other methods may include milling and overlaying HMA pavement. The length, depth of the milling and the replacement material will be solely decided by the Engineer.

(8) The finished repaired pavement surface shall leave no ridges or valleys or fins of pavement other than those allowed below.

(9) Remedial repairs shall not leave any drainage structures' inlets higher than the surrounding pavement or alter the Contract Document's drainage pattern.

(10) For items in the pavement other than drainage structures, e.g., manhole frame and covers, survey monuments, expansion joints etc., the finish pavement, ground or not, shall not be more than 1/4 inch in elevation difference. Submit to the Engineer remedial repair method to correct these conditions for acceptance.

(11) Pick up immediately grinding operation residue by using a vacuum attached to grinding machine or other method acceptable to the Engineer.

(a) Any remaining residue shall be picked up before the end of shift or before the area is open to traffic, whichever is earlier.

(b) Prevent residue from flowing across pavement or from being left on pavement surface or both.

(c) Residue shall not be allowed to enter the drainage system.

(d) The residue shall not be allowed to dry or remain on the pavement.

(e) Dispose of all material that is the result of the remedial repair operation, e.g., HMA residue, wastewater, and dust at a legal facility.

(12) Complete corrective work before determining pavement thickness for HMA pavements in accordance with Subsection 401.03(I) – HMA Pavement Thickness Tolerances.

(13) All HMA wearing surface areas that have been ground shall receive a coating, e.g., a coating material that will restore any lost impermeability of the HMA due to the grinding of the surface. The coating used shall not be picked up or tracked by passing vehicles or be degraded after a short period of time has passed, i.e., it shall have a service life equal to or greater than the HMA pavement. The coating shall not decrease the pavement's friction value. The coating's limits shall be the full width of the lane regardless how small. If the remedial repair area extends into the next lane, then the repair area will be full

lane width also. Extend the length of coating areas in order for the coating area to look like the rest of the road and does not have patches on it, i.e., make the road look uniform in color. The coating shall be of a color that matches the surrounding pavement. The areas receiving the coating shall not be open to traffic until it has cured enough so that it cannot be picked up or tracked by passing vehicles or degrade. Submit means and methods of the coating and type of coating to the Engineer or MTRB for review and acceptance. Do not proceed with the coating without acceptance from the Engineer.

(14) Recompacting cold HMA, i.e., HMA that has reached ambient temperature is not an acceptable remedial repair method.

(15) Replace all pavement markings damaged or discolored by remedial repairs.

(16) Reprofile the corrected area and provide the Engineer the results that show the corrective action, i.e., remedial repairs were successful.

(S) Pavement Smoothness and Acceptance.

(1) Price and payment in various paving sections, e.g., 401 (Hot Mix Asphalt Pavement), shall be full compensation for all work and materials specified in the various paving sections and this section, including but not limited to furnishing all labor, materials, tools, equipment, testing, incidentals and for doing all work involved in micro milling, milling (cold planing), grinding existing or new pavement, removing residue, cleaning the pavement, necessary disposal of residue, furnishing of any water or air used in cleaning the pavement and any other related ancillary work or material or services. Also, it includes any remedial work, e.g., re-paving, surface grinding, application of a coating, curing compound, and replacement of damaged pavement markings.

(2) The contract price in those sections may be adjusted for pavement smoothness by the Engineer. The pavement smoothness contract unit price adjustments and work acceptance will be made in accordance with the following schedules.

TABLE 401.03-3 –SMOOTHNESS PAY INCENTIVES		
Category	**MRI (in/mi)**	**Pay Adjustment $ per 0.1 mi**
Type A	<30.0	$580
	30.0- less than 35.0	$480
	35.0- less than 40.0	$380
	40.0- less than 45.0	$280
	45.0- less than 50.0	$180
	50.0- less than 55.0	$80
	55.0- less than 60.0	$0
Type B	<35.0	$420
	35.0- less than 40.0	$360
	40.0- less than 45.0	$300
	45.0- less than 50.0	$240
	50.0- less than 55.0	$180
	55.0- less than 60.0	$120
	60.0- less than 65.0	$60
	65.0- less than 70.0	$0
Type C	<40.0	$280
	40.0- less than 45.0	$240
	45.0- less than 50.0	$200
	50.0- less than 55.0	$160
	55.0- less than 60.0	$120
	60.0- less than 65.0	$80
	65.0- less than 70.0	$40
	70.0- less than 75.0	$0

1286
1287

(3) Pay Pavement Smoothness Adjustment will be based on the initial measured MRI for both left and right wheel path, prior to any corrective work for the 0.10-mile section, except for sections that the Contractor has chosen to remove and replace. For sections that are replaced, assessments will be based on the MRI determined after replacement.

(a) The Pavement Smoothness Adjustment will be computed using the plan surface area of pavement shown in the Contract Documents. This Pavement Smoothness Adjustment will apply to the total area of the 0.10-mile section for the lane width represented by MRI for the same lane. It does not include any other price adjustments specified in the Contract Documents. Those price adjustments will be, for each adjustment, calculated separately using the original contract price to determine the amount of adjustment to be made to the contract price. Sections shorter than 0.1 mile and longer than 50 feet shall be prorated.

(b) For 0.1 mile intervals with an average MRI above the threshold shown in Table 401.03-3 - SMOOTHNESS PAY INCENTIVES, the Engineer shall apply a disincentive payment adjustment up to the limit shown.

i. For Types A and B, payment adjustments shall be applied up to an MRI of 95.0 per Table 401.03-4 - SMOOTHNESS PAY DISINCENTIVES WITH MRI.

ii. For Type C, the payment adjustment shall be dependent on the average MRI of the pavement prior to paving activities

1. If the MRI of the pavement prior to paving activities is 125.0 in/mi or less, the payment adjustment shall be per Table 401.03-4 - SMOOTHNESS PAY DISINCENTIVES WITH MRI.

2. If the MRI of the pavement prior to paving activities is more than 125.0 in/mi, the disincentive payment adjustment shall be per Table 401.03-5 - SMOOTHNESS PAY DISINCENTIVES FOR PERCENT IMPROVEMENT, and based on the percent improvement using the following formula:

% Improvement = (Initial segment MRI – Final segment MRI) x 100 / (Initial Segment MRI)

TABLE 401.03-4 –SMOOTHNESS PAY DISINCENTIVES WITH MRI		
Category	**MRI (in/mi)**	**Pay Adjustment $ per 0.1 mi**
Type A	60.0- less than 70.0	-$100
	70.0- less than 75.0	-$250
	75.0- less than 80.0	-$350
	80.0- less than 85.0	-$450
	85.0- less than 95.0	-$550
	> 95.0	Corrective Work
Type B	70.0- less than 75.0	-$100
	75.0- less than 80.0	-$200
	80.0- less than 85.0	-$300
	85.0- less than 95.0	-$400
	> 95.0	Corrective Work
Type C (pre-paving MRI < 125)	75.0- less than 80.0	-$50
	80.0- less than 85.0	-$100
	85.0- less than 90.0	-$150
	90.0- less than 100.0	-$200
	>100.0	-$250

TABLE 401.03-5 –SMOOTHNESS PAY DISINCENTIVES FOR PERCENT IMPROVEMENT		
Category	**Percent Improvement %**	**Pay Adjustment $ per 0.1 mi**
Type C (pre-paving MRI > 125)	≥ 40	$0
	20.0- less than 40.0	-$100
	< 20	-$200

(c) Incentives will not apply to areas where payment deductions or remedial repairs has been made for non-compliant work, e.g., low compaction, thin pavement, thermal segregation, low compressive or flexural strength,

non-compliant alignment. Incentives will also not apply to areas where corrective work was required to meet contract smoothness requirements, unless the pavement section was replaced. All areas where corrective work was performed shall be tested again to ensure the smoothness requirements are met.

(d) There will be no incentive price adjustments to the contract prices regardless of the pavement meeting the Contract Documents' requirements for incentive contract price adjustment, when 25% of the total area paved of that particular type of pavement on the project has failed to meet any of the Contract document requirements, e.g., smoothness, thickness, unit weight, asphalt content, pavement defects, compaction, flexural or compressive strength. Areas exempt from the smoothness requirements may not be included in the total area calculation unless it is non-compliant.

(e) For contracts using lump sum the method described in Subsection 104.06 Methods of Price Adjustment paragraph (3), will be used to calculated proportionate unit price, i.e., the Engineer's calculated theoretical unit price. This calculated proportionate unit price will be used to calculate the unit price adjustment.

401.04 Measurement.

(A) The Engineer will measure HMA pavement per ton in accordance with the Contract Documents.

(B) The Engineer will measure leveling course and HMA pavement overlay per ton in accordance with the Contract Documents.

(C) Engineer will measure additional State pavement profiling work when applicable on a cost-plus basis as specified in this section and as ordered by Engineer. The Engineer will issue a billing for the pavement profile work done for the time period with the invoices and receipts that the billing was based on attached to the Contractor for each contract item. The Contractor's pavement profile work required in this section will not be measured and will be considered incidental to the various paving items unless stated otherwise.

401.05 Payment. The Engineer will pay for the accepted HMA pavement at the contract price per pay unit, as shown in the proposal schedule. Payment will be full compensation for the work prescribed in this section and the contract documents.

(A) Price and payment in Section 401 – HMA Pavement will be full

compensation for all work and materials specified in this Section including furnishing all labor, materials, tools, equipment, testing, pavement profiles and incidentals and for doing all work involved in grinding existing or new pavement, removing residue, and cleaning the pavement, including necessary disposal of residue and furnishing any water or air used in cleaning the pavement and remedial work needed to conform to the requirements of the Contract Documents.

(B) No payment for the Contractor's pavement profile work required in this section will be made. The Contractor's pavement profile work shall be considered incidental to the various paving items unless stated otherwise.

(C) Engineer will pay or deduct for the following pay items when included in proposal schedule:

Pay Item	**Pay Unit**
PMA Pavement, Mix _____	Ton

(1) 70% of the contract unit price or the theoretical calculated unit price upon completion of submitting a job-mix formula acceptable to the Engineer; preparing the surface, spreading, and finishing the mixture; and compacting the mixture.

(2) 20% of the contract unit price or the theoretical calculated unit price upon completion of cutting samples from the compacted pavement for testing; placing and compacting the sampled area with new material conforming to the surrounding area; protecting the pavement; and compaction acceptance. Maintain temporary pavement markings and other temporary work zone items, maintain a clean work site.

(3) 10% of the contract unit price or calculate the unit price when the final configuration of the pavement markings is in place.

The Engineer will pay for adjusting existing frames and covers and valve boxes in accordance with and under Section 604 – Manholes, Inlets and Catch Basins. Adjustments for existing street survey monument frames and covers will be paid for as if each were a valve box frame and cover.

The Engineer may, at his sole discretion, use the sliding scale factor as specified in Table 401.05-1 – Sliding Scale Pay Factor for Compaction to accept HMA pavements compacted between 90.0 percent and 98.0 percent. If the sliding scale factor is used, the Engineer will make payment for the material in that production day at a reduced price by multiplying the contract unit price by the pay factor. The Engineer is not obligated to allow non-compliant work to remain in place

and may choose to require removal of the pavement that is less than 93.0 percent or greater than 97.0 percent.

Removal of non-compliant pavement shall be in accordance with Subsection 105.12 Removal of Non-Conforming and Unauthorized Work.

Table 401.05-1 – Sliding Scale Pay Factor for Compaction	
Percent Compaction	**Percent of Quantity Paid**
Greater than 98.0	Removal
Greater than 97.0 to 98.0	95
93.0 to 97.0	100
90.0 to Less than 93.0	80
Less than 90.0	Removal

“

END OF SECTION 401

SECTION 415 – COLD PLANING OF EXISTING PAVEMENT

Make the following amendments to said Sections:

(I) Amend **Section 415.04 Measurement**, from line 67 to 68 to read as follows:

"**415.04 Measurement.** The Engineer will measure cold planing per square yard in accordance with the contract documents."

(II) Amend **Section 415.05 Payment**, from line 70 to 79 to read as follows:

"**415.05 Payment.** The Engineer will pay for the accepted pay items listed below at the contract price per pay unit, as shown in the proposal schedule. Payment will be full compensation for the work prescribed in this section and the contract documents.

The Engineer will pay for one of the following pay items when included in the proposal schedule:

Pay Item	**Pay Unit**
Cold Planing	Square Yard

(1) 80 percent of the contract bid price upon completion of removing the indicated thickness and clean and sweep before opening to public traffic;

(2) 20 percent of the contract bid price upon completion of removing the material and disposing of the removed material."

END OF SECTION 415

Amend Section 501 – Steel Structures to read as follows:

"SECTION 501 - STEEL STRUCTURES

501.01 Description. This section describes construction of new steel structures and rehabilitation to existing bridge structures.

501.02 Materials

Organic Zinc Primer Paint	666.02(A)
Epoxy Paint	666.02(A)
Fluoropolymer Top Coat Paint	666.02(A)
Bearing Devices and Related Materials	712.09
Zinc Coating	712.10 and
Structural Steel	713.01
Standard Fasteners	718.01
High-Strength Bolts and Studs	718.02

501.03 Construction.

(A) Preliminary Submittal Requirements. Prior to the preparation of structural steel shop drawings, the following preliminary documentation shall be submitted to the Engineer for review and approval a minimum of 45-days prior to initial preparation of the structural steel shop drawings.

(1) Survey results for foundation pedestals and soffit of girders at bearing locations. See Contract Drawings for additional information.

(2) National Institute of Steel Detailing (NISD) Senior Detailer – Class I Bridge Certification

(3) AISC Advanced (ABR) Bridge Fabricator Certification for the shop that will be fabricating the trestle structure.

(B) Pre-Fabrication Submittal Requirements. After review and approval of the preliminary submittals, the following documentation shall be submitted to the Engineer for review and approval prior to fabrication taking place.

(1) Shop Drawings. Submit the following shop drawings:

i. Initial drawings showing the centerline of all columns and braces and their associated work points, brace level elevations, WP elevations and dimensions at top of column, elevation of top of column seat, WP elevations and dimensions at bottom of column, elevations at top of concrete foundation pedestal and any other pertinent information to establish the basis for what the developed shop drawings will be based on.

ii. Following approval of the initial drawings, prepare detailed shop drawings that will be required for steel fabrication. Due to the complexity of the structural elements and the battered column arrangement, the shop drawings shall be developed using both 2-dimensional and 3-dimensional software programs. The submittal packages shall be discretized into 5 different packages to make the review process more manageable. Submit electronic shop drawings to the Engineer for review and approval. The shop drawings shall include the following:

1. Details for connections not dimensioned in the contract documents;

2. Direction of rolling of plates where the contract documents require specific orientation;

3. Sequence and procedures;

4. Calculations and location of temporary supports and vertical alignment of members at each stage of fabrication;

5. Slip-critical connections and connections subject to direct tension;

6. Specification and grade of each structural elements;

7. Erection Diagrams;

(2) AWS D1.5 Welder Certifications

(3) AWS D1.5 Welding Procedure Specifications (WPS)

(4) AWS D1.5 Procedure Qualification Records (PQR), as required

(5) Mill Orders and Test Reports for steel and hardware.

(6) Acknowledgement letter from galvanizer that dipping process includes centrifugally spun parts and that hardware threads are not chased.

(7) Letter from hot-dip galvanizer stating that quenching or chromate conversion coating are not to be used since this project will be going directly to paint.

(C) Pre-Construction Submittal Requirements. Before any construction is to take place, the following documentation shall be submitted to the Engineer for review and approval.

(1) Report of full size trial erection. Trial erection shall be performed in the fabrication shop using the complete Trestle No.1/Bent No. 1 structure. Assemble the entirety of the structure to ensure fit-up and geometry can be achieved. The report should include sufficient photos and measurements of key components to ensure that overall geometry of the structure is maintained.

(2) Erection Plan. The Contractor is required to retain the services of a Structural Engineer licensed in the State of Hawaii, herein referred to as the Contractor's Engineer. The Contractor's Engineer is responsible for providing a detailed plan for the replacement of the steel trestles. The Contractor's Engineer shall be involved throughout the duration of the project and shall be responsible for ensuring construction is in accordance with their design

The Contractor's Engineer is responsible for providing a detailed erection plan for the replacement of the steel structures. The erection plan and procedures shall provide complete details of the erection process including but not limited to:

i. Temporary falsework support, bracing, guys, deadmen, and attachments to other structure components;

ii. Procedure and sequence of operation;

iii. Structural member masses, lift points, and lifting devices;

iv. Crane(s) make and model, mass, geometry, lift capacity, outrigger size, and reactions;

v. Locations of cranes, trucks delivering;

(3) Rivet Removal Plan. The Contractor shall submit a work plan for how the existing rivets will be removed. This plan must adequately describe and demonstrate the removal of a rivet without damaging the base metal. Use of torches will not be allowed.

(D) Construction.

(1) Shop Drawings. Submit detailed shop drawings required for steel fabrication.

Prepare shop drawings on sheets 36 inches long by 22 inches wide. Make 2-inch margin on left side of sheet and 1/2-inch margin on other three sides. Locate title block in lower right hand corner of each sheet. Title includes statement of contents of sheet, location of structure, project name, and project number, if any.

Submit 6 sets of shop drawings for review. The Engineer will return one set with comments and corrections. Make corrections and submit 10 prints of each revised drawing. Once the Engineer accepts shop drawings, one set of accepted drawings will be returned to the Contractor. Prepare and submit shop drawings at no increase in contract price or contract time. Changes to accepted shop drawings without written consent of the Engineer will not be allowed. Steel fabrication before shop drawing acceptance by the Engineer will not be allowed.

Submit shop drawings not less than four weeks prior to fabrication. Make corrections in a timely manner.

Shop drawings shall include the following:

i. Details for members and connections not dimensioned in the contract documents.
ii. Direction of rolling plates where the contract documents require specific orientation.
iii. Sequence and procedures.
iv. Location of butt-welded splices on layout drawing of entire structure.
v. Calculation and location of temporary supports and vertical alignment of members at each stage of fabrication.
vi. Slip-critical connections and connections subject to direct tension.
vii. Qualifications of welders in accordance with Section 5, Part B, of AWS D1.5.
viii. Qualifications of welding inspectors in accordance with Section 6, Part A, of AWS D1.5.

(2) Required Prints and Reports. Submit drawings and reports in accordance with Table 501.03-1 – Submittal Requirements.

TABLE 501.03-1 – SUBMITTAL REQUIREMENTS

Item	Number of Sets Required	Furnish To
Preliminary Shop Drawings	6	Engineer
Final Shop Drawings	10	Engineer
Mill Orders and Test Reports	5	Engineer
Notice of Placing Shop Order	2	Engineer

Notice of Beginning Shop Work	3	Shop Inspector
Match Mark, Camber, and Erection Diagrams	1 8	Shop Inspector Engineer
Shipping Statements	1 4	Shop Inspector Engineer
Report of Full-Size Tests	1 6	Shop Inspector Engineer
Record of Annealing Charges	6	Engineer

(3) Shop Work and Fabrication. Furnish and follow methods and procedures for preparation, handling and inspection, shop assembly of material, and details of fabrication conforming to Section 6 – Steel Structures, in AASHTO *LRFD Bridge Design Specifications.*

Keep structural material clean and free from damage caused by improper handling during loading, transporting, and storage.

i. **Direction of Rolling.** Steel plates for columns shall be cut and fabricated so that the primary direction of rolling is parallel to the column length. For column splice plates, the direction shall be parallel to the direction of the splice. For base plates, the direction shall be parallel to the centerline of the bent.

ii. **Abutting Joints.** Abutting ends of compression members shall be faced accurately so that they bear evenly when in the Structure. On built-up members, the ends shall be faced or milled after fabrication and prior to galvanizing.

iii. **Built Members.** The various pieces forming one built member shall be straight and close fitting, true to detailed dimensions, and free from twists, bends, open joints, or other defects.

iv. **Lacing Bars.** Unless the plans state otherwise, ends of lacing bars shall be neatly rounded.

(E) Erection

(1) Falsework. The Contract drawings SB Series is provided as a recommended erection method for the steel trestle replacement. The Contractor is required to retain the services of a Structural Engineer licensed in the State of Hawaii, herein referred to as the Contractor's Engineer. The Contractor's Engineer is responsible for providing a detailed plan of the replacement of the steel trestles. The detailed plan shall include stamped and signed

drawings and calculations and shall be submitted to the Engineer for review and approval. The Contractor's Engineer shall be involved throughout the duration of the project and shall be responsible for ensuring construction is in accordance with their design. Acceptance of the Contractor's plans by the Engineer does not relieve the Contractor of responsibility for correctness and completeness of drawings and for fit of shop and field connections.

(2) Bearing and Anchorages. Do not place masonry bearing plates upon bridge seat bearing areas that are improperly finished, deformed, or irregular. Set bearing plates level in exact positions with full and even bearing upon masonry. Place bearing plates on fabric or elastomeric pads as indicated in the Contract Documents.

(3) Straightening Bent Materials. Straighten plates, angles, and other shapes by methods that will not produce fracture or other damage. Do not heat metal unless permitted by the Engineer. When heating is permitted, control heating temperature so as not to produce metal of dark "cherry red" color. After heating, cool metal as slowly as possible. Submit proposed straightening procedures and inspection methods stamped and signed by Hawaii Licensed Structural Engineer.

After straightening bends or buckles, inspect metal carefully for fractures, by method other than visual, that is acceptable to the Engineer.

(4) Assembling Steel. Assemble parts accurately, following match-marks. Handle material carefully so as not to bend, break, or damage parts. Hammering that may damage or distort members will not be allowed. Clean bearing surfaces, as well as surfaces in permanent contact, before assembling members. Use splices and field connections with 1/2 of holes filled with bolts and 1/2 with cylindrical erection pins before placing permanent fasteners. For splices and connections carrying traffic during erection, fill 3/4 of holes with bolts.

(5) Welding. All welding shall conform to the latest ANSI/AASHTO/AWS D1.5 Bridge Welding Code. Welding shall be performed in accordance with a Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) as required in AWS D1.5. The WPS variables shall be within the parameters established by the filler- metal manufacturer.

All welding, whether shop or field, shall be done by certified welders in conformance with the Bridge Welding Code AWS D1.5 of the American Welding Society. All Welder Certifications, WPS's and supporting PQR's shall be submitted to the Engineer for review and approval prior to any welding being performed.

Field welding shall not be permitted unless explicitly shown on the contract drawings. Welding shall be performed in such a manner to minimize warping and distortion of steel pieces being joined. Excessive concentrated heat being applied to steel pieces shall be avoided. All welded connections shall receive full seal welding along all edges of faying surfaces to prevent moisture intrusion.

All weld sizes are shown in inches. No fillet weld (including seal welds) or PJP weld shall be less than 1/4" and 3/16", respectively. All welds shall utilize E70XX Electrodes where Shielded Metal Arce Welding (SMAW) is utilized. Where other welding processes are used, filler metal shall have matching strength to base metal. All welding arc strikes, whether shop or field performed, shall be ground flush to the base metal. Any arc strikes made to the bottom flange of the plate girder shall additionally have magnetic particle inspection and hardness testing performed in accordance with AWS D1.5.

Electro-slag welding will not be allowed.

(6) Bolted Connections. Do not use bolted connection, except for field splices or as detailed in the contract documents. Use high-strength bolts, nuts, and washers of type and dimensions specified at locations indicated in the contract documents.

Matched Bolts Assemblies shall contain bolt, nut, and washer provided by the same supplier. Bolts shall be high-strength steel bolts conforming to ASTM F3125, Grade A325, Type 1. Use bolts that are long enough to extend entirely through nut, nut not by more than 1/2 thickness of nut. Use two nuts for bolts in tension.

Bolts shall be ordered such that threads are excluded from the shear plane. Diameter of bolt shall conform to Article 6.13.2.5- Size of Bolts, and diameter of bolt holes shall conform to Article 6.13.2.4- Holes, of the AASHTO *LRFD Bridge Design Specifications.*

Threads of turned bolts shall be entirely outside grip. Sub-punch and ream holes for all turned bolt connections to 1/32-inch oversize. Finish bolts to provide a driving fit. Furnish acceptable nut locks or flat washers, 1/4-inch-thick, as specified in the contract documents.

All hardware, including bolts, anchor bolts, nuts and hardened washers shall be ASTM F2329 hot-dip zinc galvanized. Hardware shall be centrifugally cleaned post galvanizing. Nut threads shall be tapped oversized prior to galvanizing in accordance with ASTM A563 and are prohibited from being chased following the galvanizing process. DTI washers shall be

mechanically zinc galvanized in accordance with ASTM B695, Class 55.

Furnish bolted connections using the following provisions:

i. Installation of all bolted assemblies shall be in accordance with the latest Research Council of Structural Connections (RCSC) Specifications for Structural Joints Using High-Strength Bolts.

ii. Clean contact surfaces of high-strength bolted connections of rust, mill scale, dirt, grease, paint, lacquer, and other material foreign to steel, before assembly.

iii. Furnish and install bolts conforming to ASTM F3125 Grade A325 with hardened washer and DTI washer (where pretensioned). Follow RCSC guidelines for placement of washers or as otherwise shown on the contract drawings.

iv. Furnish and install direct tension indicator washers acceptable to the Engineer for tightening of bolts. Submit procedures for installation and inspection of direct tension indicator washers, as recommended by manufacturer, to the Engineer. Include in submitted procedures the proposed method for checking and retightening bolts that may have worked loose after subsequent bolt tightening.

Tightening of ASTM F3125 bolts by the calibrated wrench method will not be allowed.

Tightening of ASTM F1554, Grade 105 anchor bolts shall be pretensioned by turn-of-nut method. See anchor bolt pretensioning schedule.

v. Locate nuts wherever practicable on side of member that will not be visible from traveled way or as otherwise shown in the contract drawings.

(F) Riveted Connections. Any existing riveted connection with unacceptable section loss (see contract drawings for details) shall be replaced with an ASTM F3125, Grade A325, Type 1 pretensioned bolt. Prior to insertion of the bolt, the existing hole shall be drilled to 15/16” diameter and cleaned with a wire brush.

(G) Zinc Coating.

(1) Zinc Coating. Zinc coat after fabrication using hot-dip process. Coat largest practicable area in accordance with Subsection 712.10 – Zinc Coating. Fabrication shall include shearing, punching, forming, bending, welding, and riveting. If

sections need to be straightened after zinc coating, straighten without damaging spelter coating.

All new steel structures shall be ASTM A123 hot-dip zinc galvanized after all fabrication is complete. Protect elements against hydrogen embrittlement in conformance with ASTM A143. Post-galvanizing quenching/passivation shall not be utilized for steel going to paint. Coordinate with coating Contractor.

Prior to hot-dip galvanizing, all welding flux and slag shall be complete removed using mechanical methods to ensure proper zinc adhesion. Vent holes may be provided in members for hot-dip zinc galvanized operation. Size and location of holes shall be determined by galvanizing contractor, unless otherwise shown on the drawings. Vent hole sizes and locations shall be included on the structural steel shop drawings. All holes, other than base plates, and where noted shall be filled with zinc plugs following galvanizing operation.

(2) Repairing Damaged Zinc-Coated Surfaces. Repair zinc coating that has chipped off or been damaged in handling, transporting or welding. Thoroughly clean damaged zinc-coated surfaces by wire brushing damaged area. Remove sags, welds, and loose and cracked spelter coating. Paint cleaned area after completing the following procedures:

i. Apply coating material conforming to Federal Specification O-G-93, stick form, in accordance with method conforming to Annex A1 of ASTM A 780. Heat coated surface with torch at sufficient temperature to melt repair material without damage to zinc coating.

(H) Painting.

See Special Provisions Section 666 – Clean and Paint Existing Bridge Steel.

See Special Provisions Section 667 – Preparation and Coating of Galvanized Bridge Steel.

501.04 Measurement.

(A) Steel will be paid on a lump sum basis. Measurement for payment will not apply.

(B) Refurbish Lifeline System will be paid on a lump sum basis. Measurement for payment will not apply.

(C) The Engineer will measure High Strength Bolt Assembly to Replace Corroded Rivets on a force account basis in accordance with Subsection 109.06 – Force Account Provisions and Compensation and as ordered by the Engineer.

(D) The Engineer will measure Additional Steel Repairs on a force account basis in accordance with Subsection 109.06 – Force Account Provisions and Compensation and as ordered by the Engineer."

501.05 Payment. The Engineer will pay for the accepted pay items listed below as shown on the proposal schedule. Payment shall be full compensation for furnishing, fabricating, delivering, erecting, cleaning, galvanizing and painting steel and other metals and for materials, labors, equipment, tools and incidentals necessary to complete the work.

Pay Item	Pay Unit
Steel for _____	Lump Sum
Refurbish Lifeline System	Lump Sum
High Strength Bolt Assembly to Replace Corroded Rivets	Force Account
Additional Steel Repairs	Force Account

The Engineer will pay for bridge bearings in accordance with and under Section 506 – Bridge Bearings.

The Engineer will consider zinc-coating of structural steel, including hardware, forgings and castings, and the cost connected incidental to "Steel". The Engineer will not make separate payment."

END OF SECTION 501

Amend Section 503 – Concrete Structures to read as follows:

"SECTION 503 - CONCRETE STRUCTURES

503.01 Description. This section describes the construction of concrete bridges, grade separations, box culverts, head walls, retaining walls, and other concrete structures.

503.02 Materials.

Structural Concrete	601
Reinforcing Steel	602
Joint Filler	705.01
Joint Sealer	705.04
Flashing Compound	705.05
Waterproofing	705.06
Waterstops	705.07
Dowels	709.01(E)
Curing Materials	711.01
Admixtures	711.03
Bearing Devices and Related Materials	712.09
Grout	712.04

Concrete materials and production methods must be selected so that the concrete temperature at delivery complies with the specified temperature limits. Ensure that the materials, means, and methods used prevent plastic shrinkage cracks from forming.

All concrete must comply with the concrete CO_2 footprint reduction requirements of Section 601 – Structural Concrete.

503.03 Construction.

(A) Foundation. Excavate and backfill around bent foundation pedestals in accordance with Section 205 - Excavation and Backfill for Bridge and

Retaining Structures, and as indicated in the Contract Documents.

The elevation of the bottom of the footings shown is approximate only. Upon completion of excavation work, request that the Engineer inspect the foundation excavation. The Engineer may order changes in dimensions or elevations of footings as may be necessary to secure a satisfactory foundation.

Backfill unauthorized excavation made below required footing elevation or beyond lines shown, with Class D concrete. When the foundation requires redesign because of unauthorized excavation, the Contractor must engage the services of a Hawaii Licensed Structural Engineer to prepare detailed drawings of a redesigned footing. Submit a redesign proposal and after the Engineer reviews and accepts the proposal, construct redesigned foundation at no additional increase in the contract price or contract time. Claim for delay or additional cost resulting from foundation redesign will not be allowed. The State will deduct costs to review the redesign from the Contractor.

Place pilings in accordance with Section 505 - Piling. Place drilled shafts in accordance with Section 511 – Drilled Shafts.

(B) Falsework, Formwork, or Centering. Falsework, or centering is temporary construction work on which other work is wholly or partially supported until permanent construction is strong enough to support itself. This includes form lining and sheathing, as well as necessary supporting members, hardware, and bracing. Formwork is a temporary structure or mold used to retain the plastic fluid concrete in its designated shape until it hardens. Formwork must have enough strength to resist the fluid pressure exerted by plastic concrete and any additional fluid pressure effects generated by vibrations.

Submit falsework and centering erection plans including soil bearing value, stress sheets, superstructure placing diagram and sequence, falsework and centering removal procedures, and design calculations for falsework and centering, as a complete package, stamped and signed by a Hawaii Licensed Structural Engineer. Submit manufacturer's certificates or perform tests, as necessary, to demonstrate the adequacy of devices proposed for use or to verify design assumptions.

Do not start falsework, formwork, or centering construction until the Engineer has accepted drawings and calculations. Acceptance of drawings or inspections of the system by the Engineer does not relieve the Contractor from the responsibility of results obtained by using such drawings and calculations.

Use AASHTO Guide Design Specifications for Bridge Temporary Works for the design of Falsework, Formwork, or Centering. For allowable stresses not specified in AASHTO, the Contractor's structural engineer may use UBC/ICBO industry specifications or codes upon acceptance. Avoid cantilevered falsework members. Limit maximum deflection due to the weight of dead and live loads to 0.4 percent of the span. Provide camber strips to compensate for deflections or other movements greater than 1/4 inch.

Take the length of spans to be the smaller of the center-to-center distance between supports or clear span plus member depth. Design formwork for the bottom slab of box girders to carry dead and live loads of both top and bottom slabs, as well as loads of webs, unless calculations indicate the bottom slab is to carry loads of top slabs temporarily imposed upon it.

Arrange a falsework system so that loads imposed produce symmetrical and approximately equal reactions. Submit falsework soil pressure, pile capacity, and ground preparation, with supporting data and documentation. Show these items on working drawings. When structures cross over waterways and other flood-prone areas, use special consideration in the design of supporting falsework to prevent the reduction in support capacity due to the effects of flood and standing water.

The design load for falsework or centering includes dead and live vertical loads, slope load of the structure, and lateral loads. The minimum vertical live load to be used in the design is 50 pounds per square foot of surface area plus 150 pounds per linear foot, applied at the outside edge of cantilevered members. Add minimum vertical live load to the actual weight of required construction equipment. Use minimum lateral load in design to be the greater of either 3 percent of total dead load or 150 pounds per linear foot. Apply minimum lateral load at the top surface of falsework support.

When falsework, scaffolding, or work is over or adjacent to existing roadways, install the aforementioned to withstand vehicle impact. Maintain falsework, scaffolding, or work until its removal. Temporary bracing shall be provided, as necessary to withstand all imposed loads during erection, construction and removal of falsework. When the aforementioned is within the clear zone install a barrier system with appropriate deflection and of sufficient length with a terminal impact attenuator. Both must have successfully passed a MASH TL-3 crash test. The falsework, formwork, centering, working platform, or work must be constructed so it does not allow any objects, e.g., water, debris, dust, tools, or material to fall on the traveling public, pedestrians, roadway, roadside, etc.

Show stresses and deflection of load supporting members in design

calculations. Show anticipated total settlements of falsework and forms on falsework drawings, including falsework footing pressure and settlement, and joint take-up. Construct deck slab form between girders with no allowance for settlement relative to girders. Do not exceed 1 inch for anticipated settlements of falsework. Provide tell-tales attached to soffit forms, readable from the ground, at sufficient locations to determine total settlements and deflections resulting from concrete placement. Check for any movement or deformation of forms and falsework that may exceed the calculated or anticipated deflection or settlement. If the movement or deformation is exceeded, take appropriate action. This action may include halting concrete placement to install additional bracing or changing the rate or sequence of concrete placement to achieve the required lines and grade. Discontinue concrete placement when settlements deviate more than ± 3/8 inch from those indicated on falsework drawings. In such affected areas, provide corrective measures prior to initial set of concrete. Remove unacceptable concrete.

In designing falsework and centering, assume the weight of 160 pounds per cubic foot for concrete. Design and construct falsework to provide the necessary rigidity and to support loads without appreciable settlement or deformation. Use screw jacks or hardwood wedges to take up settlement in formwork either before or during the placement of concrete. Design falsework for support of superstructure to support loads that would be superimposed as if the entire superstructure were placed at once. Design vertical falsework members supporting spans with a single hinge, or double hinges within a span, for twice tributary falsework requirements at a distance of 10 feet on each side of hinges, measured parallel to the centerline of the girder. Apply requirements to conventionally reinforced and prestressed concrete structures. Design falsework for prestressed concrete structures for additional loads caused by prestressing.

Place falsework or centering upon footing safe against undermining and softening when footing-type foundations are to be used. Show the bearing value of soil in shop drawings of falsework or centering.

When used; space, drive, and remove falsework piling as accepted by the Engineer. Set falsework to give finished structure camber specified. Construct arch centering in accordance with centering plans accepted by the Engineer. Make provisions for the gradual lowering of centers and for rendering the arch self-supporting. Use jacks to correct slight settlements that may occur during the placement of concrete.

In the design of bottom slab plywood forms and timber joists for concrete box girders, top slab loads may be omitted when placing the top slab separately from the webs and bottom slab.

If the lost post method of concrete box girder deck forming is used, 2 by 6 continuous mudsills beneath posts will not be required when 2 by 4 or smaller timber posts, with soft wood wedges, are used for supports.

Use manufactured items complying to AASHTO standards. When items are not covered by AASHTO, use standards of nationally known organizations such as AISC for steel, ACI for concrete, and NFPA for lumber. In all cases, furnish data listing the manufacturer's design criteria complying to design specifications and recommendations, or perform tests, as necessary, to show the adequacy of the proposed device.

Install falsework lighting in accordance with Section 633 – Falsework Lighting.

(C) Forms.

(1) Construction. Use wood or metal forms that are impervious to moisture, non-staining to concrete, mortar tight and sufficiently rigid to prevent distortion due to pressure of concrete and other loads, including vibration, incidental to construction. Construct and maintain forms to prevent joints from opening. Formwork joints shall be filled with approved material that is impervious to moisture, will not stain concrete, and produces tight joints.

Unless otherwise indicated in the contract documents, place minimum ¾ inch by ¾ inch chamfer at sharp edges of exposed concrete surfaces. Give girder and coping forms bevels or drafts to ensure easy removal.

Set and maintain forms true to lines designated. When forms appear to be unsatisfactory, either before or during concrete placement, the Engineer may stop work until defects are corrected.

When forms are submerged in water and concrete is placed in the dry, make forms watertight below high water level.

Cover knotholes and damaged areas in wood forms with metal patches.

Control rate of depositing concrete in forms to prevent form deflection or form panels that exceed permitted deflections. When structure height is greater than 6 feet, submit the rate of depositing concrete.

Use forms for concrete surfaces not completely enclosed or hidden below the permanent ground surface that complies with requirements, in this subsection, for exposed-surface forms. Interior

surfaces of underground drainage structures will be considered completely enclosed surfaces.

Before using forming systems for exposed surfaces, submit form design and materials data for each system.

Design and construct forms for exposed concrete surfaces so that the formed surface of concrete does not undulate excessively between studs, joists, form stiffeners, form fasteners, or walls. Undulations exceeding either 3/32 inch or 1/270 of the center-to-center distance between studs, joists, form stiffeners, form fasteners, or walls will be considered to be excessive. The Engineer will reject portions of concrete structure with surface undulations over limits specified herein. The Engineer will stop the use of the forms or forming systems which produce a concrete surface with excessive undulations until the Contractor makes modification acceptable to the Engineer.

Form exposed surfaces of each concrete structure element with the same forming material or with materials that produce similar concrete surface textures, color, and appearance.

For exposed surfaces, provide form panel facing consisting of continuous sections of form facing material, unbroken by joint marks, against which concrete is placed.

(2) Form Lumber. Use form lumber, except for curved and special surfaces, of five-ply panel boards or dressed shiplap, used with or without form liners. Rough lumber may be used for unexposed surfaces in the finished structure. Three-ply panel boards may be used for forming soffit of unexposed portions of box girder top slabs. When requested by the Engineer, submit certificates verifying grade and species of any piece of lumber which does not have a grade or species stamp.

Use plywood complying to the latest edition of "United States Product Standard PS-1 for Construction and Industrial Plywood" for forms. Place form panels in uniform widths of not less than 36 inches and of uniform lengths of not less than 6 feet, except where dimensions of members formed are less than specified panel dimensions. Place plywood panels with the grain of outer plies in direction of the span.

Place form panels in a neat, symmetrical pattern, subject to acceptance of the Engineer. Place panels with long dimensions horizontal and with horizontal joints level and continuous. Stagger

and position perpendicular to vertical joints, as shown in the Contract Documents.

(3) Form Ties. Use form ties of sufficient strength and number to hold the form securely in place and prevent the spreading of forms during concrete placement. The following will not be allowed:

(a) Ties consisting of twisted wire loops to hold forms in position.

(b) Non-metallic forming ties, anchorages, forming supports, or other accessories that may be embedded permanently in concrete.

(c) Driven-type anchorages for fastening forms or form supports to concrete.

Construct form ties or anchorages within forms to permit removal to a depth of at least 1 inch from the face, without injury to concrete. Design fittings for form ties or anchorages so that, upon removal, cavities left are of the smallest possible size. Fill cavities completely with cement mortar and leave surface sound, smooth, even, and uniform in color.

(4) Walls. For narrow walls and columns where the bottom of the form is inaccessible, leave lower form boards loose.

(5) Surface Treatment. Immediately before each use, clean and treat forms with non-staining form oil that will permit the ready release of forms and will not discolor concrete.

(6) Metal Forms. Specifications for forms regarding design, mortar tightness, filleted corners, beveled projections, bracing, alignment, removal, reuse, and oiling apply to metal forms. The metal thickness used for forms must be such that forms will remain true to shape. Countersink bolts and rivet heads. Design clamps, pins, or other connecting devices to hold forms rigidly together and to allow removal without injury to concrete. Metal forms that are rough or crooked will not be allowed.

(7) Reuse of Forms. Maintain shape, strength, rigidity, water tightness, and surface smoothness of reused forms. Resize warped or bulged lumber before using.

(D) Removal of Falsework and Forms. Before removing shoring beneath beams or girders, remove forms from columns to allow the Engineer

to inspect the condition of column concrete.

Remove supports using a method that permits concrete to uniformly and gradually take stresses caused by its weight.

In continuous or rigid frame structures, release falsework only after the last concrete (excluding concrete above the bridge deck) in that span and the first adjoining spans on each side have been in place for 14 days. For falsework removal, consider spans with a single hinge within the span to be continuous. Consider hinges of suspended spans within a bridge, as ends of the bridge, for determining shoring requirements. In structures of these types, remove falsework gradually and uniformly over the whole length.

After placing concrete, remove or release falsework and forms no earlier than removal times specified in Table 503.03-1 – Removal of Falsework and Forms. The Engineer will determine the exact removal time.

TABLE 503.03-1 - REMOVAL OF FALSEWORK AND FORMS

Railing and Barriers – 4 Hours and Concrete Has Hardened						
Centering Under Beams, Arches, And Other Members - 14 Days						
Slabs With Maximum Thickness of (Inches)	9		12		more than 12	
Removal Time (Days)	7		10		14	
Walls, Columns, and Vertical Sides of Beams With Maximum Height of (Feet)	2	5	10	20	30	40 or More
Removal Time (Days)	0.5	1	2	3	5	7
Note: Where forms also support vertical or horizontal loads imposed on slab or beam soffits, use longer requirements for removal time.						

Do not release falsework for cast-in-place prestressed portions of structures until after prestressing steel has been tensioned.

Do not release falsework supporting overhangs and girder stems that slope 45 degrees or more off vertical until 7 days after placing deck concrete. If a reshoring system is installed, falsework supporting sides of girder stems that slope less than 45 degrees off vertical may be removed before placing

deck slab concrete. Design reshoring system, consisting of lateral supports, to resist rotational forces acting on the stem, including those caused by the placement of deck slab concrete. Install reshoring system immediately after each form panel is removed and before the release of supports for adjacent form panel.

Do not remove falsework and forms supporting the bottom slab of box girders until 14 days after the final top slab is placed. Remove forms for webs of box girders before placing the deck slab. Forms supporting concrete top slab of box girder may be left in place. Completely remove interior forms in box girders except those permitted to remain in place. Where minimum crawl space dimensions and unobstructed access to enclosed utilities are provided, interior forms of box girders may be left in place. Clear and sweep loose material from inside of box girder.

Removal time of falsework may be reduced to 10 days when concrete test specimens develop compressive strengths equal to or greater than the required 28-day compressive strength. Cure concrete test specimen in accordance with paragraph 9.4 of AASHTO T 23.

After removing forms of railing or barriers, protect exposed concrete surfaces from damage after form removal.

(E) Loading. Inducing loading, outside its own weight, onto any part of a structure, will not be allowed until the following conditions have been met: at least 15 days have elapsed since placing concrete; and test specimens show that concrete has developed compressive strength of either 3,000 psi or required 28-day compressive strength, whichever is greater.

Material storage of any kind on structure, within 15 days of concrete placement, will not be allowed. After a minimum of 15 days has elapsed since concrete placement, materials weighing no more than 50 percent of the design live load may be stored on the structure. Submit shop drawings showing locations and weights of stored materials.

Release falsework before placing loads on the structure.

Live loads will not be allowed on completed portions of the structure when such live loads will produce more than allowable stresses permitted by AASHTO LRFD *Bridge Design Specifications*.

Backfill abutment and wing walls in accordance with Section 205 - Excavation and Backfill for Bridge and Retaining Structures.

(F) Placing Concrete.

(1) General. Place and consolidate concrete by methods that must not cause aggregate segregation or unsound concrete and must result in dense, homogeneous concrete, free of voids, rock pockets, and other defects. Use concrete while it is plastic and has sufficient workability for placement. Retempering or remixing concrete that has partially hardened will not be allowed. Allow no more than a 30-minute interval between placement of two consecutive batches or partially hardened will not be allowed. Allow no more than a 30-minute interval between the placement of two consecutive batches or loads of concrete.

Do not deviate from the schedule for placing concrete without permission from the Engineer.

The project site's addition of water to concrete ready-mix concrete in a truck mixer after the arrival at the location of concrete placemen **IS LIMITED**. The addition of water above the amount in the accepted mix design mixture may affect the concrete properties, such as the water/cementitious (W/C) ratio which may result in a reduction of concrete strength, aggregate segregation, durability, increased shrinkage, mix uniformity and the increased its susceptibility to cracking. These unwanted properties may cause a reduction in service life and may increase the possibility of catastrophic failure of the structure. Hence, exceeding the W/C ratio is prohibited.

When a truck mixer is used for mixing or the delivery of concrete, no water from the truck system or elsewhere will be allowed to be added after the initial introduction of mixing water for the batch. The additional water may be added to the concrete mix when all the following conditions exist:

- Job site water must be started to be added not later than 15 minutes after the concrete ready-mix truck had arrived at the project site. Parking the ready-mix truck off the project site, waiting in a queue or both will be considered arriving on the project site.
- The addition of water later than 15 minutes may be requested only before use from the Engineer when justified with additional data. The additional time needed and justification must be stated in the request.
- The slump of the concrete is less than that specified in the accepted mix design.
- The water added will not exceed the total amount of water specified in the accepted mix design or specification, i.e.,

exceeds the accepted water/cementitious (W/C) ratio (W=weight of water in batch, in pounds; and C= weight of cementitious materials in batch, in pounds).

- The temperature of the concrete has not exceeded the amount set in the Contract Documents.

The maximum amount of water that may be added to the concrete at the project site must be the smallest amount of water used to obtain the result of the following three restrictions:

- Bring the slump up to the accepted mix design or specified level, or
- Must not exceed 1½ gallons of water per cubic yard of concrete, or
- Must not cause the total amount of water to exceed the amount of water in the accepted mix design, i.e., change the W/C.

For example: If 1½ gallons of water per cubic yard of concrete increases the W/C beyond the accepted W/C then 1½ gallons of water must not be used. The maximum amount of water that can be added must be limited to the amount of water that would bring the mix to the accepted W/C even though the design mix slump has not been reached.

Adjustments are usually made to achieve the design mix slump requirements and must not exceed the accepted design mix's maximum slump.

The addition of water within the initial 15 minutes at the project site must be injected into the mixer under pressure and direction to assure uniformity. The drum or blades must be turned an additional 30 revolutions or more, if necessary, at mixing speed, until the uniformity of the concrete is assured. **WATER MUST NOT BE ADDED TO THE BATCH AT ANY LATER TIME!**

When macro or micro fibers are part of the mix design, excessive rotation of the drum may cause a deleterious effect on the concrete fiber mix. The fiber manufacturer's recommendations must be followed.

Pertinent Required Controlling Measures:

- Maximum allowable slump established from the accepted concrete design mixtures and job specifications.
- The concrete slump from the first portion of concrete discharged from the truck needs to be estimated or

determined. The estimated concrete discharged must be subtracted from the W/C calculation. For example, 10yds of concrete is in the truck, and ¼cy is discharged. The delivery tag indicates 1gal/cy can be added to the mix without exceeding the accepted W/C. The maximum amount of water that can be added is 9¾ gal providing the addition of that amount of water does not cause the slump to be more than the accepted concrete nix design's slump requirement. The addition of water to obtain workability and meet job specifications is the contractor's responsibility. However, the quantity of water added must be documented on the collected delivery tickets. The delivery tags must note the amount of water that can be added at the project site and still not exceed the total amount of water in the accepted concrete mix design, i.e., held back water. When the amount of held back water is not shown on the delivery tag it will be assumed that the concrete mix has the maximum total water allowed by the accepted mix design and no additional water will be allowed to be added at the project site.

- Do not allow water to be added to the concrete if the maximum slump is already obtained, or more than ¼ cubic yard has been discharged from the mixer.
- 1½ gallons of water or less per cubic yard may be used to obtain the desired slump. The slump must not exceed the maximum design slump and job specifications. The added water must not cause the batch's accepted W/C to increase.
- Tests for the acceptance of concrete based on slump must be made in accordance with AASHTO T 141 & T 119. Tests must be made after the addition of water at the project site to determine if the concrete's slump is compliant.
- When the concrete mix does not meet the requirements of this Section the concrete will be considered non-conforming, i.e., non-compliant. The action taken will comply with Subsection 105.12 Removal of Non-Conforming and Unauthorized Work.

This portion of the Section applies to most ready mixed concrete delivered. Special concrete mixes, e.g., Superplasticized concrete, mixes that have conditions that do not fall in a normal range of concrete as determined by the Engineer or require a special sequence are not applicable without a prior written request with supporting documentation, e.g., the admixture manufacturers' and ready-mix supplier's recommendations and approval. The request must be submitted before its use to the Engineer for its acceptance. The Engineer has the right to unilaterally accept or reject the request and rescind its acceptance.

Water blast laitance and foreign material and moisten interface surfaces with water immediately before placing concrete over subgrade or construction joint. Leave no ponding water or have the surface glistening. Remove excess water by vacuuming or dry, oil-free compressed air.

Submit method and sequence of concrete placement. Place concrete on the structure only after forms have been cleared of debris and the Engineer has checked and accepted forms and reinforcing steel.

Place concrete for foundations, bottom slabs of box culverts, and aprons on the ground that is free from water. Dewater, sheath, place filter material, and do other work, as required by field conditions, to ensure saturated surface dry foundation bed. Costs for obtaining a saturated surface dry foundation bed will be included in the price for structure excavation.

Excavate and place sides of concrete or masonry footings not supported on piles or rock in neat lines.

Begin placing concrete at the low point and proceed in the upgrade direction. Remove struts, stays, braces, or blockings when concrete placed has reached elevation rendering them unnecessary.

Deposit concrete in approximately horizontal layers to avoid flowing along the forms. When less than a complete layer is placed in one operation, terminate the layer at a vertical bulkhead. Layer depth must not exceed 20 inches and must be such that the succeeding layer must be placed before the previous layer has attained its initial set. Place concrete in layers that can be satisfactorily consolidated with vibrators.

Thoroughly work the external surface of the concrete with a vibrator. Work to force coarse aggregate from the surface and to bring mortar against forms, producing a smooth finish, nearly free from water and air pockets, and honeycomb.

Fill each part of the form by depositing concrete as close to the final position as possible. Work coarse aggregate back from forms and around reinforcement without displacing bars. After the initial set of concrete, do not jar forms and do not place stress on the ends of projecting reinforcing.

After concrete placement stops, remove accumulations of

mortar on reinforcing steel and surfaces of forms before the next concrete placement. If concrete is wet, prevent dried mortar chips, other foreign material, and dust from falling onto the wet concrete surface. If the concrete has set, clean reinforcing steel in a manner that will not be detrimental to concrete to reinforcing steel bond.

(2) Box Culverts. Place and allow base slab or footings of box culverts to set at least 12 hours before constructing the remainder of the culvert.

When constructing box culverts, place and allow concrete in walls to set at least 12 hours before placing the top slab. Provide appropriate keys in sidewalls for anchoring the top slab.

(3) Box Girder Spans. Place bottom slab of box girder spans monolithically with girder stems.

The top slab of box girders may be placed 10 days after placing bottom slabs and stems, provided concrete test specimens of the bottom slab and stem concrete have attained compressive strength equal to or greater than 3,000 psi. Cure concrete test specimens in accordance with paragraph 9.4 of AASHTO T 23.

Place concrete in columns in one continuous operation.

Allow the concrete to set at least 12 hours before placing columns, caps, or beams.

Do not place horizontal members or sections until concrete in supporting vertical members or sections has consolidated and shrinkage has occurred. When plans require construction joints, allow at least 12 hours to elapse between concrete placements.

Do not place concrete in the superstructure until column forms have been stripped sufficiently to determine the character of column concrete. Do not allow superstructure loads to be placed on bents or piers until bents have been in place for at least 14 days.

Do not place concrete in suspended span until adjacent continuous spans are complete in place.

In structures with one or two hinges in a span, place supporting ends of hinges, including top slabs, before placing the supported end.

Do not place concrete sidewalks and curbs not monolithic with bridge deck until falsework for spans has been released.

(4) Chutes and Troughs. The use of aluminum for chutes, tremies, troughs, or pipes will not be allowed. Place concrete to avoid segregation of materials and displacement of reinforcement.

When plans require steep slopes, equip chutes with baffle boards, or furnish chutes in short lengths that reverse the direction of movement.

Use of long troughs, chutes, and pipes of a minimum 6-inch diameter will be allowed only with written authorization by the Engineer. Incline chutes or pipes to allow concrete to flow at the required consistency. The addition of water to the concrete mix to promote free flow in chutes of low inclination must not be allowed.

Do not drop concrete into forms from a vertical distance of more than 5 feet unless confined by closed chutes or pipes.

Keep chutes, troughs, and pipes clean and free from coatings of hardened concrete by thoroughly flushing them with water after each run. Discharge flushing water away from in-place concrete.

(5) Vibrating. Consolidate concrete, except for concrete placed underwater, using high-frequency internal vibrators. The minimum transmitted vibration frequency must be 4,500 impulses per minute and must be such as to visibly affect the mass of concrete (radius of influence) of a 1-inch slump over a radius of at least 18 inches. Use a sufficient number of vibrators to properly consolidate incoming concrete within 15 minutes after depositing concrete in forms. Make at least two vibrators available at the structure site when placing more than 25 cubic yards of concrete. One vibrator must be used at the place where concrete is being deposited. This first vibrator must level the poured concrete and it must follow the depositing chute as it moves. During leveling the concrete is temporarily liquefied due to the rapid oscillatory motion transmitted to the concrete by the vibrator and the concrete flows into the corners of the forms and around the reinforcement.

The second vibrator must consolidate and de-aerate the concrete removing the entrapped air bubbles making them rise to the surface and escape. Have at least one additional vibrator in reserve in addition to the two being used to level and consolidate the concrete. Apply vibrators at a center-to-center insertion spacing approximately 1.5 times the radius of influence. Minimize lift lines by totally inserting the vibrator vertically at the depth of the lift being vibrated plus 6 inches into the previous lift. Insert vibrators in a vertical position,

perpendicular to the concrete surface, at a uniform spacing over the entire concrete placement area. Dragging vibrators through concrete to another vibration point must not occur. Attaching vibrators to or holding them against forms or reinforcing steel must also not be allowed.

External vibrators accepted by the Engineer may be used to consolidate concrete when concrete is inaccessible for adequate consolidation, provided forms are constructed sufficiently rigid to resist displacement or damage from external vibration.

When required, supplement vibration by hand spading with suitable tools to ensure proper and adequate compaction. Manipulate vibrators to work concrete thoroughly around reinforcement and embedded fixtures, and into corners and angles of forms. Do not use vibrators to cause concrete to flow or run into position, instead of placing the concrete and vibrating it. Vibrate sufficiently to compact but avoid prolonging vibration to the point where segregation occurs.

(6) Hot Weather Concreting. When the ambient temperature is expected to meet or exceed 90 degrees F or the concrete construction involves flatwork concrete construction, ACI 305 R-20 Guide to Hot Weather Concreting or its latest edition or variant must be part of the Contractor's means and methods. Handling, placing, protection, and curing procedures must limit the concrete temperatures or water evaporation, or both that can reduce the strength, serviceability, and durability of the member or structure. Submit a Hot Weather Concreting action plan to the Engineer for review and acceptance. Do not place concrete where the temperature is above 90 degrees F unless the design mix and placement method comply with ACI 305 R-20 Guide to Hot Weather Concreting or its latest edition or variant.

Weather conditions, e.g., rain, temperature, wind, and humidity, must be monitored and addressed. Include the assumed temperature of concrete to be used in the initial calculation of the evaporation rate using the ACI 305 R's evaporation rate chart or ACPA's Evaporation Rate Calculator. Have action plans that are to be used should bad weather conditions, e.g., high wind, rain, high temperature, occur or will occur during pour and under what condition weather conditions must cause a cancellation or delay of the concrete placement. Measurements of the conditions used to determine the evaporation rate must be taken at the location where the concrete is currently being placed, e.g., near the chute, the concrete bucket, the discharge nozzle of the concrete pump, etc. List make and model of weather monitoring instruments, to be used at the location of concrete placement, to measure the ambient air temperature, relative humidity,

and wind velocity to determine the on-site real-time evaporation rate. All-in-one meters that utilize the ACI 305 R's chart or other accepted method for determining evaporation rate may be used if found acceptable by the Engineer. Submit catalogs of weather monitoring instruments. Submit weather reports with evaporation rates within 48 hours of the completion of the concrete pour. Weather reports must be in a format and have information acceptable to the Engineer.

If the evaporation rate is, or is likely to become, or trending to be 0.05 lb/ft^2/hr or greater, employ the measures to prevent moisture loss such as but not limited to the application of evaporation retarder, application of supplemental moisture by fogging or reduction of the concrete temperature during batching, reduction of wind velocity or other means accepted by the Engineer that was included in the accepted hot weather concreting plan. Check evaporation rate every 15 minutes during and after placement until the concrete has taken a final set or use ACI 305 R-20's or its latest edition or variant if inspection requirements are more frequent.

If the temperature of any of the surfaces the concrete may come in contact with, e.g., reinforcement, embedments, forms and has a temperature greater than 100°F, or is 10°F greater than the concrete's temperature that is being placed, use a fogger to moisten and cool the hot surfaces to below whichever temperature is lower. Remove all standing or ponding water immediately before placing concrete. If compressed air is used to remove the water the air must be oil-free.

(7) Evaporation Retarders and Finishing Aids. Evaporation retarders and finishing aid solutions may be used when accepted by the Engineer. Adjust dilution rates to fit the local climate following the manufacturer's recommendations and receiving the Engineer's acceptance. Evaporation retarders and finishing aids must be "stand-alone" products. Products that are both evaporation retarder and finishing aid must NOT be used. They must be designed for highway pavement use. Evaporation retarders and finishing aids must not deleteriously change the water to cementitious material ratio (W/CM), i.e., water to cement ratio (W/C) of the concrete's surface, or affect the physical properties of the surface it is being applied to causing defects, e.g., chalking, color change, dusting, weaken surface, popouts, brittleness, spalling, cracking, or other unacceptable properties, submit test results that show compliance to these requirements. Evaporation retarders and finishing aid solutions must have different tints and tints must not be noticeable on the hardened cured concrete. Apply solutions with equipment that is labeled in a manner that easily identifies them from a distance.

Evaporation retarders must be allowed to form their protective film before the finishing aid solution is applied. Evaporation retarders and finishing aids must not be used interchangeably, using them interchangeably will damage the concrete surface. Misuse or adverse effects occurring to the concrete attributed to the evaporation retarders or finishing aids or both by the Engineer may result in the withdrawal of the Engineer's acceptance of the product and the immediate halting of the use of the product at no cost or increase in Contract time. The concrete will be considered non-compliant and must be removed or an Engineer accepted remedial repair be performed. The Engineer will solely decide what work method is to be used.

(8) Certified Concrete Flatwork Finisher Requirement. Perform the placement and finishing operations of concrete flatwork with a minimum ratio of one certified ACI Concrete Flatwork Finisher and Technician with 4,500 hours of acceptable work experience (certified craftsman) per three concrete finishers (concrete finishers without ACI Concrete Flatwork Finisher and Technician certification and 4,500 hours of acceptable work experience) at each location on the project site having flatwork done. The concrete flatwork must be under the direct supervision of a certified craftsman. Designate the certified craftsman who will be supervising and responsible for determining the quality of the finish of the concrete flatwork being performed. No flatwork must be performed without the required amount of certified craftsmen present.

(a) Flatwork concrete is defined as any concrete work that requires tools or machines to be used during the placement and finishing operations of concrete. Concrete flatwork includes concrete work that requires a specified finishing, smoothness, or rigid surface tolerances such as sidewalks, walkways, portland cement concrete pavement, concrete white-topping, girder seats, pier caps, bridge decks, on-grade concrete slabs, approach slabs, concrete overlays, and concrete repairs which exceed one square foot per day.

(b) Areas that are not considered flatwork concrete are the top of foundations or structures that will have backfill material placed directly on the concrete surface.

(c) Submit copies of the craftsman's current ACI certification 30 days before concrete flatwork begins for the Engineer's review and acceptance. The Engineer has the right to require the removal, replacement, retraining, and re-

certification of a certified craftsman if that person does not, in the opinion of the Engineer, demonstrate the ability to place and finish concrete in accordance with the practices recommended in the ACI Concrete Flatwork Finisher Certification Program and to meet the finishing standards required by the Contract Documents.

(d) Any cost or impact to the contractor in providing, training, certification, retraining, replacement, or re-certification is incidental to the contract items that require concrete flatwork.

(G) Joints. Before backfilling with earth or other materials against the joints, all construction, expansion, contraction, and control joints must be waterproofed with flashing compound waterproofing as detailed in the Standard Plans

(1) Construction Joints. Place construction joints only at locations indicated in the Contract Documents, perpendicular to principal lines of stress, and at points of minimum shear.

Before placing concrete on substrate concrete at the construction joint, the following work must be performed:

(a) Remove laitance, loose particles, dust, dirt, impervious membrane curing compound, and any other material foreign to the construction joint and the projecting reinforcement.

(b) Roughen horizontal construction joint by abrasive blast cleaning, hydrodemolition, or other Engineer accepted methods to the full amplitude of approximately ¼ inch."

Before placing new concrete, draw forms tightly against the concrete already in place. Thoroughly clean, high-pressure water blast laitance and foreign material, and saturate the old surface with water to a saturated surface-dry condition immediately before placing new concrete. Place concrete in substructures so that horizontal construction joints are truly horizontal. Where possible, place joints such that they will be hidden from view in the finished structure. Where vertical construction joints are necessary, extend reinforcing bars across joints to make the structure monolithic. Do not place construction joints through paneled wing walls or other large surfaces that are to be treated architecturally.

When a construction joint is necessary because of an emergency, furnish and place reinforcing steel across the construction joint as ordered by the Engineer, at no increase in the contract price

or contract time.

(2) Expansion Joints. Construct expansion joints of type and in the location indicated in the Contract Documents. Expansion joints may be of friction, open, filled compression, mortise, or special type.

(a) Metal Friction Joints. Metal friction joints include cast iron or bronze plates. Anchor plates in the correct position. Plane sliding surfaces are true and smooth by following the direction of movement of the structure with the planing tool. Do not impede movement by allowing surfaces to make contact, except for bearing surfaces.

(b) Open Joints. Construct open joints of removable bulkheading forms so that forms may be removed without damage to concrete.

(c) Filled Compression Joints. Construct filled compression joints with premolded expansion joint filler. Cut preformed joint filler to the same shape as the area to be covered. Furnish one-piece, preformed joint filler, sized to leave a 1/4-inch gap along exposed surfaces. When specified, punch holes to accommodate dowels. Fix preformed joint filler firmly against the surface of concrete already in place with cold asphalt roofing cement complying to ASTM D 4586. Do not nail the premolded expansion joint filler to the concrete or use a fastening method that will not compress more than the thickness of the premolded expansion joint filler. When necessary use more than one piece to cover the surface, fasten and hold abutting ends in shape by stapling. Cover joint between separate pieces with a layer of two-ply roofing felt and cover one side with cold asphalt roofing cement complying to ASTM D 4586. Fill 1/4-inch space along edges at exposed faces with wooden strips of the same thickness as joint material. Saturate wooden strips with oil and provide sufficient draft to make wooden strips readily removable after placing concrete. Immediately after removing forms, inspect the expansion joint. Clean and remove concrete or mortar that may have been sealed across the joint.

(d) Mortised Joints. Construct mortised joints where indicated in the Contract Documents. Mortised joints include a concrete or metal part sliding in a concrete or metal socket. Construct joint to be watertight, rustproof, and free to move in two directions.

(e) Steel Joints. Steel joints include plates, angles, or other structural shapes. Shape steel joints accurately at the shop to conform to the section of the concrete deck. Fabricate and paint steel joints in accordance with requirements indicated in the Contract Documents. When specified, zinc-coat material instead of painting. Keep the surface of the finished plate true and free of warping. Maintain joints in the correct position during concrete placement. Set opening at expansion joints as indicated in the Contract Documents. Avoid impairment of joint clearance.

Place metal joints so that they are free from kinks. Rivet and solder joints. At bends, use a one-piece strip.

Remove stones, forms, and other foreign matter that might interfere with joint efficiency.

(f) Waterstops. When required, furnish, and install waterstops as indicated in the Contract Documents. Position waterstops correctly in formwork, so that bulb is aligned and centered with the joint opening. Vibrate concrete surrounding embedded waterstops to attain impervious concrete near joints. Cut and splice waterstops at changes in direction, as necessary, to avoid buckling or distortion of web or flange. Field splice waterstops in accordance with Subsection 705.07 - Waterstop.

(3) Contraction Joints. Contraction joints in walls and other structures must be spaced at not more than 20 feet on centers and must be spaced, at abrupt changes in height or thickness and obtuse corners unless otherwise directed by the Engineer.

(H) Waterproofing. Make concrete surfaces smooth and free from holes and projections that might puncture the waterproofing membrane. Dry and clean surfaces thoroughly of dust and loose materials before waterproofing. Do not waterproof in wet weather or when the temperature is below 65 degrees F or does not comply with the accepted manufacturer's recommendations.

Waterproofing includes a coat of primer applied to a concrete surface, a firmly bonded membrane composed of two layers of saturated fabric complying to ASTM D 1668, and three uniform mopping coats of waterproofing asphalt or an accepted method of waterproofing.

Apply a uniform coat of primer to the surface, extending 12 inches on each side of the joint. Allow the primer to dry before the first application of

asphalt. Heat asphalt to a temperature between 300 degrees F and 350 degrees F. Mop asphalt thoroughly onto the surface with no holidays.

Place an 18-inch-wide strip of fabric immediately on hot asphalt. Carefully press the fabric into place to eliminate trapped air bubbles and to obtain close complete contact with the surface.

Apply a second uniform layer of asphalt onto the fabric, 3 inches beyond the edges. Immediately following that operation, press the second layer of fabric into place on top of the first layer.

Apply a third and final uniform layer of asphalt onto the fabric, 3 inches beyond the edges. Use 12-inch laps at the ends of the fabric.

Apply the uniform coat of primer to the concrete surface at a rate of one gallon per 100 square feet. Apply a uniform coat of asphalt at a rate of 15 gallons per 100 square feet of finished work.

(l) Joint Sealing.

(1) Joint Seal (Poured) for Bridge Deck. Immediately before applying a joint sealer, clean joints thoroughly by abrasive blasting. Remove mortar, laitance, scale, dirt, dust, oil, and other foreign matter, then blow out the joint with high pressure, oil-free, dry compressed air to remove residue.

Apply joint sealer after the Engineer inspects and accepts the joint; and only when concrete and ambient temperatures are not less than 50 degrees F and no greater than the temperature allowed by the manufacturer.

Apply joint sealer so that joints are filled without forming air holes and discontinuities. The top of the joint sealer must be 1/4 inch below the finished surface.

Remove joint sealer that does not do the following: cure to homogeneous and rubber-like compound; bond to joint faces; or comply with other requirements of this section.

Reclean joint and remove non-compliant joint sealer then place new joint sealer at no increase in the contract price or contract time.

After completion of joint sealing, prohibit vehicles from traveling over joints until the Engineer grants permission.

(2) Joint Seal (Preformed) for Bridge Deck. Immediately before installing a joint sealer, clean the joint thoroughly to remove mortar, laitance, scale, dirt, dust, oil, and other foreign matter from the joint with high pressure, oil-free, dry compressed air.

Install seal so that it will not be abraded by traffic and will effectively keep foreign material from entering the joint. Correct spalls and protrusions in joint before installation.

Install preformed seal in one continuous piece without field splices.

Place seal so that its top edge is 1/4 inch below the riding surface, and in a plane normal to the sides of the groove.

Place the top edge of the gasket in contact with the vertical walls of the joint. Repair spalls and other unsound concrete. Depress seal below minor spalls so that its top edge is in contact with the vertical wall of the joint.

Twisting, curling, and nicking of the seal will not be allowed.

Protect joint from the intrusion of earth, gravel, mortar, or other foreign matter so that structure can expand, and contract as designed.

The groove width indicated in the Contract Documents is the width of the expansion joint at the time of concrete placement. When the width is less than the manufacturer's minimum width for proper installation of the joint seal, defer installation until the concrete has been placed. Install seal after increasing joint width to width equal to or greater than the minimum width recommended by the manufacturer.

Steel angle protective nosing assembly must extend beyond the curb line and must terminate 1 inch from the edge of the deck.

(J) Concrete Exposed to Sea Water. In concrete structures exposed to seawater, construction joints will not be allowed between levels of extreme low water and extreme high water, as indicated in the Contract Documents, or as found in accepted reference documents. Between these levels, leave forms in place for at least 30 days.

(K) Protection and Curing. Protect concrete from mechanical damage and damage caused by exposure to the sun, rain, and flowing water. Do not allow concrete to dry out from the time of concrete placement until the end of the minimum curing period. The minimum curing period must be as follows:

(1) Cure structures for at least 7 days. Maintain a temperature of structural concrete at not less than 45 degrees F for 72 hours after placing. Maintain temperature at not less than 40 degrees F for an additional 4 days. Submit a written outline of the proposed method for protecting concrete.

(2) Cast-in-place parts of a structure to be submerged permanently in freshwater, may be cured for a period sufficient to prevent washing out of cement, and then submerged immediately.

(3) Cast-in-place parts of a structure to be submerged in freshwater, let cure for at least 5 days. Cast-in-place parts of a structure to be submerged in brackish or seawater must leave the forms in place for at least 30 days to cure in accordance with Subsection 503.03(J) - Concrete Exposed to Sea Water.

(L) Curing Methods. Cure concrete for cast-in-place structures, other than bridge decks, by water curing, impervious membrane curing, or forms-in-place curing. Cure full width of concrete bridge decks using a combination of impervious membrane curing and water curing. Cure concrete surfaces that are to receive Class 2 Rubbed Finish, by water curing or forms-in-place curing. Cure surfaces of construction joints by application of water curing or non-membrane curing compound that seals concrete without reducing interface bonding capacity. Submit proposed curing methods, including copies of test results and manufacturer's catalog no later than 30 working days before the first concrete pour. There must be no concrete pouring until the Engineer accepts the curing method including the curing compound and its application method. The procedures for protecting and curing concrete will be considered adequate if (1) or (2) are satisfied:

(1) Average strength of field-cured cylinders at test age designated for determination of **f'c** is equal to or at least 85 percent of that of companion standard-cured cylinders

(2) Average strength of field-cured cylinders test age exceeds f'c by more than 500 psi

If the curing method does not meet one of the aforementioned criterions the curing method must be modified or changed until it is compliant.

Precast concrete members may be steam cured in accordance with Subsection 504.03(G) - Curing.

The Contractor shall have the option to use curing compound SINAK LITHIUM 1000 or approved equal for bridge structures when approved by the

Engineer. Six copies of the manufacturer's brochure and certificates of test results shall be submitted. All work shall conform with the manufacturer's recommendations.

(1) Water Curing. Water cure by keeping concrete continuously wet with fresh water, using water fogging, acceptable water-saturated coverings, or ponding. Keep wood forms that remain in place sufficiently damp to prevent opening at joints and drying of concrete.

After surface water has evaporated, apply moisture to the concrete surface using a fog spray. Continue applying moisture to the surface until regular curing begins. Use adequate water supply and sufficient moisture to fog and water cure concrete without damaging the surface or texture of concrete. The temperature of water used must be at least 50°F and not be more than 35°F colder than the surface temperature of the concrete at the time the water and concrete come in contact.

Begin water curing for bridge decks after the curing compound is applied and immediately after the concrete surface is hard enough to receive water without damaging the surface or texture of the concrete. Continue water curing until the end of the specified curing period.

Prevent curing water from falling on traveled roadways under a structure or into waterways. Channel curing water away from falsework and structure foundations.

(2) Impervious Membrane Curing. Seal the concrete surface thoroughly with a liquid membrane-forming compound. Apply compound uniformly having no holidays or streaking in each coat. In separate applications, use two or more coats or curing compound. Use a ratio of at least 1 gallon for every 100 square feet of concrete surface per coat. Apply each coat 180 degrees in the opposite direction to the previous coat's application direction.

The impervious membrane curing compound must be applied to the concrete following the surface finishing operation. Start the application of the curing compound immediately before the moisture sheen disappears from the surface, but before any drying shrinkage or craze, cracks begin to appear. In the event of any drying or cracking of the surface, increase the humidity in the area by using a fog spray with an atomizing nozzle as specified in Subsection 503.03(F)(6) "Hot Weather Concreting", fogging must be started immediately, and must all be continued until the application of the compound is resumed or started; however, the compound must not be applied over any

resulting freestanding water. Do not blend the free-standing water into the concrete surface, allow it to evaporate, If the free-standing water is due to the foggers, stop them and adjust the foggers so they comply with the Contract Documents. Should the film of the compound be damaged from any cause before the expiration of 7 days after the concrete is placed in the case of structures and 72 hours in the case of pavement, the damaged portion must be repaired immediately with an additional application of two coats of compound.

Use curing compounds that will not permanently darken concrete on exposed hardened surfaces of the concrete structure. Do not apply membrane curing compound on surfaces to which concrete is to be bonded or to which waterproofing or epoxy is to be applied or will be deleterious to future work.

Keep concrete surfaces moist before applying the impervious membrane. If membrane film is broken or damaged during the specified curing period, apply new treatment to the affected area, duplicating the first application.

(3) Forms-In-Place Curing. Cure formed surfaces of concrete by retaining forms in place. Maintain forms in place for a minimum period of 7 days after concrete placement. Keep all form joints and joints between the end of forms and concrete, moisture-tight during the curing period. Reseal cracks in forms and cracks between forms and concrete by methods accepted by the Engineer.

(4) If the construction joint requires that it bonds with the concrete poured against it a lithium curing compound will be acceptable as a curing compound. Lithium curing compound must not be used on the horizontal surface in place of other aforementioned curing methods unless specifically called for by the Contract Document, or a waiver is granted by the Engineer. A lithium sealer will not be accepted as a curing compound. The lithium curing compound must meet or exceed the requirements of ASTM C-309, and ASTM C-1315 and be a 28-day water cure equivalent. All work must comply with the manufacturer's recommendations.

(M) Finishing Concrete Surfaces. Apply the following requirements to several classes of surface finishes that ordinarily apply to various parts of concrete structures.

No additional water must be applied to the concrete surfaces to aid in the finishing operation. The application of water to aid the finishing operation will result in the concrete being non-compliant with the contract requirements and result in the rejection of the concrete pour. Finishing aids or evaporation

retarders may be used only with written authorization by the Engineer. Only stand-alone finishing aids must be used to finish the concrete surface and only stand-alone evaporation retarders are used to minimize the evaporation rate of the plastic concrete. These solutions must not be used interchangeably.

(1) Class 1 Ordinary Surface Finish. Apply ordinary surface finish to concrete surfaces, either as a final finish or preparatory to applying a higher-class finish. On surfaces to be buried underground or that are enclosed, such as cells of box girders, removal of fins and form marks and rubbing of mortared surfaces to obtain a uniform color will not be required.

After removing forms, remove form bolts and ties to a depth of at least 1 inch below the concrete surface. Clean, wet, and fill resulting holes or depressions with mortar. Mortar must consist of one part cement to two parts sand by volume. Add white cement to mortar in sufficient quantity to tint mortar a shade lighter than the surrounding concrete. Use mortar that is not more than 1 hour old and that bonds indistinguishably with concrete. After the mortar has thoroughly hardened, rub the surface with a carborundum stone to obtain the same color mortar as in the surrounding concrete. Remove fins caused by form joints and other projections. Remove stains and discolorations visible from the travel way.

Clean and fill pockets with mortar, except for those scattered pockets or pinholes less than 1/2-inch long or wide and less than 3/8-inch deep or have exposed reinforcing steel. Pockets must not affect the strength of the structure or shorten the life of steel reinforcement. Fill pockets on surfaces visible to pedestrian traffic and surfaces exposed to streamflow, salt air, and saltwater. Use mortar for filling pockets, as specified for bolt and tie holes. When rock pockets affect the strength of a structure materially or shorten the life of the structure or steel reinforcement, the Engineer will declare concrete unacceptable and require removal and replacement of the affected structure.

Clean, wet, and fill with mortar, all holes or depressions in surfaces that are to receive Class 2 Rubbed Finish. Clean, wet, and fill at least 7 days before starting Class 2 Rubbed Finish.

(2) Class 2 Rubbed Finish. Apply Class 2 Rubbed Finish to the following surfaces:

(a) Surfaces of bridge superstructures, including pedestrian overpasses, except for the following: inside vertical surfaces of

"T" girders; slab soffits of interior bays of "T" girders; enclosed surfaces of box girders; top surfaces of bridge decks; walkway surfaces; and median strips.

(b) Surfaces of the bridge and pedestrian overpass piers, piles, columns, pier caps, abutments, wing walls, and retaining walls above finished ground, to at least 1 foot below finished ground.

(c) Surfaces of open-spandrel arch rings, spandrel columns, and abutment towers.

(d) Surfaces above finished ground of culvert headwalls, and endwalls, when visible from a traveled way.

(e) Surfaces of inside box culvert barrels having a height of 4 feet or more, for a distance inside the barrel equal to the height of culvert or as far as is visible from a Traveled Way, whichever is greater.

(f) Surfaces of concrete railings, end posts, and curbs.

After completing Class I Ordinary Surface Finish, sand with power sanders areas that do not exhibit a smooth, even surface of uniform texture and appearance. Sand with power sanders areas to a smooth, even surface of uniform texture and appearance.

Use power carborundum stones or disks to remove unsightly bulges or irregularities.

The intent is to secure a smooth, even surface of uniform appearance and to remove unsightly bulges or depressions due to form marks and other imperfections. Scattered pockets or pinholes permitted under ordinary finish will not be considered to affect uniformity or texture. The extent of sanding and grinding must be as specified.

The final operation for this finish consists of removing powder on the surface resulting from sanding and grinding. When additional repairs are made after sanding and grinding, repeat sanding and grinding after a repair has cured. Leave the finished surface free from powder and other foreign matter by power washing and wiping with a clean cloth. Collect and dispose of wash water.

(3) Class 6 Float Finish. Attain Class 6 Float Finish as follows:

(a) Finishing Bridge Decks and Bridge Approach Slabs. For bridge decks and bridge approach slabs, obtain a smooth riding surface of uniform texture, true to the required grade and cross-section.

Place concrete in bridge decks and bridge approach slabs at a minimum finished deck placement rate of 20 linear feet per hour. Measure rate along the centerline of the roadway. Employ experienced operators and concrete finishers to finish the deck. Keep necessary finishing tools and equipment on hand at the worksite and in satisfactory condition for use.

Complete finishing operations only during daylight hours unless acceptable lighting facilities are provided.

Immediately before placing bridge deck concrete, check falsework and wedges. Minimize settlement and deflection due to added weight of bridge deck concrete. Furnish suitable instruments, such as settlement gages, to permit ready measurement of settlement and deflection by the Engineer.

When a settlement or other unanticipated events occur, stop deck concrete placement until corrective measures have been submitted and accepted. If accepted corrective measures have not been provided before the initial concrete set, stop concrete placement, and install the bulkhead at a location designated by the Engineer. Remove concrete placed beyond the bulkhead.

Place the bridge deck and bridge approach slab concrete in a uniform heading, approximately perpendicular to the roadway centerline. Limit the rate of concrete placement to that which can be finished before the beginning of the initial set. Do not place deck surface concrete more than 10 feet ahead of strike-off. Spread concrete during its initial deposit on the deck forms to a uniform height, and it requires a strike-off that does not exceed 3 inches of concrete.

Finish bridge decks and bridge approach slabs with concrete wearing surfaces in accordance with Subsection 503.03(M)(3)(a)1. - Machine Finishing.

Bridge decks and bridge approach slabs with asphalt-wearing surfaces may be finished as described in this subsection.

During the finishing operation while concrete is still plastic, test the surface with a 12-foot straight edge. Test surface from the side or from transverse finishing bridges, in presence of the Engineer. Make necessary corrections to attain the required tolerance after the concrete has hardened.

After the concrete has hardened sufficiently, test the finished surface in presence of the Engineer with a 12-foot straight edge. The surface for the concrete deck finish must not vary more than 1/8 inch from the lower edge of a straight edge.

Where concrete of bridge deck and bridge approach slab is to be covered with a minimum 1-inch-thick layer of bituminous surfacing, earth, or another cover, the surface of the concrete must not vary more than 1/4 inch from the lower edge of a 10-foot straight edge.

Grind high areas in the hardened surface, leaving a finished texture that is not smooth or polished. Produce final surface with a uniform texture of longitudinal grooves, with tine dimensions in accordance with Subsection 503.03(M)(3)(a)1. - Machine Finishing.

Submit method of correcting low areas. Begin remediation of low spots only after the Engineer accepts remedial repair submittal.

Strike off bridge deck surfaces under curbs, railings, and sidewalks to the same plane as the roadway. Leave bridge deck surfaces under curbs, railings, and sidewalks undisturbed when future widening is shown on Plans.

When deck width is 4 feet or less, finishing methods other than those specified herein may be used, provided the completed deck surface complies to specified requirements.

Perform remedial measures on completed bridge decks and bridge approach slabs not meeting specified requirements, at no increase in the contract price or contract time.

1. Machine Finishing. Strike-off and finishing machines must be of the self-propelled types, operating on rails and complying to specified requirements.

Use elevation-adjustable screed rails. Set screed to elevations, with allowances for anticipated settlement, camber, and deflection, as required to form the surface of the bridge deck and bridge approach slab to specified line and grade. Screed rails must not deflect appreciably under applied loads.

The screed rails must be adjustable for elevations. The screed must be set to elevations, with allowances for anticipated settlement, camber, and deflection, as required to form the surface of the bridge deck to the line and grade shown in the contract. The Contractor must install screed rail type such that the rails must not deflect appreciably under the applied loads. The supports for the screed rails must not be placed within the full width of the bridge.

The Contractor must not apply any additional water to the deck surface to aid his finishing operation. The unauthorized application of water will result in the rejection of that day's concrete placement."

Before beginning concrete operations, operate strike-off and finishing machines over the full length of the bridge segment to be paved. Test run with screed and the float-adjusted to their finishing positions. While testing machines, perform the following: check screed rails for deflection; make required adjustments; measure cover on slab reinforcement; check controlling dimensions of slab reinforcement and forms.

During the test run, use the same number of machines and finishing bridges, also, machines must be loaded with the same material and personnel that will be used during the production concrete placement, i.e., carrying production loads. Make necessary corrections at this time.

After placing and consolidating concrete, strike off the surface of concrete carefully, using the strike-off machine. Make uniform deck surface, true to required grade and cross-section.

When a strike-off machine has a wheelbase greater than 6 feet, float concrete by the following means: hand-operated longitudinal float board, or

finishing machine equipped with longitudinal float, or a rotating element followed by a drag float pan.

Use longitudinal float on finishing machine not less than 8 feet or more than 12 feet long. When both strike-off and floating are to be performed by machines, provide two separate machines with separate operators, one for strike-off and one for floating. Perform final float pass as far back of strike off as concrete workability will permit.

When a strike-off machine has a wheelbase of 6 feet or less, provide two separate hand-operated float boards or a finishing machine accepted by the Engineer. Place the first, hand-operated float in operation as soon as concrete surface condition permits. Operate the second, hand-operated float as far back from the first float as concrete workability permits. Apply provisions in this subsection on hand-operated float boards, to the two separate float boards specified for longitudinal floating.

Use longitudinal floats, either hand-operated or machine-operated, with the long axis of float parallel to the bridge's roadway centerline. Operate longitudinal floats with combined longitudinal and transverse motion. Operate rotating float with rotational and transverse movements. Use floats to plane off high areas and float material removed into low areas. Lap each pass with the previous pass by half-length of float. Continue floating until a smooth riding surface is obtained. Meet surface tolerances as specified herein.

In place of separate machines for strike-off and finishing, a single machine equipped with a rotating auger for strike-off and rotating element followed by a drag float pan for consolidating and finishing may be used or the Contractor may request acceptance of the use of substitute machines and methods from the Engineer. Submit previous project experience demonstrating that the proposed machine is capable of meeting specified requirements for satisfactory bridge deck and bridge approach slab finishing. When requested by the Engineer, submit three copies of manufacturer's operators and parts manual for dual-purpose alternative machine or other Engineer

requested information. Operate the machine in accordance with the manufacturer's manual.

Hand-operated float boards and transverse finishing bridges must meet requirements in accordance with Subsection 503.03(M)(3)(a)2. - Manual Finishing.

Use not less than two transverse finishing bridges unless directed otherwise by the Engineer. The Contractor may request a waiver from this requirement upon justification and acceptance from the Engineer.

Texture surfaces to meet skid resistance requirements. Submit proposed surface treatment methods to form skid-resistant texture. The Engineer may conduct skid resistance testing.

At an appropriate time, produce uniform, transverse pavement grooves by combing with a single row of spring metal tines. Make tines as follows: 1/32 inch in thickness; 3/32 inch in width; approximately 4 inches in length; and 3/4 inch centers along the row.

Position tines so that their widths are perpendicular to the groove direction. Make grooves 1/8 to 3/16 inch in depth.

After the surface sheen has disappeared; texture the pavement surface without tearing it. Texture final surface using artificial turf drag followed immediately by metal comb grooving device.

Use artificial turf made of molded polyethylene with synthetic turn blades measuring approximately 0.85 inches long and containing approximately 7,200 individual blades per square foot. Submit a sample of artificial turf at least twenty working days before placing PCC pavement.

Attach artificial turf to self-propelled equipment having external alignment control. The device must be a separate piece of equipment to be used exclusively for texturing operation and must not be attached to other paving-train equipment. Artificial turf must be full pavement width and of sufficient size that during finishing operation, approximately 2 feet of turf, parallel

to pavement centerline, is in constant contact with the pavement surface. Maintain downward pressure on pavement surface with turf, to achieve uniform texturing without measurable variations in pavement profile. The artificial turf drag must not be wavy and must be parallel to the centerline of the pavement.

In addition to the artificial turf drag, grooving (tining) must be done immediately after the artificial turf drag is performed. It must be done by a self-propelled mechanical device (grooving device) having an external alignment control and capable of grooving the entire width of pavement being paved in a single pass at a uniform speed. The grooving device must be a separate piece of self-propelled equipment to be used exclusively for texturing operation and must not be attached to other paving-train equipment. The metal comb which creates the tining marks must include a single line of evenly spaced, tempered spring steel tines of size and stiffness sufficient to produce grooves of specified dimensions in plastic concrete without edge slumping and severe surface tearing. Operate grooving device to produce a uniform pattern of grooves parallel to pavement centerline. The tines must not be left in the concrete when the tining machine stops. The tines must be lifted off the concrete and when ready to move in a forward motion lowered the tines down again. Leaving the tines in the fresh concrete can leave an indentation in the surface which must not be allowed. Attach the metal comb to a mechanical device capable of traversing the entire pavement width in a single pass at a uniform speed. Grooves in the hardened pavement surface must have a minimum spacing of 0.75 inches and must be 0.125 -inches wide by 0.125-inches deep. Provide hand combs with steel tines to use in event of mechanical comb breakdown.

Ramps, tapers, and miscellaneous areas may be textured manually when requested from the Engineer and accepted. Indicate in the paving plan the areas that will be manually textured.

Concrete bridge decks, concrete sleeper slabs, and concrete approach slabs must be textured longitudinally by mechanical grooving. Grooves must be cut into the hardened concrete using a mechanical

water-cooled diamond edge blade saw device which must produce straight uniformly spaced grooves spaced at 3/4 inch. The groove width must be 1/8 inch plus or minus 0.02 inch and the groove depth must be 1/8 inch plus 1/16 inch or minus zero inches. If grooves cannot be cut into a continuous longitudinal operation, the continuation of grooves must be aligned such that joints are not visible. If the bridge deck texture is required to be Next Generation Concrete Surface (NGCS) the concrete sleeper slabs, and concrete approach slabs must be textured using NGCS texture.

Before grooves are cut into the accepted hardened concrete, the upper 1/8 inch of the concrete surface for the bridge deck, approach slabs, and sleeper slabs must be removed by grinding. Grooving must be done after the concrete has attained sufficient strength to prevent spalling and raveling, and before the structure is opened to traffic.

A working drawing to control, collect and dispose of run-off water at an accepted off-site facility must be submitted to the Engineer.

The requirements of Section 411.03(N) Surface Test must apply to concrete bridge decks and concrete approach slabs. If additional grinding is required to achieve the specified profile index, or IRI the grinding must be performed before the mechanical grooving and must be done only in the longitudinal direction.

2. Manual Finishing. After placing and consolidating concrete, finish providing a uniform surface.

Use template or strike board to alternately tamp and strike off concrete and move forward with combined longitudinal and transverse motions. Leave uniform mortar or grout film of suitable consistency on the concrete surface after the last pass of the template or strike board.

Use template or strike board of rigid construction, capable of resisting deflection and distortion when in use.

Set supports or headers to required elevations to form bridge deck and bridge approach slab surfaces to line and grade indicated in the Contract Documents. Allow for anticipated settlement, camber, and deflection when computing elevations.

Furnish and install supports or headers such that they must not deflect under applied loads.

Supports or headers for concrete deck placement must be completely in place for the full length of concrete placement and must be secured before placing deck concrete.

Following the completion of the preliminary finish float the deck's concrete wearing surface from transverse bridges in a direction parallel to the roadway centerline.

Transverse finishing bridges, from which floats are to be operated, must completely span the bridge roadway area to be floated. Provide easily moveable finishing bridges of rigid construction, free of wobble and springing during floating operation. Use a sufficient number of finishing bridges to permit the floating operation to follow preliminary finishing operations without undue delay. Use not less than two transverse finishing bridges unless otherwise allowed by the Engineer.

Float with two separate floats made of acceptable material, each between 12 to 16 feet long. Use float boards 1 inch thick and 4 to 8 inches wide, with rigid ribs. Provide adjusting screws at not more than 24-inch centers between rib and float board. Maintain float board flat and true. Equip each float with adjustable handles at each end. Rib and truss each float, as necessary, to ensure the float board has a true, rigid surface.

Operate floats with combined longitudinal and transverse motions, planing off high areas and floating material removed into low areas. Lap each pass with the previous pass by half-length of float. Continue floating until a smooth surface is obtained.

Place the first float into operation as soon as the concrete surface condition permits. Keep the first float in continuous operation until subsidence has taken place. Operate the second float as far back of the first float as concrete workability permits.

After completing the floating operation, the texture deck surface must be in accordance with Subsection 503.03(M)(3)(a)1. - Machine Finishing.

(b) Sidewalks and Median Strips. Provide final finish for concrete sidewalks and median strips using wooden float and broom finish. Do not plaster the surface. Use an edging tool with a ¼-inch radius to finish the outside edges of the sidewalk. Finish sidewalk as a plane surface with 2-percent (allowable construction tolerance of plus or minus 0.4 percent maximum) cross slope towards the roadway or as shown in the Contract Documents. Test surface of concrete sidewalk with 12-foot straightedge. Correct any deviation above ¼ inch.

Wet down the base or ground onto which the concrete will be placed just before concrete placement. Remove any ponds or puddles or standing water before placing concrete.

For top surfaces of decks, ramps, and approach ramps for pedestrian structures and top surfaces of sidewalks provide an abrasive coating to the surface.

Create abrasive coating by sprinkling 1/4 pound of grain per square foot, uniformly, on fresh concrete. Finish the surface with a wooden float.

If reinforcement is required, the reinforcement must be supported off the base or ground to the location shown in the Contract Documents before the concrete placement starts. Enough support must be given so there is no sag in the reinforcement. Pulling up the reinforcement during the concrete placement or supporting the reinforcement with piles of concrete is not an acceptable method of support and all concrete placed in such a manner must be removed and replaced at the Contractor's cost.

(N) Cleaning Up. Upon completion of finishing operation and before prefinal inspection of the structure, remove falsework, excavated or useless material, rubbish, temporary structures, facilities, and temporary buildings. Replace or restore public or private fences or property damaged during

prosecution of work. Leave bridge site and adjacent highway in neat and presentable condition. Remove excavated material or falsework placed in the stream channel during construction before the pre-final inspection.

(O) Tolerance for Concrete Construction and Materials. Comply with the stricter tolerances specified in the specifications, ACI 117 Standard Specifications for Tolerance for Concrete Construction and Materials, PCI Tolerance for Precast and Prestressed Concrete, and PCI MNL-116 Manual for Quality Control of Plants and Production of Structural Precast Concrete Products.

The Engineer shall have the right to reject all work which is not in compliance with the contract documents.

503.04 Measurement. Concrete will be paid on a lump sum basis. Measurement for payment will not apply.

The Engineer will not make deductions for the volume occupied by reinforcing steel, piles, floor drains, weepholes, timber bumpers, pipes less than eight (8) inches, conduits, or expansion joint materials.

503.05 Payment. The Engineer will pay for the accepted quantities of concrete complete in place on a contract lump sum basis. Payment will be full compensation for work prescribed in this section and the contract documents.

The contract unit price paid shall be full compensation for the concrete; for placing, curing and finishing; for furnishing materials including admixtures and cement (including extra cement added to concrete deposited under water); for furnishing and installing drains, scuppers, premolded joint fillers, joint seals, waterproofing at construction joints, waterstops, pipes and conduits; for furnishing and installing anchor bolts, structural shapes and other similar items; for forms, form lining and falsework or centering, bearing pads, structural steel bearing plates; and for equipment, tools, labor, materials and incidentals necessary to complete the work.

The Engineer will pay for the following pay item when included in the proposal schedule:

Pay Item	**Pay Unit**
Concrete for _____ (Class _____ if applicable)	Lump Sum

The Engineer will pay for excavation and backfill for foundations in accordance with and under Section 205 – Excavation and Backfill for Bridge and Retaining Structures.

The Engineer will pay for reinforcing steel in accordance with and under Section 602 – Reinforcing Steel."

END OF SECTION 503

Amend Section 506 – Bearing and Expansion Plates to read as follows:

"SECTION 506 – BRIDGE BEARINGS

506.01 Description. This section describes furnishing and placing of bridge bearing assemblies comprised of steel reinforced elastomeric bearing pads vulcanized to the steel masonry plate and sole plate as indicated in the design drawings (if applicable) and including all necessary hardware to secure it to the steel girders and steel trestle/concrete abutment support. The work also includes placement of epoxy grout beneath the bearing assemblies at the trestles locations only.

506.02 Materials.

Elastomeric Bearing Pad	712.09(C)
Structural Steel	713.01

506.03 Construction. Submit shop drawings and mill test reports, and obtain the Engineers acceptance of those submittal items before incorporating bearings into the work. Set bearings at correct elevation and in position in accordance with the contract documents and in such a manner that full and uniform bearing is provided over entire contact area. Make provisions to keep bearings in correct position during epoxy grout placement and include those provisions in the shop drawings.

506.04 Measurement. The Engineer will measure installed and in place bridge bearings per each as shown on the proposal schedule.

506.05 Payment. The Engineer will pay for the accepted pay items listed below at the contract price per pay unit, as shown in the proposal schedule. Payment will be full compensation for the work prescribed in this section and the contract documents.

Pay Item	Pay Unit
Fixed Elastomeric Bearing Assembly at Piers	Each
Expansion Elastomeric Bearing Assembly at Piers	Each
Fixed Elastomeric Bearing Assembly at Abutment	Each
Expansion Elastomeric Bearing Assembly at Abutment	Each"

END OF SECTION 506

Make this Section a part of the Standard Specifications:

"SECTION 515 – DECK EXPANSION JOINT

515.01 Description. This work shall consist of furnishing and installing all materials for a deck expansion joint system, in accordance with the contract plans and as specified herein. The Contractor shall provide all the necessary hardware including bolt assemblies or studs, epoxies and sealants, neoprene seal, railing sections, and other accessories and all necessary tools for the proper installation of the joint. All work and materials for the installation of the joint are to comply with the written instructions of the joint manufacturer. All work done shall conform to the approved shop drawings.

515.02 Materials. The structural sealing joint system shall be designed to withstand structural movement and harsh environmental conditions and provide a leak proof seal across the joint. The system shall consist of a preformed neoprene profile, bonded with a lubricant adhesive. The system shall meet the requirements for horizontal movement and installation width as shown on the plans. Provide seal profile that satisfies project requirements including movement and water tightness. Install all components utilizing an adhesive as recommended by the manufacturer.

The neoprene seal shall be continuous over the full length of the joint.

The Contractor shall furnish a manufacturer's certification that the materials proposed have been pre-tested and will meet the requirements as set forth in the specification.

(1) Elastomeric Seal. The structural sealing joint profile shall be preformed and manufactured from an extruded neoprene compound exhibiting the physical properties listed in the table below:

PHYSICAL PROPERTIES	**TEST METHOD**	**REQUIREMENT**
Tensile Strength	ASTM D412	2000 psi
Elongation @ break	ASTM D412	250%, min
Hardness, Type A Durometer	ASTM D2240	65 +/-5% points
Low temp stiffening 7 days @ 14ºF		0 - +15
Oven Aging 70 hrs @ 212ºF	ASTM D573	
Tensile Strength		20% loss max

PHYSICAL PROPERTIES	**TEST METHOD**	**REQUIREMENT**
Oil Swell, 70 hrs @ 104ºF	ASTM D471	45%
Ozone Resistance, 20% strain	ASTM D1149	No Cracks

(2) Adhesive. Elastomeric seal shall be installed utilizing a lubricant adhesive which meet the requirements of ASTM D2835. The lubricant-adhesive must contain a minimum of 22% solids, be uniform, contain no lumps, have the correct viscosity, and have a drying time between 8 and 20 minutes, or approved equal.

The Contractor shall submit a detailed report of the joint he proposes to use, listing its compliance to the above criteria, its performance at prior installations, its advantages and disadvantages and any other requirements deemed necessary by the Engineer. The Engineer is the sole authority for the determination of whether or not a proposed joint meets the requirements of the plans and specification.

515.03 Construction Requirements.

(A) General. The joint shall maintain complete water tightness even at the barrier walls. The seal gland shall not make contact with wheel or tire traffic during and after installation. The seal gland shall be continuous over the full length of the joint. The seal gland shall be readily replaceable if damaged.

The expansion system shall be installed to provide a smooth riding surface over the joint.

Prior to manufacture of the joint, the Contractor shall submit to the Engineer for review and acceptance shop drawings of the joint showing manufacturer, model, complete details of the type of joint, materials, installation equipment, which is to be used, and the manufacturer's installation instructions. The shop drawings shall conform to the details shown on the contract documents. Any variations, suggested by the manufacturer or the Contractor must be justified, denoted, and highlighted in the shop drawings and shall be submitted to the Engineer for acceptance before manufacture. The Engineer is not obligated to accept the variation.

At the discretion of the Engineer, the manufacturer may be required to furnish a representative sample of material to be supplied in accordance with the project specifications.

Where indicated and noted on the contract documents, install structural sealing joint system in a neat and workmanlike manner. All materials, debris, etc. which may be detrimental to effectively sealing the joint and to the bonding of the joint must be totally removed from the gap before the start of the installation of the joint. The joint interfaces must first be cleaned by disc grinding or sandblasting and then vacuumed or blown with dry, oil free compressed air before the two-component epoxy adhesive is mixed and applied.

Pressurization is done through a valve with cap system. The profile is pressurized during installation and curing time of adhesive to assure complete bonding throughout gap/profile surfaces. Air pressure will bleed itself with time or air valve can be released at any time after 24 hours of installation.

Structural sealing joint system shall be set to the proper width for ambient temperature at the time of installation and shall be installed in strict accordance with the manufacturer's written instructions along with the advice of their qualified representative.

Steel surfaces must be Society for Protective Coatings (SSPC) SP-10 near white, metal blast clean immediately prior to installing the joint seal. This is a requirement in new or existing construction. All oxidation must be removed and "white steel" revealed. Steel surfaces will be aggressively disc ground to roughen and abrade the surface to achieve the "white steel" condition.

On galvanized steel surfaces, the galvanizing material must be removed to look like "bare white steel." Immediately install the joint seal into the steel joint gap to avoid oxidation of the steel surface.

Prior to the installation, the joint seal shall be uncoiled from shipment packaging and allowed to reach a relaxed condition. The joint seal shall be cut to the correct length of the appropriate gap for installation, without pulling or exerting excess tension. Seal both ends of the joint seal (airtight) and install air valve. Inflate joint seal to assure there are no leaks in the joint seal. Deflate before installation.

Clean and abrade sides of joint seal per the manufacturer's instructions. The serrated sidewalls should be cleaned with a conditioning agent recommended by the manufacturer. The two-component epoxy adhesive should be thoroughly mixed until a uniform color result. Apply the epoxy adhesive to the inside of the joint gap to a sufficient depth; so that when the joint seal is installed, the adhesive is in contact with the serrated sidewalls of the seal. The adhesive should then be applied to the joint seal so that it covers the entire serrated sidewall of the joint seal.

The joint seal should then be gradually inserted into the joint gap, without stress or compression, positioning seal to the proper depth. Pressurization should be done through the air valve with a heavy pump. Pressurization should be applied slowly so as not to cause the joint to squeeze adhesive out of the flanges on the sides of the joint.

Use cleaning methods Revised as recommended by the manufacturer to remove excess adhesive from the joint seal.

Allow epoxy adhesive to cure (usually 24 hours) and remove valve to bleed off air pressure.

515.04 Method of Measurement. Deck expansion joints will be measured by the actual linear feet installed in place complete, measured at the top surface of the joint.

515.05 Basis of Payment. The accepted quantities of the deck expansion joints will be paid for at the respective contract unit price per linear foot in the proposal, which price and payment shall be full compensation for furnishing and installing all materials, including neoprene seal glands, epoxies, anchorage devices, all necessary tools and equipment and all labor and incidentals necessary to complete the work.

Payment will be made under:

Pay Item	**Pay Unit**
Deck Expansion Joint Seal	Linear Foot”

END OF SECTION 515

Amend Section 601 – Structural Concrete to read as follows:

"SECTION 601 - STRUCTURAL CONCRETE

601.01 Description. This section describes structural concrete, which consists of Portland Cement, fine aggregate, coarse aggregate, and water. It may also include adding admixtures for the purpose of entraining air, retarding or accelerating set, tinting, and other purposes as required or permitted. All concrete designs for structural concrete to be placed on HDOT Highway projects must use technology to reduce the embodied carbon footprint of concrete used in the highway infrastructure. e.g., carbon dioxide mineralization or equivalent technology such as C-S-H nanoparticle-based strength-enhancing admixture (CSH-SEA), or technology or material that allows the reduction in the size of the carbon footprint of the mix, e.g., strength improving admixtures, supplementary cementitious materials (SCMs), or blended hydraulic cements such as Portland-limestone cement, or other Engineer accepted methods that can reduce the embodied carbon footprint of the concrete.

601.02 Materials.

Portland Cement	701.01
Fine Aggregate for Concrete	703.01
Coarse Aggregate for Portland Cement Concrete	703.02
Admixtures	711.03
Water	712.01

Use coarse aggregate for lightweight concrete conforming to ASTM C330 except Sections 5, 7 and 9.

601.03 Construction.

(A) Quality Control. Portland Cement concrete production requires Contractor responsibility for quality control of materials during handling, blending, mixing, curing, and placement operations.

Sample, test, and inspect concrete to ensure quality control of component materials and concrete. Sampling and testing for quality control in accordance with standard methods shall be performed by certified ACI Concrete Field Technician Grade I. Perform quality control tests for slump, air content, temperature, and unit weight during production of structural concrete other than concrete for incidental construction. Submit quality control test results.

(B) Design and Designation of Concrete. Design concrete mixture for concrete work specified. Submit mix design using State Highways Division form DOT 4-151 or an Engineer accepted equivalent form. Do not start work until the Engineer accepts mix design. The Engineer will accept concrete mix design using information given in Table 601.03-1 - Design of Concrete, and other pertinent requirements.

Whenever 28-day compressive strength, f'_c, is 4,000 psi or greater, designate concrete by required minimum 28-day compressive strength.

The 28-day compressive strength, f'_c, less than 4,000 psi listed in Table 601.03-1 – Design of Concrete, is for design information and designation of class only.

Proportion concrete designated by compressive strength such that concrete conforms to required strength.

Design concrete placed in bridge decks and pavements exposed to traffic wear, with air content of 3 percent, including entrapped and entrained air. Maintain air content for plastic concrete within tolerance of 1 percent air content, plus or minus, during the work.

Class A concrete shall be used when type of concrete is not indicated in the contract documents.

Design concrete as specified in Table 601.03-1 – Design of Concrete.

TABLE 601.03-1 - DESIGN OF CONCRETE (800 Maximum Cement Content lbs. /c.y.)							
Class of Concrete	**28-Day Strength** f'c, psi.	**Minimum Cement Content lbs. /c.y.**	**Maximum Water-Cement Ratio, lb./lb.**	**Minimum Cement Content with Mineralized CO_2 lbs./c.y.**	**Maximum Water-Cement Ratio with Mineralized CO_2 lb./lb.**	**Minimum Cement Content with SCM lbs. /c.y.**	**Maximum Water-Cement Ratio with SCM lb./lb.**
A	3000	532	0.59	504	0.62	NA	NA
B	2500	475	0.66	450	0.70		
C	2000	418	0.75	396	0.79		
D	1500	380	0.85	360	0.87		
BD	3750	610	0.49	NA	NA		
SEAL	3000	610	0.55	NA	NA		
Designated by Strength f'_c or $^*f'_r$	As Specified	610	0.49	NA	NA	NA	NA
$^*f'_r$ = Specified Modulus of Rupture							

Structural Concrete Design – The Carbon Dioxide mineralization process is our preferred method for CO_2 footprint reduction for structural concrete. Other Carbon Dioxide reduction options, materials, or technologies may be considered for structural concrete mix designs if a Carbon Dioxide mineralization system on the island is unavailable, or Carbon Dioxide is in short supply. Other options to reduce concrete's Carbon Dioxide footprint includes but are not limited to adding Supplementary Cementitious Materials, admixtures, blended hydraulic cements, or a combination thereof. Additional means and methods of CO_2 footprint reduction not listed herein may be used if their use can be justified and accepted by the Engineer.

The reduced carbon footprint concrete mix design for all islands must have a reduction of Portland Cement content and still comply with the concrete design strength and other durability requirements as specified. See Table 601.03-1 Design of Concrete's specified limits for cement content, water cement ratio, and other properties when using CO_2 mineralization.

It should be noted that in some cases the use of SCMs in mixes may not result in it having the same strength curve as their cement counterpart and more curing time will be needed to meet and exceed the design strength. In

such cases, the Contractor may request a waiver from the 28-day limit. Submit laboratory test data with the request to the Engineer. The waiver may be granted on a case-by-case basis, e.g., mass concrete. The Engineer reserves the right to limit the amount of SCMs in the mix or reject the mix design.

Use the absolute volume method to proportion concrete materials in accordance with requirements of concrete designated by class, cement content in pounds per cubic yards, or specified 28-day compressive strength. Use absolute volumetric proportioning methods as outlined in the American Concrete Institute (ACI) Standard 211.1, "Recommended Practices for Selecting Proportions for Normal and Heavyweight Concrete."

Use coarse aggregate size No. 57 (one inch to No. 4) or No. 67 (3/4 inch to No. 4) for concrete. For concrete placed in bottom slabs and stems of box girders, use No. 67 size aggregate. Smaller size aggregates may be permitted when encountering limited space between forms and reinforcement or between reinforcement when accepted by the Engineer in writing. Maximum aggregate size shall not be greater than 1/3 of the space between reinforcing steel bars or reinforcing steel and the form.

Use the following standard methods in Table 601.03-2 – Standard Methods for determining compliance with requirements indicated in this subsection:

TABLE 601.03-2 – STANDARD METHODS	
Sampling Fresh Mixed Concrete	AASHTO T 141
Mass Per Cubic Meter (Cubic Foot) Yield and Air Content (Gravimetric) of Concrete	AASHTO T 121
Slump of Hydraulic Cement Concrete	AASHTO T 119
Air Content of Freshly Mixed Concrete by the Pressure Method	AASHTO T 152
Specific Gravity and Absorption of Fine Aggregate	AASHTO T 84
Specific Gravity and Absorption of Coarse Aggregate	AASHTO T 85
Temperature of Freshly Mixed Portland Cement Concrete	ASTM C1064
Making and Curing Concrete Test Specimens in the Field	AASHTO R-100 Formerly T 23

Compressive Strength of Molded Concrete Cylindrical Specimens	AASHTO T 22 (4 inch by 8 inch or 6 inch by 12 inch cylinders)
Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading)	AASHTO T 97

When concrete is designated by compressive strength, f'_c, or flexural strength, f'_r, or includes CO2 Mineralization technology, CSH-SEA or SCMs, the Engineer will require prequalification of materials and mix proportions proposed for use before placing such concrete. The Engineer will prequalify concrete based on past performance records using statistical computations of population sizes and (n-1) weighting, or trial batch test reports in compliance with computed minimum average strength for material and mix proportions. The Engineer will determine minimum average strength on probability of not more than one in 20 tests falling below specified strength for the following conditions:

(1) When past performance records are available, furnish the following documented performance records:

(a) Minimum of 15 consecutive 28-day strength tests from projects having same materials and mix proportions.

(b) Two groups totaling 30 or more test results representing similar materials in which mix proportion strengths are within 20 percent of specified strength, from data obtained within one year of proposed use.

The Engineer will analyze performance records to establish standard deviation.

(2) When sufficient past performance records are not provided, the Engineer will assume current standard deviation to be 500 psi for compressive strength, f'_c, and 50 psi for flexural strength, f'_r.

Unless sufficient performance records are available from other projects at DOT Materials Testing and Research Branch (MTRB), submit test performance records or trial test reports for prequalifications, based on data of the most recent tests made on the concrete of the proposed mix design. The data must be from tests that have been performed within one year of the proposed use and done at an accredited material testing laboratory by certified material testing personnel.

When shrinkage reducing admixtures are used, submit test results showing compliance to the Contract Documents' requirements.

Include the following information in test data and trial batch test reports: date of mixing; mixing equipment and procedures used; size of batch in cubic yards and weight, type, and source of ingredients used; slump of concrete; air content of concrete when using air entraining agent; age at time of testing; and strength of concrete cylinders tested.

Show that concrete strength tests equal or exceed minimum average strength in trial test reports. Test is average 28-day test results of five consecutive concrete cylinders or concrete beams taken from single batch. No cylinder or beam shall have strength less than 85 percent of minimum average strength.

Submit test data and trial test reports signed by official of firm that performed tests.

The Engineer reserves the right to stop work when a series of low strength tests occur. Do not continue concrete work until cause is established and the Engineer is informed of and accepts, necessary corrective action to be taken.

(C) Batching. Measure and batch materials in accordance with the following provisions:

(1) Portland Cement. Either sacked or bulk cement may be used. Do not use fraction of sack of cement in concrete batch unless cement is weighed.

Weigh bulk cement on weighing device accepted by the Engineer. Seal and vent bulk cement-weighing hopper properly to preclude dusting during operation. Do not suspend discharge chute from weighing hopper. Arrange discharge chute so that cement will not lodge in hopper or leak from hopper.

Batching accuracy shall be within 1 percent, plus or minus, of required weight.

(2) Water. Measure water by volume or by weight. Use readily adjustable device for measurement of water, with accuracy within 1 percent, plus or minus, of quantity of water required for batch. Arrange device so that variable pressure in water supply line does not affect measurements. Equip measuring tanks with outside taps and valves or other accepted means to allow for checking calibration.

(3) Aggregates. When storing and stockpiling aggregates, avoid separation of coarse and fine particles within each size, and do not

intermix various sizes before proportioning. Protect stored or stockpiled aggregates from dust or other foreign matter. Do not stockpile together, aggregates from different sources and of different gradations.

When transporting aggregates from stockpiles or other sources to batching plant, ensure uniform grading of material is maintained. Do not use aggregates that have become segregated or mixed with earth or foreign matter. Stockpile or bin aggregates at least 12 hours before batching. Produce or handle aggregates by hydraulic methods and wash and drain aggregates. If aggregates exhibit high or non-uniform moisture content, the Engineer will order storage or stockpiling for more than 12 hours.

Proportion aggregates by weight, with the exception that aggregates in concrete for minor structures, curbs, and sidewalks may be proportioned by either volume or weight. For volumetric proportioning, use measuring boxes of known capacity to measure quantity of each aggregate size.

Use batch weight based on dry materials plus total weight of moisture (both absorbed and surface) contained in aggregate. Measure individual aggregates to within 2 percent, plus or minus, of required weight, and total weight of aggregates to within 1 percent, plus or minus, of required weight.

(4) Admixtures. All admixtures shall be compatible with each other. Admixtures which significantly increase the drying shrinkage or creep in the concrete may be rejected by the Engineer. Store, proportion, and dispense admixtures in accordance with the following provisions:

(a) Liquid Admixtures. Dispense chemical admixtures, air entraining admixtures, and corrosion inhibiting admixtures in liquid form. Use mechanical dispensers for liquid admixtures with sufficient capacity to measure prescribed quantity for each batch of concrete. Include graduated measuring unit in each dispenser to measure liquid admixtures to within 5 percent, plus or minus, of prescribed quantity for each batch. Read graduations accurately from point of measuring unit, and control proportioning operations to permit visual check of batch accuracy before discharging. Mark each measuring unit clearly for type and quantity of admixture.

Arrange with supplier to provide sampling device consisting of valve located in safe and accessible location for sampling admixtures.

When using more than one liquid admixture for concrete mix, use separate measuring unit for each liquid admixture and dispense separately to avoid interaction that may interfere with admixture efficiency and adversely affect concrete. Dispense liquid admixture by injecting so as not to mix admixture at high concentrations.

When using liquid admixtures in concrete that is completely mixed in paving or continuous mixers, operate dispensers automatically with batching control equipment. Equip such dispensers with automatic warning system that shall provide visible or audible signals at points where proportioning operations are controlled, when the following occurs:

a. Quantity of admixture measured for each batch of concrete varies from pre-selected dosage by more than 5 percent; or

b. Entire contents of measuring unit from dispenser is not emptied into each batch of concrete.

Unless liquid admixtures are added to batch with pre-measured water, discharge liquid admixtures into stream of water that disperses admixtures uniformly throughout batch. An exception is that air-entraining admixtures may be dispensed directly into moist sand in batching bins, provided adequate control of concrete air content can be maintained.

Measure and disperse special admixtures, as recommended by admixture manufacturer, and as accepted by the Engineer. Special admixtures include high-range water reducers requiring dosages greater than capacity of conventional dispensing equipment. For site-added, high-range water reducers, use calibrated, portable dispenser supplied by manufacturer.

(b) Mineral Admixtures. Protect mineral admixtures from exposure to moisture until used. Pile sacked material of each shipment to permit access for tally, inspection, and identification.

Provide adequate facilities to ensure that mineral admixtures meeting specified requirements are kept separate from other mineral admixtures and that only specified mineral admixtures are allowed to enter into the work. Provide safe and suitable facilities for sampling mineral admixtures at weigh hopper or in feed line immediately in advance of hopper.

Incorporate mineral admixtures into concrete using equipment conforming requirements for Portland Cement weigh hoppers and charging and discharging mechanisms specified in ASTM C94 and Subsection 601.03(C) - Batching.

When concrete is completely mixed in stationary paving or continuous mixers, weigh mineral admixture in separate weigh hopper. Introduce mineral admixture and cement simultaneously into mixer, proportionately with aggregate.

When interlocks are required for cement-charging mechanisms, and cement and mineral admixtures are weighed cumulatively, interlock their charging mechanisms to prevent introduction of mineral admixture until mass of cement in weigh hopper is within tolerances specified in Subsection 601.03(C)(1) - Portland Cement.

In determining maximum quantity of free water that may be used in concrete, consider mineral admixture and supplementary cementitious materials (SCMs) to be cement.

(5) Bins and Scales. At batching plant, use individual bins, hoppers, and scale for each aggregate size. Include separate bin, hopper, and scale for bulk cement and fly ash.

Except when proportioning bulk cement for pavement or structures, cement weigh hopper may be attached to separate scale for individual weighing or to aggregate scale for cumulative weighing. If cement is weighed cumulatively, weigh cement before other ingredients.

When proportioning for pavement or structures, keep bulk cement scale and weigh hopper separate and distinct from aggregate weighing equipment.

Use springless-dial or beam-type batching scales. When using beam-type scales, make provisions to show operator that required load in weighing hopper is approaching. Use devices that show condition within last 200 pounds of load and within 50 pounds of overload.

Maintain scale accuracy to 0.5 percent throughout range of use. Design poises to lock to prevent unauthorized change of position. Use scales inspected by the State Measurement Standards Branch of the Department of Agriculture to ensure their continued accuracy. Provide not less than ten 50-pound weights for testing scales.

Batching plants may be equipped to proportion aggregates and bulk cement by automatic weighing devices.

(6) Batching and Hauling. When mixing is to be performed at work site, transport aggregates from batching plant to mixer in batch boxes, vehicle bodies, or other containers of adequate capacity and construction. Use partitions to separate batches and prevent spilling from one compartment to another while in transit or during dumping.

Transport bulk cement to mixer in tight compartments carrying full quantity of cement required for batch. Once cement is placed in contact with aggregates, batches shall be mixed and placed within 1-1/2 hours of contact. Cement in original shipping packages may be transported on top of aggregates. Ensure that each batch contains number of sacks required by job mix.

Deliver batches to mixer intact. Charge each batch into mixer without loss of cement. When carrying more than one batch on truck, charge batch into mixer without spilling material from one batch compartment into another.

(D) Mixing. Mix concrete in mechanically operated mixers. When accepted by the Engineer, batches that do not exceed 1/3 cubic yard may be hand-mixed in accordance with methods described at end of this subsection.

Use stationary or truck mixers that distribute materials thoroughly and produce concrete uniform in color and appearance. When there is variation in mixed concrete attributable to worn pickup or throw-over blades, the Engineer will inspect mixer. If inspection reveals that blades are worn more than one inch below original height of manufacturer's design, repair or replace blades. Upon request, make copy of manufacturer's design, showing dimensions and arrangement of blades.

Charge batches into central or truck mixers so that portion of mixing water enters ahead of cement and aggregates. Deliver uniform flow of water. Place entire amount of batch water in mixer by end of first quarter of mixing period. When mixers with multiple compartment drums are used, time required to transfer material between compartments will be included as mixing time. Use drum rotation speed as designated by manufacturer. If mixing does not produce concrete of uniform and smooth texture, provide additional revolutions at same speed until thorough mixing of each concrete batch is attained. Begin measuring mixing time from time cement, aggregates, and 60 percent of water are in drum. Do not exceed manufacturer's rated capacity for volume of concrete mixed in each batch.

Equip central or truck mixers with attachment for automatically timing

mixing of each concrete batch. Timing device shall include automatic feature for locking discharge chute and device for warning operator when required mixing duration has been met. If timing or locking device fails to operate, immediately furnish clock or watch that indicates seconds, to mixer operator. If timing device is not repaired within three days after becoming inoperative, shut down batching operation until timing device is repaired.

For stationary mixers, use mixing time between 50 seconds and 5 minutes. Select mixing time, as necessary, to produce concrete that meets uniformity criteria when tested in accordance with Section 11.3.3 of ASTM C94. The Contractor may designate mixing time for which uniformity tests are to be performed, provided mixing time is not less than 50 seconds or more than 5 minutes. Before using concrete for pavements or structures, mix concrete to meet specified uniformity requirements. The Contractor shall furnish labor, sampling equipment, and materials required for conducting uniformity tests of concrete mixture. The Engineer will furnish required testing equipment, including scales, cubic measure, and air meter; and will perform tests. The Engineer will not pay separately for labor, equipment, materials, or testing, but will consider the costs incidental to concrete. After batching and mixing operational procedures are established, the Engineer will not allow changes in procedures without the Contractor re-establishing procedures by conducting uniformity tests. Repeat mixer performance tests whenever appearance of concrete or coarse aggregate content of samples is not conforming to requirements of ASTM C94. For truck mixers, add four seconds to specified mixing time if timing starts as soon as skip reaches its maximum raised position.

Unless otherwise indicated in the contract documents or accepted by the Engineer, concrete shall be mixed at proportioning plant. Operate mixer at agitating speed while in transit. Concrete may be truck-mixed only when cement or cement and mixing water are added at point of delivery. Begin mixing truck-mixed concrete immediately after introduction of mixing water to cement and aggregates, or introduction of cement to aggregates.

Inclined-axis, revolving drum truck mixers shall conform to Truck Mixer, Agitator and Front Discharge Concrete Carrier Standards TMMB 100-01, 15th Revision, published by Truck Mixer Manufacturers Bureau. Truck mixers shall produce thoroughly mixed and uniform mass of concrete and shall discharge concrete without segregation.

Manufacturer's standard metal rating plate shall be attached to each truck mixer, stating maximum rating capacity in terms of volume of mixed concrete for various uses and maximum and minimum mixing speeds. When using truck mixers for mixing, adhere to maximum capacity shown on metal rating plate for volume of concrete in each batch.

Operate truck mixers at mixing speed designated by manufacturer, but at not less than 6 or more than 18 revolutions per minute. Mix truck-mixed concrete initially between 70 and 100 revolutions at manufacturer-designated mixing speed, after ingredients, including water, are in mixer. Water may be added to mixture not more than two times after initial mixing is completed. Each time that water is added, turn drum an additional 30 revolutions or more at mixing speed until concrete is mixed uniformly.

When furnishing shrink-mixed concrete, transfer partially mixed concrete at central plant to truck mixer. Apply requirements for truck-mixed concrete. The Engineer will not credit number of revolutions at mixing speed for partial mixing in central plant.

When accepted by the Engineer, hand mixing may be allowed. The entire concrete placement at one location shall not exceed 1/3 cubic yard. It shall be hand mixed on a watertight, level platform. Use no aluminum to construct platform. Measure proper amount of coarse aggregate in measuring boxes and spread on platform. Spread fine aggregate on that coarse aggregate layer. Limit coarse and fine aggregate layers to total depth of one foot. Spread dry cement on this mixture. Turn whole mass not less than two times dry. Add sufficient clean water, distributed evenly. Turn whole mass again, not less than three times, not including placing in carriers or forms.

(E) Transporting Mixed Concrete. Transport central-mixed concrete to delivery point in truck agitators or truck mixers operating at speed designated by equipment manufacturer as agitating speed; or in non-agitating hauling equipment, provided consistency and workability of mixed concrete upon discharge at delivery point is suitable for placement and consolidation in place; and provided mixed concrete after hauling to delivery point conforms to uniformity criteria when tested as specified in ASTM C94.

For revolving drum truck mixers transporting central-mixed concrete, limit concrete volume to manufacturer's rated capacity for agitator operation. Maintain agitating speed for both revolving drum mixers and revolving blade type agitators as designated on manufacturer's data plate. Equip truck mixers or truck agitators with electrically or mechanically actuated counters. Actuate counters after introducing cement to aggregates.

Bodies of non-agitating hauling equipment shall be smooth, watertight, metal containers equipped with gates to permit control of concrete discharge. Protect open-topped haul vehicle against weather with cover accepted by the Engineer.

When hauling concrete in non-agitating trucks, complete discharge within 30 minutes after introducing mixing water to cement and aggregates.

When truck mixer or agitator is used for transporting central-mixed concrete to delivery point, complete discharge within 1-1/2 hours, or before 250 revolutions of drum or blades, whichever comes first after introduction of mixing water to cement and aggregates, or cement to aggregates. For truck-mixed concrete, complete concrete discharge within 1-1/2 hours, or before 300 revolutions of drum or blades, whichever comes first. These limitations are permitted to waived if concrete is of such slump after the 1-1/2 hour time or 300-revolution limit has been reached, that it can be placed, without addition of water to the batch.

Submit delivery tickets from manufacturers of truck-mixed concrete and central-mixed concrete with each truckload of concrete before unloading at jobsite. Printed, stamped, or written delivery ticket shall include the following information:

(1) Name of concrete plants.

(2) Serial number of ticket.

(3) Date and truck number.

(4) Name of Contractor.

(5) Specific project, route, or designation of job (name and location), and truck overweight permit number when required.

(6) Specific class or designation of concrete in accordance with contract documents.

(7) Quantity of concrete in cubic yards.

(8) Time of loading batch or mixing of cement and aggregates.

(9) Water added by receiver of concrete and receiver's initials.

(10) Information necessary to calculate total mixing water added by producer. Total mixing water includes free water on aggregates, water, and water added by truck operator from mixer tank.

(11) The amount of water held back from the batched concrete mix that can be added to the concrete mix at the project and still not cause the mix to exceed the accepted mix design water to cement ratio.

(12) Readings of non-resettable revolution counters of truck mixers after the introduction of cement to aggregates, or introduction of mixing water to cement aggregates

(13) Supplier's mix number or code and include the mix design name.

Furnish additional information designated by the Engineer and required by job specifications upon request.

(F) Consistency. Regulate quantity of water used in concrete mixes so that concrete consistency, as determined by AASHTO T 119 test method, is within nominal slump range specified in Table 601.03-3 - Slump for Concrete or as stated on the accepted concrete mix design. If concrete slump exceeds nominal slump, adjust mixture of subsequent batches. If slump exceeds maximum slump, the Engineer will reject concrete unless deemed satisfactory for its use.

The Engineer will also reject harsh or unworkable concrete that cannot be properly placed. Remove rejected concrete at no increase in contract price or contract time.

Slump for concrete shall be as specified in Table 601.03-3 – Slump for Concrete.

TABLE 601.03-3 - SLUMP FOR CONCRETE

Type of Work	Nominal Slump Inches	Maximum Slump Inches
Concrete Pavements	0 – 3	3-1/2
Reinforced Concrete Structures: Sections Over 12 Inches Sections 12 Inches Thick or Less	 0 – 4 2 – 5	 5 6
Non-Reinforced Concrete Facilities	1 – 3	4
Concrete Placed Underwater	6 – 8	9
Bridge Decks	0 – 3	3½

*A waiver to the maximum slump requirement may be requested from the Engineer. Submit justification for the granting of the waiver request along with how the mix design's components ensure that the mix will not segregate.

In adverse or difficult conditions that may affect the placement of concrete, the above slump limitations may be exceeded for placement workability, with the addition of admixture conforming to Subsection "711.03 – Admixtures", if the design mix redesign is accepted by the Engineer in writing and the water-cement ratio is complies with Contract Documents requirements. Provide additional cement and water, or admixture at no increase in the contract price or contract time.

If the slump of the ready mix concrete upon delivery is below the design slump, water may be added provided:

(1) Water shall not be added to the concrete if more than ¼ cubic of concrete has been discharged from the mixer.

(2) Water may be added only up to 30 minutes after the average travel time to the jobsite.

(3) The maximum slump, the maximum water/cement ratio, and the maximum water per cubic yard shall not be exceeded.

(4) Not more than 1 ½ gallons of water per cubic yard shall be added to the concrete, but not more than the amount of "held-back" water.

(5) The amount of "held-back" water from the approved mix design shall be shown on the delivery ticket.

In adverse or difficult conditions that may affect placement of concrete, the above slump limitations may be exceeded for placement workability, with the addition of admixture conforming to Subsection 711.03 - Admixtures, if accepted by the Engineer in writing and provided water-cement ratio is maintained. Provide additional cement and water, or admixture at no increase in contract price or contract time.

(G) Forms. Construct forms in accordance with applicable sections.

(H) Placing Concrete. Place concrete in accordance with applicable sections.

(I) Finishing Concrete Surfaces. Finish concrete surfaces in accordance with applicable sections.

(J) Curing Concrete. Cure concrete in accordance with applicable sections.

601.04 Measurement. The Engineer will measure concrete in accordance with the applicable sections.

601.05 Payment. The Engineer will pay for the accepted concrete under the applicable sections."

END OF SECTION 601

SECTION 602 - REINFORCING STEEL

Make the following amendments to said Section:

(I) Amend **Subsection 602.03(D) Placing and Fastening** by revising the first sentence of the first paragraph between lines 58 and 60 to read as follows:

"Unless otherwise indicated in the contract documents, place and fasten reinforcing steel in accordance with the CRSI Placing Reinforcing Bars and the CRSI *Manual of Standard Practice*."

(II) Amend **Subsection 602.03(D) Placing and Fastening** by adding the following sentence to Note 1 in Table 602.03-1 Placement Tolerances at line 68:

"Note 1 is not applicable for deck slabs, approach slabs, and sleeper slabs."

(III) Amend **Subsection 602.03(D) Placing and Fastening** by amending the last sentence of paragraph three at line 79 and 80 to read as follows:

"All plastic bar supports will be allowed only in prestressed concrete members and for vertical positions in drilled shafts."

(IV) Amend **Subsection 602.03(E)** by revising lines 122 to 794 to read as follows:

"No splicing of reinforcing steel shall be allowed."

(V) Delete **Subsection 602.03(F) Splicing of Welded Wire Fabric** in its entirety.

END OF SECTION 602

Make this Section a part of the Standard Specifications:

"SECTION 615 – UNDERWATER CONCRETE

615.01 Description. This Section describes all work pertaining to underwater placement of grout.

615.02 Materials. The Contractor shall use a non-shrink cementitious grout designed to resist "wash-out" in underwater grouting applications such as Underwater Grout by Dayton Superior or approved equal for repairing undermining at the substructure. Follow manufacturer's recommendations for underwater grouting. Contractor may submit alternate material that is better in quality for approval by the Engineer.

615.03 Construction.

(A) Submittals. Submit a minimum of 30 days prior to the start of this work and providing a minimum of ten complete sets consisting of copies of the following submittals for acceptance. Clearly indicate the name of the product and its manufacturer on pertinent submittals as well as what portion of the Contract Document it is being submitted for, e.g., subsection, line number. No work that is related to these submittals shall be performed until written acceptance has been received by the Contractor. Sets that are not complete in the sole opinion of the Engineer or MTRB shall be rejected and no review will take place. The Contractor shall resubmit required sets to start the review process again.

(1) Material Safety Data Sheets: Furnish the manufacturer's Material Safety Data Sheets for each of the materials present at any time on the job site.

(2) Detailed list of all equipment being used.

(3) Detailed step by step procedures for all aspects of the repair work (i.e. dewatering, formwork, placement of vent holes, placement of grout ports, verification of grout filling all voids, etc.)

(B) Execution. Clean out all silt and loose debris from voids. Remove all deleterious material and organic growth by high-pressure water blasting. Formwork shall be grout-tight. Pea gravel shall be placed into the voids under the footing prior to injection grouting. Mixing and placing of the grout shall follow manufacturer's recommendations. Mixing water shall be clean, potable water. The grout shall be injected into the voids commencing from the furthest point from the formwork, progressing towards the formwork. Formwork shall be secure and allow for pumping of the grout at a pressure sufficient enough to ensure all voids are filled. All pumping shall be done

slowly to permit the grout to fill all voids and pumping shall be continuous until the pour is complete. Leave forms in place for a minimum of 7 days. Non-formed surfaces shall be cured with SINAK LithiumCure 1000 or approved equal.

615.04 Measurement. The Engineer will measure underwater concrete on a lump sum basis. Measurement for payment will not apply.

615.05 Payment. The Engineer will pay for the accepted underwater concrete costs. Payment will be full compensation for the work prescribed in this section and the contract documents.

The Engineer will pay for the following pay items when included in the proposal schedule:

Pay Item	**Pay Unit**
Underwater Concrete for _____	Lump Sum”

END OF SECTION 615

Make the following section a part of the Standard Specifications:

SECTION 621 – INVASIVE SPECIES MANAGEMENT

621.01 Description. This section describes the best management practices for the prevention, identification, control, eradication, and reporting of invasive plant and animal species (collectively, invasive species). Invasive species impacts can include damage to infrastructure, public health and safety issues, reduction of biodiversity, and reduced cover of desirable native and/or nonnative species. The material found in Section 621 – Invasive Species Management shall be applied to the following sections, as appropriate: Section 201 – Clearing and Grubbing, Sections 202 – Removal of Structures and Obstructions, 203 – Excavation and Embankment, 204 –Excavation and Backfill for Miscellaneous Facilities, 205 – Excavation and Backfill for Bridge and Retaining Structures, and 206 –Excavation and Backfill for Drainage Facilities, which cover various excavations; Section 209 – Temporary Water Pollution, Dust, and Erosion Control; Section 619 – Planting; Section 641 – Hydro-Mulch Seeding; Section 642 – Landscape Maintenance; and Section 643 – Maintenance of Existing Landscape Areas.

(A) Definitions. Whenever the following words, terms, or pronouns are used in contract documents, unless otherwise prescribed therein and without regard to the use or omission of uppercase letters, the intent and meaning shall be interpreted as follows:

(1) Alien Species. Any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem.

(2) Botanist/Arborist. A person with a minimum of 5 years of experience in the botanical field, including the identification, eradication, control, and reporting of invasive plant species. The CONTRACTOR's selected botanist/arborist shall be approved by the Engineer.

(3) Hawaii Invasive Species Council (HISC). Inter-departmental collaboration comprised of the Departments of Land & Natural Resources (DLNR), Agriculture (DOA), Health (DOH), Transportation (DOT), Business, Economic Development & Tourism (DBEDT), and the University of Hawaii (UH). The HISC was established in 2003 for the special purpose of providing policy level direction, coordination, and planning among state departments, federal agencies, and international and local initiatives for the control and eradication of harmful invasive species infestations throughout the State and for preventing the introduction of other invasive species that may be potentially harmful.

(4) Invasive Species. An alien species whose introduction does, or is likely to, cause economic or environmental harm or harm to human health.

(5) Invasive Species Committee (ISC). Committees located in Hawai‘i that are island-based partnerships of government agencies, nongovernmental organizations, and private businesses protecting each island from the most threatening invasive weeds and pests.

(6) Noxious Weed. Any plant species that is, or that may be likely to become, injurious, harmful, or deleterious to the agricultural, horticultural, aquacultural, or livestock industry of the state and to forest and recreational areas and conservation districts of the state, as regulated by the Secretary of Agriculture and the federal land management agencies and the State of Hawai‘i Department of Agriculture (HDOA) Hawai‘i Revised Statutes (HRS) Chapter 152. The HDOA Noxious Weed List can be found in HRS 4:6:68 (Noxious Weed Rules).

(7) Pest. Any insect, rodent, nematode, fungus, weed, or any other form of terrestrial or aquatic plant or animal life or virus, bacteria, or other microorganism (except viruses, bacteria, or other microorganisms on or in living humans or other living animals) that the Engineer declares to be a pest (Federal Insecticide, Fungicide, and Rodenticide Act, Section 2(t)).

(8) Physical Construction. Activities associated with clearing, grubbing, grading, excavating, filling of land, or other similar site work activities and that cause ground disturbance and/or site disturbance.

(9) Propagule. A vegetative structure that can become detached from a plant and give rise to a new plant, e.g., a bud, sucker, or spore.

(10) Priority Invasive Plants for the State of Hawai‘i Department of Transportation Construction Projects.

(a) Plants and weeds identified in State of Hawai‘i Department of Transportation (HDOT) contract specifications.

(b) Plants on the U.S. Department of Agriculture Federal Noxious Weed List and in HRS 4:6:68 (Noxious Weed Rules) *provided that* the HDOA and/or the ISC also recommend that weed as a target.

(c) Species identified as targets for the early detection, eradication, or containment and control by the local island ISC in each county, found at the following websites:

1. Hawai‘i Island: https://www.biisc.org/

2. Kaua‘i: https://www.kauaiisc.org/

3. Maui: https://mauiinvasive.org/

4. O‘ahu: https://www.oahuisc.org/

(d) Species determined by HDOT to impact roadside maintenance operations, infrastructure, or health and safety of the public (as determined by the Engineer). These species can be found in Chapter 2 of the HDOT Invasive Species Project Prioritization Plan.

(e) Species that are actively controlled by neighboring landowners and agreed upon by the Engineer, as identified during pre-construction consultation with landowners (as applicable).

(11) Priority Pests for the State of Hawai‘i Department of Transportation.

(a) Animals and pathogens designated as high-priority invasive species for early detection, eradication, or containment by the ISCs or HDOA in each county.

(b) Animals and pathogens known to impact roadside maintenance operations, infrastructure, or public safety, as determined by HDOT.

(c) Animals and pathogens that are of concern to neighboring landowners and the Engineer agrees should be targets for HDOT.

(12) Weed. Any plant growing where it is not wanted, as determined by the Engineer.

(13) Wildlife Biologist. A person with a minimum of 5 years of experience in the wildlife field, including identification, eradication, control, and reporting of invasive animal species. The CONTRACTOR’s selected Wildlife Biologist shall be approved by the Engineer.

621.02 Materials.

(A) Free from Invasive Plants or Pests. All material, including plant material, gravel, sand, and soil, provided for the project shall be free of invasive plants or pests. Such action is to prevent the introduction of invasive species onto the project site.

(B) Plant Material Sources.

(1) The CONTRACTOR shall buy plants propagated on the island where the plants will be planted. The CONTRACTOR shall provide the Engineer with the names of the nursery or nurseries they will use to provide landscaping plants in accordance with Section 619 – Planting. A Botanist/Arborist and a Wildlife Biologist (collectively, Biologists) shall inspect the nursery for the presence of invasive species on the property and in planting materials destined for the project site within 90 days of planting. Inspection results shall be provided to the Engineer in a report.

(2) Should plants not be available on-island, imported plants from off-island may be used but shall not be brought directly to the project site. State of Hawai‘i Plant Quarantine Branch–certified nurseries should be given priority when selecting off-island plant imports (State of Hawai‘i Plant Industry Division 2020, available at: https://hdoa.hawaii.gov/1pi/pq/certified-nurseries/). These plants shall not be mixed with locally grown plants and shall be first quarantined in a location away from the project site for a period not less than 30 days in an area approved by the Engineer. Biologists shall inspect all plants imported from off-island to ensure that they are free from invasive species, such as coqui frogs (*Eleutherodactylus coqui*), fire ants (*Wasmannia auropunctata* and *Solenopsis geminata*), and weed seedlings, that could arrive inadvertently. The Biologists shall screen out any priority invasive plants or other potentially invasive plants or organisms, including imported plants that appear to be sick or carrying disease. Any plant that appears to be diseased shall be submitted to the University of Hawai‘i College of Tropical Agriculture and Humane Resources extension agents for positive identification of the disease. The Biologists may also seek assistance from other organizations, including the State of Hawai‘i Department of Land and Natural Resources (DLNR), HDOA, and the local island ISC in the identification or detection of non-plant invasive species. Imported plants shall be planted out only after they have been determined to be free of unwanted weeds or animal pests at the quarantine location determined by the Engineer. All pests or invasive species shall be

reported by calling the Hawai‘i Invasive Species Council at 808-643-PEST (7378) to determine appropriate treatment.

(3) In conjunction with Section 641 – Hydro-Mulch Seeding, a botanist/arborist shall inspect seeded areas a minimum of 45 days after hydroseed is applied.

(C) Construction Material.

(1) The Contractor shall make sure all material stockpile sites are free of invasive plants (including seeds and propagules) and animals. Stockpile site surveys shall be included in the Biologists' inventory report.

(2) All imported materials, including gravel, soil, rock, and sand shall be free of invasive species.

(3) All materials shall be stockpiled at a designated staging area to prevent contamination. If possible, permanent containment areas shall be constructed for long-term projects.

(4) Stockpiles of materials such as gravel, soil, rock, and sand shall be inspected every 6 months by the Biologists to ensure that they are not encroached upon by invasive plants or animals (a buffer of 30 feet shall be maintained).

(5) If invasive species are present, the CONTRACTOR shall either chemically or mechanically remove them, as determined by the Engineer.

621.03 Construction.

(A) Responsibility.

(1) Any priority invasive plants and priority pests that establish after notice to proceed and prior to final acceptance by the Engineer that were not present before construction shall be the sole responsibility of the CONTRACTOR to remove or control. Acceptable removal is dependent on the type of species and shall be approved by the Engineer.

(2) The CONTRACTOR shall be responsible for the control or eradication of priority invasive plants and/or priority pests that are already established at a project site before construction begins. CONTRACTOR responsibility is determined by the Engineer. Removal of already established species shall be paid from the force account; see Payment section below.

(3) The CONTRACTOR shall ensure that weed and/or pest removal is carried out in a legal manner, including obtaining all necessary training, licenses, and permits from applicable regulatory agencies for the specific methods proposed for removal and disposal of invasive species.

(B) Inventory of Invasive Species before Physical Construction.

(1) A full list of plant and animal species present at the site (botanical inventory and faunal inventory, respectively) is required for projects that have more than 1 acre or 43,560 square feet of roadside soil or vegetation and which will remain as soil or vegetation at the end of the construction project. The botanical and faunal inventory can either be combined into one report or the floral and faunal inventories can be reported on separately. Biologists shall provide one electronic copy of each inventory report to the Engineer. Botanical and faunal inventories shall be undertaken within 30 days before physical construction activities (e.g., site work, clearing, grubbing, ground disturbance, and/or any other site disturbance) are initiated. The postconstruction botanical and faunal inventories shall be undertaken during the Plant Establishment Period, which extends 9 months from the accepted completion date of the Planting Period. See Section 619 – Planting for definitions on the Planting Period and the Plant Establishment Period. The botanical and faunal inventory of the right-of-way shall be done by Biologists hired by the CONTRACTOR. The botanical inventory report shall include scientific names of plant species and their abundance (area covered and/or number of plants, as appropriate, depending on growth form). For priority invasive plants, the inventory shall provide details on GPS location (NAD 83) and reproductive status: mature (reproductive parts present) or immature. For priority invasive animals, the inventory shall include scientific names of faunal species and shall provide details on GPS location (NAD 83) and individual(s) detected.

(2) The Biologists shall inventory and report any priority invasive plants and/or priority invasive pests within 30 feet of any proposed on-site stockpiles for gravel, sand, and soil that may be sourced for the construction project.

(C) Invasive Species Removal Plan.

(1) If invasive species are found before physical construction, including within 30 feet of material stockpile locations, the CONTRACTOR shall submit an invasive species removal plan for approval by the Engineer. This plan shall include specific removal methods for all priority invasive species identified by the Engineer, such as physical removal and/or chemical treatments, and a detailed post-removal monitoring plan. The plan should address how to prevent the spread of the invasive species if not removed. A cost to remove and a cost to prevent the spread shall be submitted by the CONTRACTOR. Preparation of the removal plan will be paid for from the force account.

(2) If the invasive species is/are not removed prior to physical construction, the CONTRACTOR shall surround areas of all invasive plants with a protective 4-foot-high, orange plastic mesh or equivalent fence accepted by the Engineer, supported on a minimum 6-foot-long steel T-post. The CONTRACTOR shall provide signage on the fence that states “not to disturb or work within the fenced area.” Fences shall be erected before removal work begins and shall not be removed until removal work is completed. For trees or shrubs, flagging tape can be used to mark plants. The CONTRACTOR shall contact the local island ISC to determine the best method to contain invasive animals.

(D) Removal of Priority Invasive Species Found before Physical Construction.

(1) The CONTRACTOR shall be required to remove invasive plants and/or priority pests present at the site after approval of the removal plan or implement mitigation measures to prevent their spread. Removal of invasive species present prior to construction will be paid from the force account. Removal shall be completed prior to any physical construction at the project site.

(2) The CONTRACTOR shall be responsible for ensuring the plant and animal removal is carried out in a legal manner, including obtaining all necessary training, licenses, and permits from applicable regulatory agencies for the specific methods proposed for clearing and removing invasive species.

(3) If pesticides are proposed for use in the removal plan, the CONTRACTOR shall ensure that their application is supervised by a licensed commercial applicator. The labels for pesticides being used must be in the applicator's possession; the applicator shall have proper safety equipment and be prepared to handle chemical spills before they occur. The CONTRACTOR shall use the least toxic chemical that shall achieve the desired results. If a chemical spill occurs, the Engineer must be notified, and the proper authorities shall be notified in accordance with the pesticide label requirements. A record of chemical applications shall be kept by the commercial applicator and submitted to the Engineer.

(4) Green waste resulting from invasive species removal shall be disposed in a manner that will prevent spread by seeds or regrowth from plant fragments. Material contaminated with invasive species shall be covered and secured during transport to prevent other areas from becoming contaminated. In addition, seeds and fruit shall be placed and secured in bags by the CONTRACTOR. As determined by the Engineer, plant material shall be incinerated or buried in a landfill.

(E) Post-removal Monitoring and Inspection. A Biologist shall carry out post-removal monitoring at least every 6 months to confirm that the removal plan was successfully implemented. The post-removal monitoring is intended to ensure that the treated areas remain free of invasive species during the construction. Before handing the site over to the Engineer, the CONTRACTOR shall perform an inspection of the entire construction site. The Engineer shall determine whether the CONTRACTOR has met the responsibilities for invasive species removal based on the post-removal inspection report.

(F) Decontaminating Equipment, Machinery, and Vehicles.

(1) Clean Equipment.

(a) All CONTRACTOR equipment and vehicles shall arrive at the work site clean and visibly free of any soil, plants, or plant parts (e.g., seeds); insects and insect eggs; reptiles and amphibians and their eggs; or any other invasive species. Routine clean-down procedures shall be implemented to prevent contaminants from building up using visible inspection and power washing equipment. All equipment cleaning and sanitation shall be incidental to the lump-sum pay items.

(b) The CONTRACTOR shall certify that equipment is arriving free of soil and debris capable of transporting viable invasive plant parts, seeds, or propagules, or invasive animals. The CONTRACTOR shall provide the Engineer with sequentially numbered decals and an accompanying spreadsheet with the decal numbers indicated in one column and subsequent column headings for the date of inspection and license plate number. Decals shall include the contract number and be consistent with the format supplied by the Engineer. The CONTRACTOR shall place the decal on construction project machinery and vehicles, and the Engineer will initial and date the decal after an inspection determines that the vehicles are acceptably clean. After initialing the decal on the vehicle/ machinery, the Engineer will use the submitted spreadsheet to record the date of inspection and license plate number. The CONTRACTOR shall remove the decal after project completion.

(c) Vehicles or equipment that are off-site for 1 or more working days shall be cleaned and inspected at least once prior to their arrival at site. For other vehicles left on-site, the CONTRACTOR shall attempt to maintain reasonable standards of vehicle hygiene, and frequency of inspection will be determined by the Engineer.

(d) All vehicles and equipment brought in for construction work from off-island are required to be thoroughly washed at the port of export before they arrive at the project site. If invasive species are found at the project site, all vehicles that are deemed to be contaminated by the Engineer must be washed before leaving the project site and being returned to its island of origin, or if not feasible or appropriate at the project site, then at an approved alternative site.

(e) Cleaning Stations.

1. The Engineer will designate a cleaning station for the project site. The location of cleaning stations shall be recorded using a GPS unit and provided to the Engineer. The Engineer will consider the following when selecting and approving a cleaning station at the project site:

a. The cleaning stations shall not contribute to further contamination of machinery. To prevent this, gravel or other appropriate material shall be used to minimize contact with mud or dirt, which may contain invasive plant seeds.

b. Cleaning stations shall be located in low-value areas (e.g., away from native vegetation) or off-site.

c. The designated cleaning area must provide an environment for operators to safely undertake clean-down procedures (i.e., is safe for road traffic and personnel).

d. Cleaning station locations must be clearly posted with signs that say: “Cleaning Station.”

2. The CONTRACTOR shall only use designated cleaning stations at the project site to decontaminate equipment, machinery, and vehicles. All earthwork equipment shall be cleaned and be completely free of soil, seeds, vegetative matter, or other debris that could contain plant seeds or propagules prior to arrival and/or before leaving the project site. Manual clean-down procedures consist of using hand tools such as brushes, brooms, air compressors, vacuums, and/or high-pressure water guns. If using high-pressure water, apply only as much water as needed to avoid unnecessary run-off. As part of the cleaning, the CONTRACTOR must pay particular attention to key areas such as the chassis and wheels. A clean-down checklist for vehicles shall include the following:

a. Underside: wheels, rollers, tracks, wheel arches, wheel trim, bumpers, mud flaps, tire rims, axle, differentials, and spare tire

b. Digging apparatus, blades, and buckets

c. Interior: foot wells, carpets, and under mats

d. Engine bay: radiator, air filters, grille, recess under windscreen wipers, and transmission gearbox

e. Tray and trunk (for soil, seed, and plant material)

3. The CONTRACTOR shall clean and inspect equipment before it arrives at the project site. Equipment shall be considered free of soil, seeds, and other such debris after a visual inspection confirms it. Visual inspection shall include the complete exterior, including undercarriages, tires, wheel wells, and grille. Disassembly of equipment components or specialized inspection tools are not required. The Engineer will maintain a log of vehicle inspections. Earthwork equipment shall not be allowed to operate within the state right-of-way until approved by the Engineer.

4. Priority pests found hitchhiking on equipment shall be reported to HDOA by calling 808-643-PEST (7378).

5. Equipment shall not be sprayed with pesticides as a preventative measure. Spraying equipment with pesticides is not consistent with label specifications. Additionally, many pesticides target a wide range of vegetation and invertebrates and using pesticides in this way may harm nontarget vegetation and invertebrates.

6. The CONTRACTOR shall thoroughly inspect seeding equipment prior to conducting seeding activities to ensure they are free of invasive plant propagules.

(G) Ensuring No Invasive Species Become Established during Construction.

(1) The CONTRACTOR is responsible for keeping the construction site free of invasive species**.** Monitoring shall be carried out by the CONTRACTOR after removal of invasive species found prior to construction, every 6 months during construction, after physical construction, and after the Plant Establishment Period, before handing the site over to the State. This monitoring shall be undertaken by a Botanist/Arborist for invasive plants and a Wildlife

Biologist for invasive animals who shall provide an inventory report which will include scientific names of plant and animal species and their abundance (e.g., area covered and/or number of plants, as appropriate, depending on growth form; and number of individual animals detected). The invasive species inventory report can either report on invasive plants and animals separately or joined as a single document. The report for priority invasive plants shall provide GPS (NAD 83) locations and reproductive status, and the report for priority invasive pests shall provide GPS (NAD 83) locations and the number of individuals detected. Each Biologist shall provide one electronic copy of each inventory report to the Engineer.

(2) Invasive Species Information Signage at the Project Site. Invasive species and noxious weed signage shall be prominently posted at the CONTRACTOR's workplace and at the project site. Signage shall include one laminated 8.5 × 11–inch color page for each HDOT priority invasive species relevant to the project site. The CONTRACTOR may obtain free digital files with invasive species photographs that shall be printed and laminated for use on the project site; these are available at: http://www.hawaiiinvasivespecies.org. All signage shall include "Call 808-643-PEST (7378)."

(3) Training. HDOT and the CONTRACTOR's field staff shall attend a mandatory training by biologists knowledgeable about invasive plants and animals about on-site decontamination protocols, identification of priority invasive species and pests, and reporting procedures**,** once annually (or prior to any physical construction). The local island ISC should be contacted for training information. Trainers shall record the name and date of training for those individuals that complete the training, which shall be provided to the Engineer upon request.

(4) Unannounced Inspections. The CONTRACTOR shall provide unfettered access to the state right-of-way to any ISC staff, HDOA staff, or anyone else acting for the Engineer for the purpose of detecting or monitoring invasive species.

(H) Post-Physical Construction Prior to Returning the Site to the State—Post-Construction Inventory. The CONTRACTOR shall conduct a post-construction invasive species inventory to verify and confirm that the CONTRACTOR maintained the site in the original condition after the initial removal of invasive species was conducted. If additional invasive species are found, the CONTRACTOR would be responsible to develop a removal plan, remove the invasive species found, and conduct post-removal monitoring at their own expense. The removal plan shall be subject to Engineer approval.

621.04 Measurement.

(A) Invasive species control measures during construction, including signage and decontamination training, will be paid on a lump sum basis. Measurement for payment will not apply.

(B) The development of the invasive species removal plan, removal of invasive species established before physical construction and not part of the project's physical construction work, as well as the post-removal monitoring, shall be paid with force account funds. The Engineer will measure invasive species removal planning, removal, and monitoring required and requested by Engineer on a force account basis in accordance with Subsection 109.06 – Force Account Provisions and Compensation.

621.05 Payment. The Engineer will pay for the accepted invasive species management on a contract lump-sum basis after the final acceptance of the project. Payment will be full compensation for the work prescribed in this section and the contract documents.

The Engineer will pay for the following pay items when included in the proposal schedule:

Pay Item	**Pay Unit**
Inventory of Invasive Species before Construction	Lump sum
Invasive Species Removal Plan	Force account
Removal of Plants and Animals Established before Physical Construction or Site Work, Post-removal Monitoring	Force account
Monitoring of Invasive Species during and after Construction	Lump sum
Post-Construction Inventory Prior to Returning the Site to the State	Lump sum

An estimated amount for the force account is allocated in the proposal schedule under Existing Invasive Species Removal, which includes the Invasive Species Removal Plan and the Removal of Plants and Animals Established before Physical Construction or Site Work, Post-removal Monitoring. The actual amount to be paid will be the sum shown on accepted force account records, whether this sum is more or less than the estimated amount allocated in the proposal schedule."

END OF SECTION 621

Make the following section a part of the Standard Specifications:

"SECTION 627 – MANAGEMENT OF CONTAMINATED MATERIALS

627.01 Description. This section describes the following:

The soil investigation at the project area was conducted to identify the presence of the potential contaminants that may be encountered during the construction activities associated with the Nanue Bridge Repairs, Ninole, Hamakua, Hawaii project. Lead was detected at concentrations above the State of Hawaii, Department of Health (DOH) Tier 1 EAL for construction/industrial land use (800 mg/kg) in samples collected from 0-3", 3-6", and 6-9" below ground surface (bgs). Arsenic was also detected in concentrations that exceeded the HDOH Tier I EALs of 24 mg/kg. While the residential direct exposure is set to 23 mg/kg the highest exceedance was 32 mg/kg in DU8 at 6 to 9 inches bgs. Refer to the Nanue Bridge Remedial Alternative Analysis, dated August, 2024, prepared by EnviroQuest, Inc.

Soils impacted by arsenic may be encountered during the bridge rehabilitation project and shall be handled in accordance with this specification and State and Federal Regulations.

627.02 Materials. Not applicable.

627.03 Construction.

(A) Submittals Prior to Construction. Submit the following submittals a minimum of ten (10) working days prior to beginning the work:

(1) Construction – Environmental Hazard Management Plan (C-EHMP): A plan shall be submitted for review that describes the procedures, engineering controls and methods the Contractor will use during the excavation, temporary storage, handling, treatment, backfilling and disposal of soil at the project site. The plan should also include soil stockpiling, testing, backfilling procedures, personal protection requirements, work area isolation, construction barriers, wetting methods, decontamination procedures, and emergency procedures.

The plan shall include the names and qualifications of personnel who will be managing soil activities at the site. The plan should also include copies of current training and certification of all workers by an EPA-approved Hazardous Waste Operations and Emergency Response course, respirator fit testing documentation, and medical clearances.

(2) Proposed schedule of work and performance schedule.

(3) A sketch identifying the location of temporary soil stockpiling.

(B) Construction Requirements. Do not begin work until submittals detailed in **627.03(A)(1)** - **Construction – Environmental Hazard Management Plan (C-EHMP)** are completed and accepted in writing by the Engineer.

The Contractor shall examine the project site to understand conditions that may affect work and performance.

The Contractor shall supply all labor, materials, and equipment necessary for the removal, temporary storage, testing, handling, soil backfilling and management of soil to carry out the work in accordance with applicable Federal, State, and local regulations, and these specifications.

Soil stockpiles shall be placed on 20-mil plastic sheeting and covered to protect from rain, wind, etc. In addition, stockpiles of contaminated soils shall be bermed to keep contaminated rainwater from migrating away from the stockpiles and ultimately off-site. The Contractor shall separate soil into two soil piles. Pile 1 will consist of soil excavated from the depth found to be contaminated (surface to 36” bgs). Pile 2 will consist of soil excavated from 36” bgs and deeper. The intent of separating the soil is to utilize potentially unimpacted soil as backfill and/or to remove and dispose of impacted soils from the site. Soil from Piles 1 and 2 will be tested for RCRA metals and chlorinated pesticides. If soil concentrations are below the Department of Health (DOH) Environmental Action Levels (EAL), then the soil may be used with no restrictions as long as it meets other specification requirements.

The Contractor shall also test any residual soils not used as backfill for Toxicity Characteristic Leaching Procedure (TCLP) for metals and chlorinated pesticides. Soils with concentrations above the regulatory limit shall be disposed of in accordance with regulatory requirements.

Soil excavation activities, trenching and any disturbance of arsenic containing soil may cause a potential exposure to Contractor's employees and the general public to fugitive dust. The routes of exposure of dusts are by inhalation, ingestion and dermal contact. The Contractor shall use engineering controls such as water spraying and wind barriers to control fugitive dust.

The Contractor shall provide a Qualified Consultant (QC) with at least 5 years of experience in the handling and management of soils

impacted by hazardous chemicals to manage the project. Contractor shall be responsible for implementation of the engineering controls and conformance with the requirements of this specification. The QC shall be responsible for monitoring and documentation of the engineering controls and conformance with the requirements of this specification.

(C) Submittals After the Construction. Submit the following submittals within 30 days after work is completed.

(1) Close-out Report shall include the following:

i. Laboratory results for any soils or groundwater subject to sampling.

ii. The Waste Manifest signed by the Contractor, waste transporter, and landfill operator. The total quantity of waste should also be included.

iii. A signed certificate stating that the removal and disposal of contaminated items were completed in accordance with the Contractor's approved Work Plan and all applicable rules and regulations.

iv. If required, any results from project air monitoring.

(D) References.

(1) Quality Standards. All work under this contract shall be performed in strict accordance with all applicable Federal, State, and local regulations, standards, and codes governing arsenic-impacted soil.

(2) The most recent editions of any relevant regulation, standard, document, or code shall be in effect. When conflict regarding the requirements or with these specifications arises, the most stringent requirements shall apply. Such documents include, but are not limited to, the following:

i. 29 CFR 1910, "Occupational Safety and Health Standards" (General Industry Standards)

ii. 29 CFR 1910.120, "Hazardous Waste Operations and Emergency Response"

iii. 29 CFR 1910.134, "Respiratory Protection"

iv. 29 CFR 1910.1000, "Air Contaminants"

v. 29 CFR 1910.1020, "Access to Employee Exposure and Medical Records"

vi. 29 CFR 1910.1200, "Hazard Communication"

vii. 29 CFR 1926, "Safety and Health Regulations for Construction" (Construction Industry Standards)

viii. 40 CFR 50, "National Primary and Secondary Ambient Air Quality Standards A"

ix. 40 CFR 122, "EPA Administered Permit Program: The National Pollutant Discharge Elimination System"

x. 40 CFR 261, "Identification and Listing of Hazardous Waste"

xi. 40 CFR 263, "Standards Applicable to Transporters of Hazardous Waste"

xii. 40 CFR 302, "Designation, Reportable Quantities, and Notification"

xiii. 49 CFR 172, Subpart E, "Labeling"

xiv. 49 CFR 172 Subpart F, "Placarding"

xv. 12-8-3-148.1, "State of Hawaii, Safety and Health Regulation for Construction" (Construction Industry Standard)

xvi. 12-202-33, "A Hawaii Occupational Safety and Health Standards"

xvii. HDOH, 2012. Evaluation of Environmental Hazards at Sites with Contaminated Soil and Groundwater, Volume 2: Background Documentation for the Development of Tier 1 Environmental Action Levels, Appendices 2-9. Fall 2011. Prepared by: Hawaii Department of Health, Environmental Management Division. Fall 2011 (Revised Fall 2017).

xviii. TGM, 2008, Technical Guidance Manual for the Implementation of the Hawaii State Contingency Plan,

State of Hawaii Department of Health Hazard Evaluation and Emergency Response Office, Interim Final - in Effect October 31, 2018.

(E) Excavation and Disturbance of Soil. During the excavation and disturbance of arsenic-containing soil, all workers, supervisory personnel, subcontractors and consultants must take precautionary measures as necessary to prevent exposure of Contractor's employees and the general public to the resulting soil dust.

(F) Contractor Training. Each employee shall be instructed for a minimum of 40 hours by a trained professional in hazardous materials operations and emergency response, awareness and work practices, safety and health precautions and the use and requirements for protective clothing, respirators, and equipment in accordance with 40CFR1910.120. A certificate of training, signed and dated by the trainer, shall be provided for each worker. The Contractor shall designate a competent person(s) to perform or supervise soil excavation and disturbance.

(G) Personal Protective Equipment.

(1) Protective Clothing. Furnish personnel involved in removal, handling, disposal of soil and contaminated items with impervious, disposable, whole body protective covering, face shields with goggles and impervious gloves. All the protective clothing shall be worn throughout the removal of contaminated items and shall be replaced as necessary.

(2) Respirators. Provide as a minimum, half-face respirators approved by the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services, with filters approved for use in atmospheres that contain arsenic.

(3) Warning Signs and Labels. Provide warning signs at approaches to the work area. Locate signs at such a distance that personnel may read the sign and take necessary precautions before entering the area. Provide and affix labels to Department of Transportation (DOT) approved waste drums and other containers of containing contaminated materials. The caution label must display the **following in bold print: Caution: May Contain Arsenic**. "No Smoking" signs, warning signs and labels shall be provided throughout the entire project and as deemed necessary by the QC.

(H) Polyethylene Sheeting. Sheet plastic shall be new, clear or black with at least 20-mil thickness. 6-mil plastic can be used to cover the

stockpiles.

(l) General Work Procedures.

(1) Prior to beginning work, the Contractor and the QC shall discuss the approved Plan, including work procedures and safety precautions. At the conclusion of the project, the Contractor shall submit a signed certificate stating that the removal and disposal of contaminated items were completed in accordance with the Contractor's approved Plan and all applicable rules and regulations.

(2) Contractor is responsible for providing their personnel with appropriate training and protective equipment while they are performing work and shall ensure compliance with any and all regulations concerning safety and health of their employees.

(3) Boundaries shall be established at each area where soil excavation/disturbance is to be performed. The area should be clearly identified to prevent unauthorized entry. Establish a control area by completely enclosing/roping-off the area where arsenic contaminated soil excavation, removal, stockpiling and disposal operations will be performed.

(4) Provide physical boundaries around the arsenic control area by roping off the area to ensure that airborne concentrations of contaminants will not reach their action levels and/or permissible exposure limits outside the control area.

(5) Caution signs shall be placed at the entrances to each work area, located such that approaching personnel may read the signs and take necessary precautions before entering the work area. No one will be permitted in the work area unless the person is provided with appropriate training and protective equipment and their presence is necessary to the removal work.

(6) There shall be no eating, smoking, drinking, or storing of food or drink within work areas.

(7) Select and conduct the removal procedure to minimize the potential spread of contamination. Handle contaminated items such that no skin contact occurs. Contaminated materials shall not be exposed to open flames or other high temperatures.

(8) Before exiting the controlled area and before food breaks, each worker will remove all personal protective equipment, place disposable items in a labeled, impermeable disposal bag, and then

exit the area. Workers shall wash their hands thoroughly with a detergent soap to remove contamination. Boots shall be cleaned to minimize tracking of contaminated material from the work area.

(9) At the completion of work in an area, the work area shall be cleaned as necessary and all contaminated clothing, disposable personal protective equipment surface coverings, and waste material shall be disposed of with the contaminated items.

(J) Soil Disturbance/Excavation. The Contractor shall notify the Engineer at least 10 working days prior to the start of excavation of arsenic impacted soil. Stage operations to minimize the amount of time arsenic impacted soil are exposed to the weather. Provide protection measures around the area of arsenic impacted soil to divert runoff of water from within the excavation boundaries. Runoff that comes in contact with arsenic impacted soil shall be retained onsite and shall not be allowed to drain off-site or into storm water conveyances systems.

(1) The Contractor's Qualified Consultant shall be continuously on-site to inspect excavated soil to expedite the work.

(2) Prior to any disturbance/excavation activities, locate the area identified in the approved Work Plan where excavated soil will be stockpiled.

(3) Soil stockpiles shall be placed onto 20-mil plastic sheeting and covered with 6-mil plastic sheeting and secure the edges of the liner with a soil berm, stakes, or equivalent to contain potential surface water runoff.

(4) Any excavated soil that, based on the RCRA metals and chlorinated pesticides concentrations, are below the respective HDOH EALs shall be reused as backfill on the project site. Soil with RCRA metals and chlorinated pesticide concentrations above the EALs will be used for backfill at depths greater than 3 feet below ground surface. The Contractor shall place 2 feet of clean topsoil over arsenic impacted soil. The purpose is to reduce the amount of soil for disposal offsite.

(5) The Contractor is responsible for all the testing and proper disposal of any soil that is not used as backfill.

(K) Final Cleanup.

(1) Maintain surfaces in the work area to be free of accumulations of contaminated materials. Restrict the spread of

dust and debris, and to keep waste from being distributed over the work area.

(2) When work which disturbs contaminated soil has been completed, the QC will visually inspect the work area for evidence of contaminated materials and direct the Contractor to clean and remove remaining contaminated materials. The Contractor shall not dismantle the work area boundaries prior to authorization by the QC.

(3) Earthmoving equipment which contacts contaminated subgrade materials shall be cleaned with a water spray immediately upon completion of work. The wash location shall be located immediately adjacent to the contaminated soil excavation and all wash water shall be directed into the excavation.

(L) Transportation and Disposal.

(1) The Contractor shall transport and dispose of any excess soil that cannot be backfilled to the landfill that will accept such soil. Additional sampling and analysis will be required per landfill requirement.

(2) Upon transportation and disposal, the Contractor shall submit copies of the waste shipping papers for both hazardous and non-hazardous wastes and Certificates of Disposal to the Engineer. The Contractor shall also include all waste shipping papers and Certificates of Disposal in the Completion Report.

(M) Air Monitoring.

(1) Air monitoring shall be conducted for at least three (3) full 8-hour shifts to establish a negative exposure assessment for worker's exposure to airborne arsenic. After the establishment of the negative workers exposure, periodic personal monitoring shall be conducted once every seven days to document worker exposure for the duration of the arsenic-contaminated soil work. Perimeter air monitoring shall be conducted throughout the entire duration of contaminated soil work.

(2) Submit air sampling results to the Engineer within five (5) working days after the samples are collected, signed by the testing laboratory employee performing the analysis.

(3) Perform personal and area monitoring during the contaminated soil work operation. Sufficient area monitoring shall

be conducted at the physical boundary to ensure unprotected personnel are not exposed above action level (AL) and/or permissible exposure limit (PEL) at all times. If the outside boundary levels are at or exceed AL and/or PEL, work shall be stopped, and the Contractor and the Qualified Consultant shall immediately correct the condition(s) causing the increased levels and notify the Engineer immediately.

627.04 Measurement. The Engineer will measure clearing and grubbing, excavation, testing, and disposing of unsuitable material from work site in accordance with the applicable Sections.

Work under this section, excluding clearing and grubbing, excavation, testing, and disposing of unsuitable material, will be paid on a lump sum basis. Measurement for payment will not apply.

The Engineer will measure additional management of contaminated materials required and requested by the Engineer on a force account basis in accordance with Subsection 109.06 – Force Account Provisions and Compensation.

627.05 Payment. The Engineer will pay for the accepted clearing and grubbing, excavation, testing, and disposing of unsuitable material from work site under the applicable Sections.

The Engineer will pay for accepted pay items listed below at contract price per pay unit, as shown in the proposal schedule. Payment will be full compensation for work prescribed in this section and contract documents.

The Engineer will pay for following pay item when included in proposal schedule:

Pay Item	**Pay Unit**
Management of Contaminated Materials	Lump Sum
Additional Management of Contaminated Materials	Force Account

An estimated amount for force account is allocated in proposal schedule under ‘Additional Management of Contaminated Materials’, but actual amount to be paid will be the sum shown on accepted force account records, whether this sum be more or less than estimated amount allocated in proposal schedule. The Engineer will pay for measures requested by the Engineer that are beyond scope of accepted Construction – Environmental Hazard Management Plan (C-EHMP) on a force account basis.”

END OF SECTION 627

Amend Section 628 – Shotcrete to read as follows:

"SECTION 628 – SHOTCRETE

628.01 Description. This work includes furnishing all materials and labor required for placing shotcrete for the construction of the ground cover around the foundation pedestals as shown on the plans. The work also includes any preparatory trimming and cleaning of soil/rock surfaces to receive new shotcrete. Shotcrete work shall conform to all requirements of the latest ACI 506.2 specification published by ACI, except as modified by these contract documents.

628.02 Materials.

Structural Concrete	601
Reinforcing Steel	602
Glass Fiber Reinforced Polymer Rebar	670
Portland Cement	701.01
Admixtures	711.03
Water	712.01

Use fine aggregate conforming to Subsection 703.01 – Fine Aggregate for Concrete, except maximum percentage for material passing the No. 100 sieve shall be 15 percent. Use fine aggregate with minimum sand equivalent of 60.

Concrete mix shall contain coarse aggregate. Sand only mixes will not be allowed. Slump shall be between 2 in. and 4 in.

If admixtures are proposed, submit type, quantity, and manner of admixture incorporation.

Materials shall be delivered, stored and handled to prevent contamination, segregation, corrosion or damage. Store liquid admixtures to prevent evaporation and freezing.

628.03 Construction Requirements

(A) Construction Submittals. No shotcreting shall be performed until the following submittals and requirements are accepted by the Engineer:

(1) Shotcrete mix design including:

(a) Type of Portland cement.

(b) Aggregate source and gradation.

(c) Proportion of mix by weight and water-cement ratio.

(d) Slump

(e) MSDS data sheets

(f) Proposed admixtures, manufacturer, dosage, and technical literature.

(g) Previous strength test results for the proposed shotcrete mix, tested in accordance with ASTM C1604 and C39, and conducted within one year of the start of production shotcreting.

(2) Curing compound technical product data sheet (PDS) and safety data sheet (SDS).

(3) Equipment list, including but not limited to: Air compressor, concrete pump, hoses, nozzle, blowpipe, etc.

(4) A written statement of independent site evaluation.

(B) General. The Contractor shall utilize the wet mix process of shotcreting as follows:

(1) Wet Mix Process.

(a) Provide good quality, thoroughly mixed, concrete in accordance with the contract documents and these specifications. Slump shall be appropriate for the work being performed.

(b) Introduce the concrete into the chamber of the delivery pump equipment.

(c) Meter the concrete into the delivery hose and convey the concrete by compressed air or other means to a nozzle.

(d) Inject additional air at the nozzle to increase the velocity and improve the gunning pattern.

(e) Jet the concrete from the nozzle at high velocity onto the surface that the nozzleman will shotcrete.

(C) Equipment. Submit the equipment that will be used on the project for acceptance by the Engineer. Operate the equipment according to the manufacturer's recommendations. Submit the manufacturer's specifications and operating instructions for acceptance by the Engineer.

(1) Wet Mix Process. The wet mix delivery equipment shall be of a design and size that has produced good results in similar work. The wet mix process shall have the capacity to deliver the pre-mixed concrete accurately, uniformly and continuously through the delivery hose. The material delivery through the nozzle shall be non-pulsating and non-surging. Follow the manufacturer's recommendations as to:

(a) the type and size of nozzle. (Do no cut or make modifications to manufactured nozzle),

(b) cleaning the equipment,

(c) inspecting the equipment and

(d) maintaining the equipment.

Deliver a continuous, conical shaped, smooth stream of uniformly mixed material at the proper velocity to the discharge nozzle. Distortion of this stream or nonuniform appearance shall be cause to stop the work until the Contractor has corrected the situation.

Maintain a supply of clean oil-free air adequate for providing sufficient nozzle velocity for parts of the work and for the simultaneous operation of a blow pipe for cleaning away rebound.

Provide air compressor capable of performing to the job requirements and wet-mix equipment manufacturer's recommendations. Concrete construction practices shall conform to this section and Section 503 – Concrete Structures.

(D) Production Testing. During production shotcrete work, The Contractor shall produce one unreinforced material test panel for each workday or every 50 cubic yards placed, whichever is less. The test panel shall be constructed and the extracted cores shall be tested in accordance with Subsection 628.03(D)(1). Install test panels at a location that is near the worksite and that won't be damaged by the ongoing construction operations. Material test panels shall be cured using the same methods that is stipulated for production shotcrete work.

(1) Test Panels: Material test panels shall be used to substantiate the material properties of the in place shotcrete mix. The Contractor shall furnish an unreinforced test panel in accordance with ASTM C1140, except that the dimensions of the test panel shall be at least 24 by 24 inches square with the same thickness as in the structure, but not less than 8 inches thick. Extract, prepare ends, and moisture condition drilled cores in accordance with ASTM C1604. Diameter of drilled cores shall be no less than 3". Conduct density testing of cores in accordance with ASTM C642. Conduct compressive strength tests in accordance with ASTM C39. Testing shall be performed by the Contractor's accredited testing agency.

When required by the Engineer, the Contractor shall provide additional test panels during construction.

The Engineer reserves the right to require core testing of any in-place shotcrete if it is believed that a portion of the production shotcrete was placed with questionable procedures or if the material is believed to have inconsistencies. The cost of coring, testing, and any subsequent required repairs, shall be borne by the Contractor if the testing results substantiate the presence of defects. The cost of coring and performing tests with no defects shall be borne by the State. The corrective method plan shall restore the defective shotcrete to a condition equal or better than that of the shotcrete with no defects.

(E) Alignment Control. Surfaces that the Contractor will shotcrete shall conform to the dimensions shown in the contract or ordered by the Engineer. Install adequate ground wires or approved equal as guides to establish the thickness and surfaces of the shotcrete build-up. The wires shall be taut and true to line at all times during the operation.

(F) Surface Preparation.

(1) Earth. Excavate and grade area accurately to elevations and dimensions as specified without shattering the existing ground. Remove any surface material which is so loosened or damaged to a sufficient depth to provide a base that is suitable to receive the shotcrete. Cost of additional shotcrete due to overbreak is incidental to the work. After excavation/backfill and prior to shotcreting, the Contractor shall maintain a consistent moisture level on the face of the soil to prevent loosening, cracking, or sloughing. The use of sprinklers, plastic coverings, and the cost to maintain them shall be incidental to the work. Similarly, all surface water shall be

controlled and diverted away from the project area to prevent oversaturation and collapse of the soil slope face. Immediately prior to shooting shotcrete, dampen the surface of the soil with sufficient water to provide a firm foundation and to prevent absorption of water from the shotcrete, but without free surface water.

(2) Rock. Remove loose material, mud, or other foreign material that will prevent bonding. Clean and prewet surface immediately before applying shotcrete.

(3) Forms. Construct forms to contain the sides and upper curb of the shotcrete placed on the slope. Do not attempt to shoot shotcrete without guide forms in place. Remove forms after use by applying 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.

The surface of all reinforcing bars shall be free of overspray or other deleterious materials that inhibit development of bond with the shotcrete. Reinforcement laps shall be noncontact and shall be separated with a clearance of at least three times the diameter of the largest reinforcing bar; three times the maximum size aggregate; or 2 inches, whichever is least, unless otherwise specified. The use of contact lap splices necessary for support of the reinforcing is permitted when approved by the Engineer. All surfaces to receive shotcrete shall be saturated surface dry prior to construction. Protect adjacent surfaces from overspray during shooting.

Remove material that loosens as the shotcrete is applied. Cost of additional shotcrete is incidental to the work. Divert water flow and remove standing water so that the shotcrete placement will not be detrimentally affected by standing water.

(G) Application. Contractor shall provide sufficient lighting and ventilation to provide the shotcrete crew with a clear view of the shooting area. A working surface shall be utilized that permits nozzlemen unobstructed access to the receiving surface such that the shotcrete nozzle is always oriented perpendicular to the receiving surface. Place shotcrete first in corners, recesses, and other areas where rebound or overspray cannot easily escape. Apply the shotcrete from the lower part of the area upwards to prevent accumulation of rebound. Orient nozzle at an appropriate distance and perpendicular to the receiving surface so that rebound will be minimal and compaction will be maximized. Pay special attention to encapsulating reinforcement. Care shall be taken while

encasing reinforcing bars to keep the top face of the reinforcement clean during shooting operations, so that shotcrete builds up from behind, to encase the reinforcement and prevent voids and sand pockets from forming.

Apply shotcrete using a circular or elliptical motion of the nozzle while building the required thickness. Use sufficient material velocity, material consistency, and distance from the end of the nozzle to the receiving surface to produce maximum consolidation of the shotcrete and full encapsulation of the reinforcing bars. Shotcrete material accumulating on the top face of the reinforcing bars is an indication that either the material velocity is too low or the concrete mix design is too stiff.

At locations where accumulated rebound or overspray material will occur, such as congested areas of reinforcement, embedded obstructions, corners, and recesses, a compressed air blow pipe shall be used to remove the loose material from being incorporated into the work. Shotcrete crew shall continuously remove accumulations of rebound and overspray using the compressed air blowpipe in advance of deposition of new shotcrete.

If high winds prevent the person handling the nozzle from making proper application of the shotcrete or if rain occurs causing washing out of the cement or sloughing of the material, the Engineer will suspend gunning.

Do not allow rebound or overspray to be incorporated into the work.

Apply shotcrete in lifts and thicknesses appropriate for the particular work being done. The lift heights and thicknesses of individual layers shall be placed in a manner to prevent sloughing and sagging. When a layer of shotcrete is to be covered by a succeeding layer, it may be allowed to harden slightly or stiffen so as to support the additional weight of the applied material. Prior to application of the subsequent layer, remove all loose, uneven, or excess material, glaze, laitance, rebound, or overspray from the surface of the shotcrete and reinforcing bars that may compromise the bond. Removal of deleterious materials shall be done using a stiff bristle broom, scraper, or other acceptable means prior to it setting and hardening. Do not hit reinforcing bars with a hammer. If undesirable surface deposits have taken final set, the surface of the shotcrete shall be cleaned using abrasive blasting or high pressure water blasting. Any layer of shotcrete that has been allowed to reach final set shall be cured using a non-barrier forming curing compound as described in Subsection 628.03(L) Curing. Previously cured layers of shotcrete shall be brought to a saturated-surface-dry (SSD) condition immediately prior to application of any subsequent shotcrete layers.

(H) Hot Weather Shotcreting. Unless otherwise specified do not place shotcrete when shotcrete temperature is above 95°F. Construction practices shall follow ACI 305R-10 Guide to Hot Weather Concreting.

(I) Construction Joints. For shotcrete structures that are subjected to compression loads, at the horizontal joint between soil nail wall lift lines, or as otherwise specified on the contract drawings, construction joints shall be made square. Precautions shall be implemented to avoid and remove trapped rebound at the joint location. Where a squared construction joint is not required, the shotcrete may be tapered to a thin edge over a distance of about 12 inches, unless otherwise specified. Broom the construction joint of laitance prior to final set, clean the surface thoroughly and wet the construction joint (SSD) before the subsequent application of shotcrete.

(J) Control Joints. Control Joints will not be allowed.

(K) Finishing. Rod and Steel Trowel Finish.

Following the final application of shotcrete, use a level to cut grooves at the proper depths along the face of the ground cover slab. Cut/Rod and scratch the remaining surface using a cutting rod or trowel until the correct line and grades are reached across the entire surface. The scratched surface should produce a flat and straight open face surface free of undulations and waves. Using the flat edge of a steel trowel, obtain a smooth surface by dragging the trowel in a circular motion and at a slight angle to push the coarse aggregate into the face of the shotcrete. Continue troweling until the entire surface is free of voids and is smooth.

Rodding and troweling shall be done in a manner and timed properly such that it will not disturb the freshly placed shotcrete, create cracks, reduce internal cohesion, or break bond between the shotcrete and the reinforcement or shotcrete and the underlying material. Do not add water to the surface of the shotcrete to aid in finishing.

(L) Curing. Any layer of shotcrete that will achieve final set shall be cured using Sinak Lithium Cure 1000, or approved equal immediately following the finishing operation. Curing compound shall be applied at a dosage rate as recommended by the manufacturer.

(M) Evaluation of In-Place Shotcrete. Remove and replace shotcrete that is delaminate, 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 material and procedures shall be submitted to the Engineer for approval prior to starting any repair work.

Repair any core holes in accordance with ACI 301 Chapter 9. Do not fill holes by shooting. Repair/Backfill material shall be approved by Engineer.

(N) 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 may be required to ensure remaining work complies with requirements of the contract documents.

628.04 Method of Measurement. The Engineer will measure the shotcrete per square foot as shown on the proposal schedule.

The Engineer will not measure additional shotcrete required to complete the job. The Contractor shall anticipate and include in his/her bid substantial excavation overbreak and subsequent backfill with shotcrete at the face of the slope due to the irregular and rocky nature of the subsurface materials at the foundation locations.

Full compensation for shotcrete production test panels shall be considered as included in the contract price and no separate payment will be made therefore.

628.05 Basis of Payment. The Engineer will pay for the accepted quantities of shotcrete as shown on the proposal schedule.

Payment will be full compensation for the work prescribed in this section and the contract documents.

The Engineer will pay for the following pay item when included in the proposal schedule:

Pay Item	**Pay Unit**
Shotcrete _____	Square Feet

The Engineer will not pay for additional shotcrete or cast-in-place concrete needed to fill voids created by irregularities in the slope face, excavation overbreak, or inadvertent excavation beyond the plan excavation line or failure to construct the shotcrete to the specified line and grade tolerances. The Contractor shall anticipate substantial excavation overbreak and subsequent backfill with shotcrete at the face of the excavation due to the irregular and rocky nature of

the subsurface materials at the shotcrete locations. The cost is for the work prescribed in this section and the contract documents."

END OF SECTION 628

SECTION 629 - PAVEMENT MARKINGS

Make the following amendments to said Section:

(I) Amend **Subsection 629.03(B) – Temporary Pavement Markings** by revising the third paragraph from line 62 to 63 to read:

"Maintain and replace temporary pavement markings, flexible delineators, and barricades. "

(II) Amend **Table 629.03 – 1 – Temporary Pavement Markings** to read as follows:

"TABLE 629.03-1 TEMPORARY PAVEMENT MARKINGS	
TYPE	**PAVEMENT MARKINGS**
Passing Permitted - Both Sides	Single 4-inch yellow stripe 5 feet in length spaced 20 feet on center with Type D markers spaced 40 feet on center and located on center of 5-foot length of stripe.
Passing Prohibited - Both Sides	Double solid 4-inch yellow stripes with Type D markers placed 20 feet on center on one of 4-inch yellow stripes selected by the Engineer.
Passing Permitted - One Side Only	Single continuous 4-inch yellow stripe with Type D markers placed on stripe 20 feet on center on no-passing side and single 4-inch yellow stripes 5 feet in length spaced 20 feet on center on passing side.
Lane Lines - Lane Changing Permitted	Single 4-inch yellow or white stripe 5 feet in length spaced 20 feet on center with Type C or Type D markers spaced 40 feet on center.
Lane Lines - Lane Changing Prohibited	Double solid 4-inch white stripes with Type C markers placed 20 feet on center on one of the 4-inch white stripes selected by the Engineer.
Crosswalk	Two 12-inch white transverse lines spaced 8 feet on center or as ordered by the Engineer.
Stop Line	Single 12-inch white transverse line.
Note: Paint may be used for temporary markings in areas where final paving is not complete."	

(III) Amend **629.04 – Measurement** by revising lines 292 to 294 to read as follows:

"**629.04 Measurement.**

(A) The Engineer will measure thermoplastic and preformed pavement marking tape per linear foot in accordance with the contract documents. The longitudinal pavement markings will be measured per linear foot as a single stripe for the width specified in the contract and in the proposal. The Engineer will include the longitudinal gaps for skip striping, up to thirty (30) feet long, in the measurement.

The Engineer will not measure temporary pavement markings including flexible delineator posts with reflector makers or Type I Barricades and temporary signs installed for the longitudinal guidance of public traffic over reconstructed areas, cold planed surfaces, newly paved surfaces or other unmarked or scarified areas for payment.

The Contractor shall consider the work required for the removal of pavement markings incidental to the various contract items, except as provided in the proposal or elsewhere in the contract. If the contract stipulates that the Engineer will make payment for the removal of pavement markings, the Engineer will measure the removal of pavement markings.

(B) The Engineer will measure the pavement markers per each for the types shown in the proposal.

(C) The Engineer will measure the painted stripes that are twelve (12) inches wide or less as a single stripe. The Engineer will measure the painted stripes over twelve (12) inches wide as two (2) stripes. The Engineer will measure the double stripes that are twelve (12) inches or less in total width including the transverse space between the stripes as a single stripe."

(IV) Amend **629.05 – Payment** by revising lines 296 to 330 to read as follows:

"**629.05 Payment.**

(A) The Engineer will pay for thermoplastic and preformed pavement marking tape at the contract price per linear foot according to the contract, complete in place, including primers.

The Engineer will pay for double four (4) inch striping with a four (4) inch space between stripes at the contract price per linear foot basis according to the contract.

The contract unit price paid shall be full compensation for furnishing labors, materials, tools, equipment and incidentals and for doing the work

involved in furnishing and installing pavement markings complete in place according to the contract.

The Engineer will not pay for the temporary pavement markings including flexible delineator posts with reflector markers or Type I Barricades and temporary signs installed for the longitudinal guidance of public traffic over reconstructed areas, cold planed surfaces, newly paved surfaces or other unmarked or scarified areas for payment if not shown in the proposal separately. The Engineer will consider them incidental to the various contract items.

(B) The Engineer will pay for the various types of pavement markers at the contract price per each basis according to the contract, complete in place, including adhesives.

The Engineer will pay for the following pay items when included in the proposal schedule:

Pay Item	**Pay Unit**
_____ Pavement Striping (Type ___ Tape or Thermoplastic Extrusion)	Linear Foot
Type ____ Pavement Marker	Each”

END OF SECTION 629

SECTION 632 – MARKERS

Make the following amendment to said Section:

(I) Amend **Section 632.04 - Measurement** by replacing lines 79 to 81 to read:

"**632.04 Measurement.** The Engineer will measure flexible delineator per each as complete units of the type and design specified in the proposal.

Removal of existing flexible delineators and flexible delineator bases will not be measured."

(II) Amend **Section 632.05 – Payment** by replacing lines 83 to 100 to read:

"**632.05 Payment.** The Engineer will pay for flexible delineator at the contract price per each complete in place. Payment will be full compensation for furnishing and installing materials, furnishing equipment, tools, labors and incidentals necessary to complete the work.

The Engineer will pay for the following pay items when included in the proposal schedule:

Pay Item	**Pay Unit**
Flexible Delineator	Each

Removal of existing flexible delineators and flexible delineator bases will not be paid and will be considered incidental to the various contract items."

END OF SECTION 632

Make the following Section a part of the Standard Specifications:

"SECTION 636 – E-CONSTRUCTION

636.01 Description. This section specifies requirements for performing the Project in a "paperless" manner, using electronic tools for all submittals, communications, quantity tracking, testing, and sampling, scheduling, quality control, and performance monitoring.

636.02 General Requirements. The Contractor shall implement the use of the E-Construction platform, as provided by the HDOT and directed by the Engineer, for use throughout the project. Paper-based or hard copy submittals will not be accepted.

This Special Provision shall take precedence over all other Specification sections with respect to providing and receiving paper copy communications, submittals, and any project records. Where conflicts exist, and a decision between a hard-copy item and a corresponding electronic version is needed, the electronic version shall be selected, unless otherwise directed by the Engineer.

636.03 Construction

(A) Plans and Specifications. Project drawings will not be provided to the Contractor in hard copy format. An electronic version will be provided in the E-Construction platform for use during the project.

The Contractor shall note all changes to the work, including all subcontractor's work, in electronic format using the E-Construction platform Red annotations shall be used to note changes. Blue annotations shall be used for any additional notes that will be helpful for the State in interpreting the field posted drawings. Other drafting standards may be implemented by the Engineer and shall be adhered to by the Contractor. Changes shall be input by the Contractor and reviewed by the Engineer monthly. The Contractor shall make any changes that the Engineer requires.

(B) Submittals. The Contractor shall provide all required submittals, as listed within the contract documents, via the E-Construction platform. All review, approval, and resubmittal regarding submittals shall also be documented within the E-Construction platform

(C) Correspondence. Electronic mail (email) shall be the preferred method of electronic communication. All communications that affect project scope, schedule, cost, or quality, including changes and requests for information, shall be submitted as directed by the Engineer.

(D) Prosecution and Progress. The Contractor shall provide all administrative, management, and project support documents required by various

specification sections, using the E-Construction platform. These elements include, but are not limited to:

(1) Preconstruction Submittals (Section 108.03)
(2) Correspondence regarding Contract Time and Delays (Section 108.05)
(3) Progress Schedules (Section 108.06)
(4) Weekly Meeting preparatory materials (Section 108.07)
(5) Samples, certifications, material data, installation instructions, and shop drawings (Sections 105 and 106)
(6) Field-posted Drawings (Section 648)
(7) Pre-Final Inspection submittals (Section 108.13)
(8) Warranty documentation (Section 108.17)
(9) Project Closing Documents (Section 108.19)

In addition to the foregoing, the Contractor shall provide any other materials, correspondence, and submittals using the E-Construction platform as directed by the Engineer.

(E) Resources. The Contractor shall provide a comprehensive list of Contractor labor and equipment, including all subcontractor labor and equipment, that will be deployed on the project, using spreadsheet-based templates provided in the E-Construction platform. All template fields shall be completed. The submitted information shall comply with the requirements of Specification Section 108 – Prosecution and Progress (identification of labor and equipment resources) and Specification Section 109 - Measurement and Payment (cost data) and represent all individual personnel with labor categories and rates, and all equipment owned or rented, with associated rates, on this project. Updates for additional personnel or equipment shall be accomplished by the Contractor at will and shall be completed when directed by the Engineer.

636.04 Measurement. The Engineer will measure additional E-Construction programs, additional licenses, or additional equipment, if ordered by the Engineer, on a force account basis in accordance with Subsection 109.06 – Force Account Provisions and Compensation.

636.05 Payment. The Engineer will pay for the additional E-Construction programs, additional licenses, or additional equipment, on a force account basis in accordance with Subsection 109.06 – Force Account Provisions and Compensation.

The Engineer may withhold progress payment until the Contractor is in compliance with all E-Construction requirements.

Pay Item	Pay Unit
Additional E-Construction Programs, additional licenses or additional equipment	Force Account

An estimated amount for force account may be allocated in the proposal schedule under “Additional E-Construction Programs, additional licenses or additional equipment.” The actual amount to be paid will be the sum shown on accepted force account records.”

END SECTION 636

SECTION 645 – WORK ZONE TRAFFIC CONTROL

Make the following amendments to said Section:

(I) Amend **645.03 - Construction** by adding the following after the sentence on line 61:

"In addition to the traffic control plans; furnish, install, maintain, re-locate if needed, and removal of two (2) electronic message boards (126 inches wide and 76 inches high) for the duration of the construction, with locations to be determined by the Engineer."

(II) Amend **Subsection 645.03(F) Lane Closures** by revising lines 248 to 275 to read as follows:

> **"(F) Lane Closures.** Lane closures will be allowed only from 8:30 a.m. to 3:00 p.m., Monday through Friday, for daily lane closures. This excludes contraflow lane closures that require longer than one day. Exceptions to lane closure hours specified require written acceptance by the Engineer. No increase in contract price or contract time will be given for lane closure restrictions specified.
>
> Contra-flow lane closures longer than a day shall close one-lane for a specified duration of time. The Contractor shall provide the Engineer 3 weeks notice prior to any contra-flow traffic control implementation.
>
> Full bridge closures, less than 30 minutes, will be allowed at night between 8:00 p.m. and 4:00 a.m. Contractor must clear motorist cue in both directions, before conducting another short-term bridge closure within the same night. The Contractor shall provide the Engineer 3 weeks notice prior to any night closure. The Contractor shall be responsible for notifying the public in advance. No night work will be allowed from September 15 to December 15.
>
> Full bridge closures, greater than 30 minutes, require approval from the DOT Director. The Contractor shall provide the Engineer 4 weeks notice prior to any closure greater than 30 minutes. The Director's response shall not be assumed to be approval. If approved, the Contractor shall be responsible for notifying the public in advance. No night work will be allowed from September 15 to December 15."

END OF SECTION 645

Make this Section a part of the Standard Specifications:

SECTION 661 – FIBERGLASS REINFORCED PLASTIC (FRP) GRATING

661.01 Description. This section describes the requirements for furnishing, fabricating, and installing all fiberglass reinforced plastic (FRP) grating with all appurtenances, accessories, and incidentals necessary to produce a complete, operable, and serviceable installation in accordance with the Contract Drawings and as specified herein.

661.02 Reference Standards.

American Society for Testing Materials (ASTM)

ASTM D-638 “Tensile Properties of Plastic”

ASTM D-790 “Flexural Properties of Unreinforced and Reinforced Plastics”

ASTM D-2344“ Apparent Interlaminar Shear Strength of Parallel Fiber Composites by Short Beam Method”

ASTM D-696 “Coefficient of Linear Thermal Expansion for Plastics”

661.03 Construction

(A) Submittals.

(1) Shop drawings of all fabricated gratings and accessories in accordance with the provisions of this section.

(2) Shop drawings clearly showing material sizes, types, styles, part or catalog numbers, complete details for the fabrication and erection of components including but not limited to, location, lengths, type and sizes of fasteners, clip angles, members sizes, and connection details.

(3) Manufacturer’s published literature including structural design data, structural properties data, grating load/deflection tables, corrosion resistance tables, certificates of compliance, test reports as applicable, and design calculations for systems not sized or designed in the contract documents.

(4) Certified test reports showing the values of the skid-resistant surface coefficient of friction of the FRP grating.

(5) Sample pieces of each item specified herein for acceptance by the Engineer as to quality and color. Sample pieces shall be manufactured by the method to be used in the work.

(B) Quality Control

(1) All items to be provided under this section shall be furnished only by manufacturers having a minimum of ten (10) years experience in the design and manufacturing of similar products and systems. Additionally, if requested, a record of at least five (5) previous, separate, similar successful installations in the last five (5) years shall be provided.

(2) The manufacturer shall offer a minimum 3 year limited warranty on all FRP products against defects in materials and workmanship.

(3) The manufacturer shall be certified to the ISO 9001-2008 standard.

(4) The manufacturer shall provide proof of certification from at least two other quality assurance programs for its facilities or products (DNV, ABS, USCG, AARR).

(5) The manufacturer shall provide proof, via independent testing, that materials proposed as a solution do not contain heavy metals in amounts greater than that allowed by current EPA requirements.

(C) Quality Assurance. If requested by the State, the manufacturer shall provide access to the shop to provide inspection of the work. The manufacturer shall give ample notice to the Contractor prior to the beginning of any fabrication work so that inspection may be provided.

(D) General

(1) Materials used in the manufacturing of the FRP products shall be raw materials in conformance with the specification and certified as meeting the manufacturer's approved list of raw materials.

(2) The grating shall be free, as commercially possible, from visual defects such as foreign inclusions, delaminations, blisters, resin burns, air bubbles, and pits. The visual quality of the pultruded grating shall conform to ASTM D4385.

(3) FRP pultruded grating shall be manufactured using a pultruded process utilizing an Isophthalic Polyester resin with chemical formulations as necessary to provide the corrosion resistance, strength, and other physical properties as required.

(4) All fiberglass grating shall be protected from ultraviolet (UV) attack with an integral UV inhibitor in the resin in addition to an externally shop-applied UV inhibiting coating.

(5) After fabrication, all cut ends, holes, and abrasions of FRP grating shall be sealed with a compatible surface veiling resin coating.

(6) All finished surfaces of FRP items and fabrications shall be smooth, resin rich, free of voids, and without dry spots, cracks, crazes, or unreinforced areas. All glass fibers shall be well covered with resin to protect against their exposure due to wear or weathering.

(7) All mechanical grating hold down clips and hardware shall be Type 316L stainless steel provided by the grating manufacturer and shall be saddle style clips. Quantity and location of hold-down clamps shall be as shown on the contract drawings.

(8) Grating shall be of a pultruded construction with bearing bars and cross bars. The bearing bars shall be joined into panels by passing continuous length fiberglass pultruded cross rods through the web of each bearing bar. A continuous fiberglass pultruded bar shaped section shall be wedged between the two cross rod spacers mechanically locking the notches in the cross rod spacers to the web of the bearing bars. Continuous adhesive bonding shall be achieved between the cross rod spacers and the bearing web and between the bar shaped wedge and the two cross rod spacers locking the entire panel together to produce a panel that resists twist and prevents internal movement of the bearing bars.

(9) The top surface of all panels shall have an integrally applied aluminum oxide non-skid grit affixed to the top surface of the grating followed by a baked-on top coat of epoxy resin.

(10) Surface shall have a wear index of less than 1.0 when tested to ASTM D4060 (Before and after 750 hours of UV exposure per ASTM D4329 cycle A).

(11) Panels shall be ordered in 20’-0” lengths and cut in the field to fit the support locations as shown on the drawings.

(12) Panels shall span a minimum of 3 supports and be installed in a minimum 2-span continuous arrangement. Simply supported grating panels will not be acceptable.

(13) Manufacturer may be required to submit corrosion data from tests performed on actual grating products in standard chemical environments. Corrosion resistance data of the base resin from the manufacturer is not a true indicator of grating product corrosion resistance and shall not be accepted.

(14) Color shall be gray

(15) Depth: 2”

(16) Minimum Grating Section Properties:

a. $A = 4.429\ in^2/ft$
b. $I = 2.298\ in^4/ft$
c. $St = 2.669\ in^3/ft$
d. $Sb = 2.017\ in^3/ft$

(17) Cross Rod Spacing shall not exceed 8 in o.c.

(18) Approx. Weight shall not exceed: 3.94 lbs/sq. ft

(19) The manufacturer shall certify that the stiffness of all panels manufactured are never more than 2.5% below the published load-deflection values.

(E) Fabrication

(1) Measurements. Grating supplied shall meet the dimensional requirements and tolerances as shown or specified or similar as approved product. The Contractor shall provide and/or verify measurements in field for work fabricated to fit field conditions as required by grating manufacturer to complete the work. When field dimensions are not required, Contractor shall determine correct size and locations of required holes or cutouts from field dimensions before grating fabrication.

(2) Layout. Each grating section shall be readily removable, except where indicated on drawings. Manufacturer to provide openings and holes (where located) on the contract drawings. Grating openings which fit around protrusions (pipes, cables, machinery, etc.) shall be discontinuous at approximately the centerline of opening so each section of grating is readily removable.

(3) Sealing. All shop fabricated grating cuts shall be coated with vinyl ester resin to provide maximum corrosion resistance. All field

fabricated grating cuts shall be coated similarly by the contractor in accordance with the manufacturer's instructions.

(F) Product Delivery and Storage

(1) Delivery of Materials. Manufactured materials shall be delivered in original, unbroken pallets, packages, containers, or bundles earing the label of the manufacturer. Adhesives, resins, and their catalysts and hardeners shall be crated or boxed separately and noted as such to facilitate their movement to a dry indoor storage facility.

(2) Storage of Products. All materials shall be carefully handled to prevent them from abrasion, cracking, chipping, twisting, other deformations, and other types of damage. Adhesives, resins, and their catalysts are to be stored in dry indoor storage facilities between 70 and 85 degrees Fahrenheit until they are required.

(3) Identify and match-mark all materials, items, and fabrications for installation and field assembly.

(G) Installation. Contractor shall install grating in accordance with manufacturer's assembly drawings. Ensure support members are secure prior to fastening grating panels in place with hold down fasteners as specified herein. Field cut and drill fiberglass reinforced plastic products with carbide or diamond tipped bits and blades. Seal cut or drill surfaces in accordance with manufacturer's instructions. Follow manufacturer's instructions when cutting or drilling fiberglass products or using resin products; provide adequate ventilation.

661.04 Measurement. Fiberglass reinforced plastic grating will be measured by the actual square feet installed in place and complete and in accordance with the contract documents.

661.05 Payment. The accepted quantities of the fiberglass reinforced plastic grating will be paid for at the respective contract unit price per square feet as shown in the proposal schedule. Payment will be full compensation for the work prescribed in this section and the contract documents.

Pay Item	Pay Unit
Fiberglass Reinforced Plastic Inspection Walkway	Square Feet

END OF SECTION 661

Make the following Section a part of the Standard Specifications:

"SECTION 666– BLAST, CLEAN, AND PAINT EXISTING BRIDGE STEEL

666.01 Description of Work. This work is for the refurbishment and reconstruction painting work of the superstructure at Nanue Stream Bridge. This specification discusses containment of the bridge to prevent the escape of construction debris to the surrounding air, Nanue Stream and riverbanks and surrounding soil.

It details power washing on all structural steel to be painted, Near White Metal blasting and repainting of the retained below deck girders and retained cross bracing. Retained existing steel will be coated with a 3 coat organic zinc – epoxy- fluoropolymer topcoat. The trestle type substructure will be Hot Dip Galvanized (HDG) steel, painted in the shop and touched up in the field upon installation. Repainting of the superstructure girders and existing cross frames to remain will include the use of organic zinc primer, epoxy stripe, epoxy intermediate, and a fluoropolymer topcoat. New steel will be shop galvanized and shop painted with coats of organic zinc primer, epoxy stripe, epoxy intermediate, and fluoropolymer topcoat. In some cases, new girder cross frame and strut steel will be shop galvanized and shop painted with organic zinc primer. After installation in the field, they will be finish coated with epoxy stripe coat, epoxy intermediate and fluoropolymer topcoat.
The Contractor awarded the work will be required to schedule, arrange and conduct a pre-job conference to discuss the pertinent issues of the work. The contractor shall be able to address the work schedule, containment, staffing, and discuss their understanding of the specification. A walk-thru of the work site, if applicable, will be part of the pre-job conference. At a minimum, the Painting Contractor's field foreman and QC representative, the Engineer and any representatives of the Engineer shall be present.

REFERENCE STANDARDS

American Society for Testing Materials (ASTM)

ASTM D-4285 "Standard Test Method for Indicating Oil and Water in Compressed Air"
ASTM D-4940 "Standard Test Method for Conductimetric Analysis of Blasting Media.
ASTM D-4417C "Standard Test Method for Field Measurement of Surface Profile of Blast Cleaned Steel
ASTM D-6386 "Preparation of Zinc (Hot Dip Galvanizing) Coated Iron and Steel Product and Hardware Surfaces for Painting"
ASTM A-123/123M "Zinc (Hot Dip Galvanized) on Iron and Steel Products"

Society of Protective Coatings (SSPC), now AMPP

SSPC Volume 1	"Good Painting Practices"
SSPC-SP-1	"Solvent Cleaning"
SSPC -SP-2	"Hand Tool Cleaning"
SSPC-SP-3	"Power Tool Cleaning"
SSPC-SP-10	"Near-White Metal Blast Cleaning"
SSPC-SP-11	"Power Tool Cleaning to Bare Metal"
SSPC-PA-2	"Procedure for Determining Conformance to Dry Coating Thickness Requirements"
SSPC-QP-1,	"Standard Procedure for Evaluating the Qualifications of Industrial/Marine Painting Contractors"
SSPC-QP-3,	"Certification Standard for Shop Application of Complex Protective Coatings Systems"
SSPC-Guide 6,	"Guide for Containing Surface Preparation Debris Generated during Paint Removal Operations."
SSPC-TG-15,	"Field Methods for Extraction and Analysis of Soluble Salts on Steel and Other Nonporous Substrates"

666.02 Material Requirements.

(A) General. In this text, the words: coat; paint; coating and; painting are interchangeable. The word "system", when referencing coat or paint, means final product of several different, compatible coatings of paint. Specify the new paint, paint additive brand along with, "or approved equal".

(1) The coating system for all steel surfaces of the bridge superstructure (to include girders and attached struts and cross bracing) shall incorporate a custom system consisting of the following. Existing steel will be SP-10 blasted and coated with Organic Zinc Primer, Epoxy Stripe Coat, Epoxy Intermediate, and Fluoropolymer Topcoat. New cross frames will be Hot Dip Galvanized (HDG), and will be coated with organic zinc primer prior to being shipped to the field. After installation, they will be coated in the field with the remaining epoxy intermediate and Fluoropolymer topcoat. The stripe coat will be brush-applied to all edges, corners, bolts, rivet heads, and weld seams.

The bridge substructure (columns and bracing elements) will be new HDG and will be shop coated with zinc primer, Epoxy Intermediate and Fluoropolymer Topcoat. Such pieces will be touched up in the field with the similar system.

(2) Do not mix manufacturers. The same manufacturer shall furnish the primer, intermediate, stripe, and topcoat.

(3) Final topcoat color shall be in accordance with Federal Standard 595B Color 26493.

(4) The Contractor shall submit color selection to the Engineer for review and final selection before ordering paint system products. Each coat of paint shall have distinctly contrasting shades of subsequent coats to be applied to aid in application and inspection.

(5) The Coating Manufacturer shall submit a Certificate of Compliance for the protective coatings stating that the Contractor can apply each coating between temperatures of 50-100ºF, and at relative humidity no greater than 85%. The certification shall state that the paint system complies with the requirements specified herein. If there is a difference in application parameters (temperature, relative humidity, dew point) from the manufacturer of the coatings and those listed in this specification, this specification shall take precedence.

(6) The Coating Manufacturer shall prepare the paint at the factory, ready for application. No field thinning or tinting will be allowed after shipping the paint.

(7) Labels on containers shall show the exact title of the paint, the manufacturer's name, date of manufacture, date of expiration, the manufacturer's batch number, and product code. Package the paint in new approved containers. Precautions concerning the handling and application of paint shall be shown on the label of all paint and clean-up solvent containers.

(B) Coatings Specified. Unless otherwise specified in accompanying specifications, coatings used shall be in accordance with the following coating scheme:

Existing Steel to Remain for Bridge Superstructure:

Surface Preparation: SSPC SP-10 Near-White Metal Blasting (2.0-3.5 mil anchor tooth profile)

Primer:	Zingametall Zinga (organic zinc rich primer) @ 2.5-3.5 mils DFT
Stripe Coat:	Tnemec Epoxoline II Series V69 (hi build polyamide epoxy primer) @ 4-6 mils DFT
Intermediate:	Tnemec Epoxoline II Series V69 (polyamide epoxy primer) @ 4-6 mils DFT
Topcoat:	Tnemec Fluoronar Series 1070V (FEVE Fluoropolymer) @ 2-3 mils DFT

NOTE: All coatings used shall have a mixed VOC at or under 340 g/l (2.8 lbs/gal).

HDG Steel Substructure and New Superstructure Steel

All new pieces shall be Hot Dip Galvanized in the shop according to ASTM-A123. Preparation and coating shall be performed according to Section 667 – Preparation and Coating of Galvanized Bridge Steel with the following system to be applied in the shop after HDG.

Surface Preparation: SSPC SP-16 Brush-Off Blasting (0.75 mil min. anchor tooth profile)

Primer:	Zingametall Zinga (organic zinc rich primer) @ 2.5-3.5 mils DFT
Stripe Coat:	Tnemec Epoxoline II Series V69 (hi build polyamide epoxy primer) @ 4-6 mils DFT
Intermediate:	Tnemec Epoxoline II Series V69 (polyamide epoxy primer) @ 4-6 mils DFT
Topcoat:	Tnemec Fluoronar Series 1070V (FEVE Fluoropolymer) @ 2-3 mils DFT

NOTE: All coatings used shall have a mixed VOC at or under 340 g/l (2.8 lbs/gal).

(C) Paint System Requirements.

(1) For superstructure and substructure steel, the topcoat gloss level shall have a gloss finish, according to the manufacturer's product data sheets. The color of the topcoat shall meet Federal Standard 595B, Color 26493.

(2) In the event the supplier cannot provide the aforementioned coatings, the Contractor shall submit for approval an alternate epoxy-fluoropolymer coating system for review. The submittal shall include documentation that the currently specified system cannot be obtained, and the manufacturer's literature / product data sheets of the alternate system detailing percent volume solids, application parameters, recommended thickness, and VOC, shall be submitted. This literature shall include a reference list of equivalent structural projects where the proposed paint system was used, detailing dates, facility owner and coating applicator. No request for substitution will be considered that would decrease film thickness and/or number of coats or offer a change in the generic type of coating specified.

(3) When the proposed Paint System manufacturer's literature requires a higher degree of surface preparation or a greater film thickness than specified herein, that degree of surface preparation and film thickness shall apply, at no additional cost to the State.

(4) The proposed paint system shall have a minimum of two years' field exposure on similar structures.

(5) No substitution will be considered unless request for approval has been submitted by the bidder and has been approved by the Engineer at least 10 days prior to close of bids. The burden of proof of the merit of the proposed substitute is upon the proposer. The Engineer's decision of approval of disapproval of the proposed substitution shall be final.

666.03 Construction Requirements.

(A) General.

(1) The coating Contractor shall comply with the current, State, Federal and local laws and regulations pertaining to the protection of the environment in the performance of this type of work. These include but are not limited to regulations required by the State Department of Health (DOH), and Federal Environmental Protection Agency (EPA) rules and regulations.

(2) The coating Contractor shall comply with the current Federal Occupational Safety and Health Administration (OSHA) and Hawaii Occupational Safety and Health (HIOSH) requirements for worker protection and safety equipment during all work on this project.

(3) The painting contractor shall be certified to SSPC-QP-1, Field Application to Complex Marine and Industrial Structures.

(4) All surface preparation and painting operations shall be inspected by an AMPP Certified Coating Inspector (formerly NACE CIP-2) coating inspector, to be supplied by the Contractor. At a minimum, the inspector shall be present for all checkpoints listed in this specification. Inspections shall detail environmental conditions throughout the working day, coating processes used, surface preparation processes used, DFT coating thicknesses of each coat for existing steel, recoat windows, discrepancies, corrective actions, coatings applied, and any other pertinent information listed on submittal forms.

(5) The HDG shop facility shall be certified to SSPC QP-3 Shop certification at the time of work. All procedures and documentation performed with coating galvanized pieces shall be in accordance with the facility's established procedures documented as part of their QP-3 certification.

(B) Site Preparations.

(1) The Contractor's work shall be made accessible to the Engineer at all times. Contractor shall provide all safety, fall protection, access and scaffolding needs for the Engineer. The Contractor shall make access to all superstructure and sub-structure access to all components using man-lifts, ladders and/or scaffolding, or stairs.

(2) Wood Removal - Contractor will be responsible for removal of wooden pick boards left resting on lower members of steel cross frames beneath roadway surface. Planks remain under each of the 10 girder spans and total approximately 100.

(3) The stainless steel lifeline brackets and wire rope which run along each girder span (upriver side and downriver side) shall be removed prior to surface preparation, and re-installed in their same locations after final painting has cured.

(C) Containment of Work and Protection of the Environment

(1) In order to protect the surrounding natural environment and work environment, the Contractor will be required to contain each superstructure (existing steel girder spans) work area so that there is

no escape of water-wash effluent, paint debris, abrasive blast media or dust, and any other construction debris to the surrounding area. In addition, care should be taken to contain any overspray to escape into the surrounding environment, above and under the structure. The contractor shall construct containment, or multiple containments, capable of containing all material as described above. The contractor shall incorporate SSPC Guide 6, containment Class 1A or 2A into their design submittals. According to SSPC Guide 6 "Containment systems may need to be reviewed by a registered professional engineer prior to erection and use to confirm the structural adequacy of the containment and the effect of various loads imposed."

(2) Containment material shall be water impermeable where water washing will take place, and with rigid floor construction to aid in collection of spent abrasive where abrasive blasting will take place.

(3) Wash water effluent shall be removed on an ongoing basis throughout the project as to not interfere with ongoing operations. Containment of the work area shall remain in place until the final coat of paint has been cured, inspected, and accepted by the Engineer.

(D) Surface Cleaning and Preparation. The coating contractor shall prepare the bridge steel as specified below:

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(1) Before any surface preparation, remove all visible and non-visible contaminants described herein by methods specified in SSPC-SP1 Solvent Cleaning. General cleaning shall be accomplished using Low Pressure Water Cleaning (as defined in SSPC WJ-2/NACE WJ-2) at minimum working pressures of 1000 psi, not to exceed 3000 psi using fresh water. For the purposes of this specification, fresh water shall be defined as local potable water quality.

(NOTE: For tight crevices, additional means above LPWC may be necessary to remove tightly adherent pack rust, dirt and moss. Hand tools such as scrapers and Greenie pads may be necessary to achieve a contaminant-free surface

(NOTE: All sources of compressed air shall be tested daily and verified to be clean, dry, and oil free per ASTM D-4285.)

(2) Vacuum or air blow-down (using clean, dry and oil-free air) shall be used to remove any standing water and to aid in drying surfaces prior to mechanical methods of surface preparation.

(3) Edge treatment – Some edges of existing steel to remain may show signs of "knife edge corrosion" where the steel has thinned due to corrosion. Where such sharp edges occur, contractor shall radius them with power tools to a 2-3 mm radius edge. Radiusing shall be accomplished after initial abrasive blasting.

(4) Surface preparation of Superstructure existing steel to remain shall be done in two passes and in accordance with Society of Protective Coatings standard.

Initial Pass - SSPC-SP-6 Commercial Blast Cleaning. Following the initial pass, the Contractor shall make all contract specified repairs and inspect the exposed steel for any additional necessary repairs and inform the Engineer.

Final Pass – SSPC-SP10 – Near White Blast Cleaning just prior to paint.

After the initial blasting pass but prior to the final blasting pass, new galvanized and primed cross frames and struts will be installed on the bridge. During final blasting work, the Contractor shall make use of blasting tape and other shielding measures to prevent any damage from occurring to the newly bolted steel members.

The final blast profile shall be an anchor tooth profile of 2.0 – 3.5 mils, and shall be accomplished with an approved abrasive of sufficient grit size to achieve the proper profile. Profile shall be checked per ASTM D4417C. At least 5 profile measurements shall be taken per 1000 ft^2 blasted.

QC Checkpoint – SP-10 and Profile

(5) After SP-2/SP-3 cleaning, surfaces to be cleaned may require an additional SP-1 solvent cleaning prior to painting.

NOTE ON QC CHECKPOINTS - Coating Contractor shall inform Engineer at least 4 hours prior to QC Checkpoint operations. In the event the Engineer is not present at the requested time, the Contractor may proceed to the next evolution, if Contractor documents QC data on the required data sheets, and written approval is obtained from the Engineer.

QC Checkpoint - Cleanliness

All surfaces to be prepared shall meet the requirements of SSPC-SP-1 Solvent Cleaning. Surfaces shall be cleaned so that chloride measurements taken on the washed steel measure under 10 µg/cm^2 chlorides as measured with any method detailed in SSPC Technology Guide 15. A minimum of 1 measurement shall be made for each 1000 ft^2 of surface washed. Surface conductivity may be substituted for chlorides. Conductivity shall measure less than 100 µS/cm.

QC Checkpoint – Chlorides/Conductivity

(E)

Application of Caulking (for Existing Superstructure)

(1) After applicable dry-to-recoat time of the primer, as described in its PDS, all faying surfaces including but not limited to: girder bottom flange cover plate to bottom flange, girder bottom flange to web, top edge and two vertical edges of all girder splice plates, riveted stiffener to girder web, and cross frame/strut gusset plate connections to the stiffener. See contract drawings for additional information pertaining to caulk application. Additionally, the girder web to top flange faying surfaces shall be caulked. Caulk shall be a compatible flexible industrial grade moisture cured single-component urethane caulking compound in accordance with ASTM C920, Type S, Grade NS. Caulk shall be cured according to its cure schedule prior to application of the stripe coat.

(F) Application of Stripe Coat (for Existing Superstructure and New Substructure Steel)

(1) Prior to stripe coating, verify all surfaces are clean and contaminant free according to SSPC SP-1.

(2) All stripe coating shall be accomplished by brush. Striping shall be applied to ALL edges, corners, crevices, nuts, bolts, weld seams and tight metal-to-metal joints, with the selected epoxy intermediate coating. Stripe coat shall be of distinctly contrasting color of prior applied coating to aid in determining coverage. During application, immediately brush out any runs, drips, sags or puddles. Stripe coating shall cover all edges of the structure, extending approximately ½" on either side of the edge, where applicable. Stripe coating shall be uniform in appearance.

(3) Galvanized fasteners (nuts, washers and bolts), if applicable, shall be wire brushed, solvent wiped and striped and painted as described herein.

(4) Stripe coat shall additionally be applied to all edges and weld seams of the new galvanized and primed girder cross frames and struts.

Verify stripe coat is applied to all applicable surfaces with no visible holidays and in accordance with good painting practice as detailed in SSPC PA-1.

QC Checkpoint – Stripe Coat

(G) Application Requirements (Prime Coat, Intermediate, and Topcoat), where applicable for all areas.

(1) The Contractor shall paint the bridge repair areas according to the best practices of the trade, in conformance with the recommendations of the coating manufacturer as delineated in the Product Data Sheets, observing all recommended environmental conditions, recoat windows, wet and dry film thicknesses, and in conformance with applicable portions of the Steel Structures Painting Council Specification SSPC-PA 1, except where superseded by these specifications.

(2) Coating applicators shall use wet film thickness (WFT) gages periodically to ensure proper application thicknesses. Periodic WFT measurements shall be made during paint application utilizing an approved wet film thickness gage. After sufficient cure time, dry film thickness readings shall be taken with a calibrated electronic gage, of each coat in accordance with SSPC- PA-2. DFT measurements shall not be made in areas of stripe coat, as these will be higher than specified ranges. Where thickness measurements fall below the specified minimum, make additional application of paint as necessary to meet the thickness required, at no additional cost to the State.

QC Checkpoints- Intermediate and Topcoat

Verify substrate cleanliness immediately prior to prime coat application. Clean in accordance with SSPC SP-1 if not clean prior to application of prime coat.

After cure of prime coat, accomplish a visual holiday inspection and rectify any discrepancies according to the Engineer.

Verify substrate cleanliness immediately prior to intermediate application. Clean in accordance with SSPC SP-1 if not clean prior to application of intermediate coat.

After cure of intermediate coat, accomplish a visual holiday inspection and rectify any discrepancies according to the Engineer.

Verify substrate cleanliness immediately prior to topcoat application. Clean in accordance with SSPC SP-1 if not clean prior to application of topcoat.

After cure of topcoat, accomplish a visual holiday inspection and rectify any discrepancies according to the Engineer.

Verify DFT readings of prime, intermediate and topcoats in accordance with SSPC PA-2, according to the DFT schedule listed for the selected coating system.

(3) Sufficient time shall elapse between successive coats to permit them to dry properly for recoating. Consult specific Product Data Sheet (PDS) for proper cure times. If any appreciable time elapses between painting operations, as judged by the Engineer, the coating manufacturer or Contractor shall re-clean surfaces before restarting painting operations.

(4) Apply coatings via airless spray utilizing approved equipment standard to the industry according to the instruction of the paint manufacturer. Topcoats shall be applied by airless spray to a smooth even finish free of runs, drips, sags, dry-spray, orange-peel, and holidays. (All stripe coating on the bridge superstructure and retained steel shall be applied by brush.)

(5) All coatings shall be applied between ambient conditions of 50°F – 90°F and substrate temperatures under 100°F. Relative humidity shall not exceed 85% during application and cure. During painting, substrate temperature must be at least 5°F above the dew-point and rising. If environmental restrictions of the coating PDS differ from the aforementioned requirements, these requirements shall take precedence.

(H) Surface Preparation and Coating Application for Field Touch-up areas. A touch-up area is any area on the steel which includes a surface

defect such as a gouge, scrape, or any area that has been damaged during the handling, transportation, ongoing bridge construction, that has damaged the underlying HDG layer (if applicable), or applied primers and topcoats. Areas burned by torch cutting and welding are also included as touch-up.

(1) Prepare damaged area(s) to sound coating or steel using methods described in SSPC-SP-2 Hand Tool Cleaning, SSPC-SP-3 Power Tool Cleaning. If damaged area is to bare steel, ensure that the exposed steel has a surface profile of 2.0 – 3.5 mils profile, using methods described in ASTM D4417C. Note that rotary disc sanding will destroy existing galvanizing or profile on the steel, so establishment of a profile by mechanical impact tooling such as needle guns, Bristle Blasters™, or roto-peens will be necessary.

(2) Ensure that the surrounding area to intact coating is feathered smooth to eliminate rough edges.

(3) Any single repair area under 4 in^2 may be repaired with SP-2/SP-3 methods, as approved by the Engineer. Any repair area over 4 in^2 bare rusting steel shall be prepared in accordance with SP-11. For touch-up on new HDG steel, care shall be taken to not destroy or remove underlying galvanizing layer on the underlying steel. If galvanizing is removed, zinc based primer shall be used in the touch-up process.

(4) Remove any dust, residue and debris prior to paint touch-up according to SP-1.

(5) Apply touch-up coats of the entire selected coating system if the damage exposes bare substrate steel. Application shall be by brush to specified thicknesses, in accordance with manufacturer's Product Data Sheet (PDS)

(6) Follow Subsection 666.03(G) - Application Requirements (Primer, Intermediate and Topcoat), where applicable for all areas.

QC Preparation and Application for Touch-Up areas - All areas touched-up shall be verified for completeness by the Engineer prior to final acceptance.

QC Checkpoint – Touch-Up

(I) Submittals.

(1) Paint and Caulk Manufacturer's Product Data Sheet (PDS). The Contractor shall submit paint and caulking (joint sealant) manufacturer's paint Product Data Sheet (PDS) with their written warranty, including the conditions limiting the warranty. Product Certificates of Conformance (CoC's) shall accompany all material used under this specification and shall be submitted. Any alternate materials, as described above shall be submitted to the Engineer for review at least 7 days prior to the start of production work.

(2) Paint and Caulk Manufacturer's Safety Data Sheets (SDS). The contractor shall submit the corresponding SDS for each material supplied, including intermediate, stripe, and topcoats, along with thinning/cleaning solvents.

(3) Abrasive. If will be required to submit the type and size of abrasive, along with any pertinent documentation and Certificates of Conformance shall be submitted for the abrasive used in abrasive blasting operations for both in field work and shop work. The CoC for the abrasive media shall list abrasive cleanliness testing results per ASTM D4940.

(4) Coating contractor's Quality Control (QC) reports. The Contractor shall maintain daily surface preparation and coating inspection reports in accordance with details of the QP-1 Contractor Certification. The reports shall detail the work performed, noting areas prepared/painted, environmental conditions throughout the day (to include Substrate Temperature, Ambient Temperature, Dew Point, and Relative Humidity), product applied, batch numbers, date of manufacture, acceptance criteria, QC data, notes and any problems encountered. Photos detailing general work area and any applicable details shall be included in daily reports. A weekly report shall be compiled from the daily reports and submitted to the Engineer on a weekly basis. Coating QC records for shop coating of HDG components for the sub-structure are also to be submitted to the Engineer on a weekly basis.

(5) A sample blank copy of the daily inspection report to be used shall be submitted to the Engineer prior to the start of production work. This sample report shall be formatted specifically for this project with applicable inspection fields contained herein.

(6) Coating Contractor's Work Plan. Within two weeks of starting production work, the contractor shall submit a Coating Work Plan, detailing a timetable of significant events for the entire bridge repainting process. The work plan, at a minimum, will detail coating

contractor name and location, days and working hours, traffic flow disruptions, dates of mobilization, dates of containment erection, preparation and coating activities, specific equipment and methods used, and abrasive media (if applicable) data sheets, final acceptance and demobilization.

(7) Name and resume of proposed AMPP Certified Coating Inspector (formerly NACE CIP Level 2) detailing past inspection activities

(8) Containment Design detailing the level and Class of containment (per SSPC Guide 6), details of materials of construction, framing, penetrability, joints, ventilation, air-handling equipment, and lighting, if applicable.

(I) Cleanup and Disposal. Any original equipment removed prior to blasting (such as superstructure lifelines and wire rope) shall be reattached in original locations using original hardware. The Contractor shall clean up the entire project site of painting, cleaning debris, containment, masking material, BMP's and other debris caused by the Contractor's operations, before receiving final payment. This work shall be considered incidental to the other contract items.

QC Checkpoint- Final Acceptance

The Engineer shall have the right to reject all work which is not in compliance with the contract documents.

666.04 Measurement.

(A) Abrasive Blast, Clean, and Paint Existing Bridge Steel Members will be paid on a lump sum basis. Measurement for payment will not apply. Removal and disposal of power washing water and debris, and the use of a AMPP Certified Coating Inspector (Formerly NACE CIP Level 2 coating inspector) shall be considered incidental to abrasive blast, clean, and paint existing bridge steel members.

(B) The Engineer will measure Radius Edges of Existing Steel Bridge Members to Remain per liner foot in accordance with the contract documents.

(C) The Engineer will measure Caulk Edges of Faying Surfaces on a force account basis in accordance with Subsection 109.06 – Force Account Provisions and Compensation and as ordered by the Engineer.

666.05 Payment. The Engineer will pay for the accepted pay item listed below at contract price per pay unit, as shown in the proposal schedule. Payment will be full compensation for work prescribed in this section and contract documents.

The Engineer will pay for the following pay item when included in the proposal schedule:

Pay Item	Pay Unit
Clean and Paint Existing Bridge Steel Superstructure Members	Lump Sum
Radius Edges of Existing Steel Bridge Members to Remain	Linear Foot
Caulk Edges of Faying Surfaces	Force Account

The requirements of Specification Section **104.07 Variations in Estimate Quantities** is not applicable to the pay item for Radius Edges of Existing Steel Bridge Members to Remain. This quantity may vary by as much as 40% before an adjustment in the contract price can be made.

Payment for work under this Specification does not cover installation, maintenance, and removal of underdeck work platform beneath the bridge superstructure. Underdeck work platform shall be covered under Section 209.

END OF SECTION 666”

Make the following Section a part of the Standard Specifications:

"SECTION 667 - PREPARATION AND COATING OF GALVANIZED BRIDGE STEEL

667.01 Description of Work. This specification defines the material and execution requirements for the shop preparation and shop coating of galvanized bridge components for the Nanue Stream Bridge.

This specification is to supplement the specification Section 666 "Blast, Clean, and Paint Existing Bridge Steel". It is limited in scope to cleaning surface preparation and coating of galvanized substrates for the bridge substructure and replacement elements for the superstructure and as detailed in the contract drawings. All other practices in Section 666 apply unless noted herein. The galvanized pieces will be brush-off blasted, coated with one coat of an organic zinc primer, epoxy stripe coat, epoxy intermediate, and one coat of a fluoropolymer topcoat.

The substructure trestles, tie plates, bearing assemblies, lateral diagonal bracing, and plaque shall be new Hot Dip Galvanized (HDG) steel, painted completely in the shop and touched up in the field upon installation. New steel will be shop galvanized and coated with a 3 coat organic zinc, epoxy, fluoropolymer topcoat system.

Struts and cross-frames (marked for replacement) shall be new HDG steel, painted with an organic zinc prime coat in the shop. After installation in the field, the members shall be coated with the remaining epoxy midcoat and fluoropolymer topcoat system at the same time that the bridge girders and painted. The Contractor shall use caution when working around the painted cross frames and struts so as not to damage them.

REFERENCE STANDARDS

American Society for Testing and Materials (ASTM International)
ASTM D-4285 "Standard Test Method for Indicating Oil and Water in Compressed Air"
ASTM D-4940 "Standard Test Method for Conductometric Analysis of Blasting Media.
ASTM D-4417C "Standard Test Method for Field Measurement of Surface Profile of Blast Cleaned Steel
ASTM D-6386 "Preparation of Zinc (Hot Dip Galvanizing) Coated Iron and Steel Product and Hardware Surfaces for Painting"
ASTM F-21 "Standard Test Method for Hydrophobic Surface Films by the Atomizer Test"

ASTM A-123/123M “Zinc (Hot Dip Galvanized) on Iron and Steel Products”

Society of Protective Coatings (SSPC), now AMPP

SSPC Volume 1 “Good Painting Practices”
SSPC-SP-1 “Solvent Cleaning”
SSPC -SP-2 “Hand Tool Cleaning”
SSPC-SP-3 “Power Tool Cleaning”
SSPC-SP-10 “Near-White Metal Blast Cleaning”
SSPC-SP-11 “Power Tool Cleaning to Bare Metal”
SSPC-SP-16 “Brush-Off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals”
SSPC-PA-2 “Procedure for Determining Conformance to Dry Coating Thickness Requirements”

SSPC-QP-1, “”Field Application of Coatings to Complex Industrial and Marine Structures”
SSPC-QP-3, “Standard Procedure for Evaluating the Qualifications of Industrial/Marine Painting Contractors”

667.02 Material Requirements.

(A) General All coatings specified in Section 666 – Blast, Clean, and Paint Existing Bridge Steel shall be used for coating the galvanized components.

(B) Thinners and Additives. Thinners or additives shall be those recommended by the coating manufacturer. Thinner shall be primarily used for cleaning of equipment. Thinner may not be added in amounts exceeding the limits set forth in the manufacturer’s product data sheets (PDS).

(C) HOT-DIP GALVANIZING REQUIREMENTS

1. Hot-Dip galvanizing practices shall be in accordance with the applicable portions of ASTM A 123/123M, A 153/A 153M, and F2329.
2. Water quenching or chromate conversion coating is to be avoided as these processes interfere with paint adhesion and surface preparation.

667.03 Construction Documents

The work of this section shall comply with ASTM D6386

(A) Inspection. Inspect surfaces to verify suitability of the surfaces to receive paints prior to the commencement of surface preparation and paint application. Establish an initial average applied dry film thickness (DFT) of the galvanizing using equipment described in SSPC-PA-2. Report, in

writing, to the Engineer or his designated representative any condition that may affect proper application of overall performance.

(1) Surface Smoothing. Zinc high spots, such as a metal drip line, shall be removed by cleaning with hand tools or power tools as described in SSPC Surface Preparation Specification SSPC-SP-2 or SSPC-SP3. The zinc shall be removed until it is level with the surrounding area, taking care that the base galvanized layer is not damaged.

(B) Surface Preparation

(1) Solvent Cleaning: Visual grease and oil shall be removed prior to the surface preparation. This shall be accomplished in accordance with SSPC SP-1 (Solvent Cleaning) and Low Pressure Water Cleaning (LPWC). Water break tests shall be performed to insure removal of contaminants prior to surface preparation and coating. Testing shall be per ASTM F-21.

(2) Ambient Conditions: Final surface preparation which exposes bare steel shall not be performed when the relative humidity in the work area exceeds 85%. The surface temperature of the steel shall be at least 5 deg. F above the dew point temperature of the surrounding air during surface preparation.

(3) Compressed air cleanliness: The supply air used for cleaning, blow down, of painting using conventional and airless paint equipment shall be free from moisture and oil contamination. The air cleanliness shall be verified daily using the ASTM D 4285 blotter test method.

(4) Abrasives and Profile: Abrasives used for Brush-Off blasting shall be clean and uniformly graded, free of oil, soluble salts and other similar substances. Brush off blast abrasives shall have hardness less than 5 on the Mohs scale and a particle size in the 200-500 micron range. Due to the intricate assembly of the steel elements, adjusting stand-off distance will prove difficult. It is important that the appropriate abrasive is selected that will allow the blaster to achieve the intended results. All abrasives shall be tested for cleanliness per ASTM D-4940 prior to use. Submit abrasive material, indicating type, size, and Moh's hardness to the Engineer for review and approval.

(5) Abrasive Brush-off blasting of galvanized components shall be according to SSPC-SP-16, to achieve a general roughened texture of no less than 0.75 mils. Abrasive brush-off blasting shall use a rapid nozzle movement to roughen the HDG texture, as per ASTM D-6386.

(6) Abrasive size and nozzle pressure should be adequate to achieve the desired profile without damaging or eroding the HDG coating. No more than 1.0 mil of galvanizing is permitted to be removed in the process.

(7) After SSPC SP-16 has been accomplished, blow down all surfaces with clean dry compressed air to ensure all dust is removed prior to painting.

(8) Subsequent to brush off blasting, visually examine all surfaces to ensure completeness of surface preparation.

(9) Random profile measurements shall be made according to ASTM D-4417C to ensure proper technique. Baseline DFT measurements shall be taken over brush-off blasted HDG components to ensure preservation of the original galvanized thickness and to establish a baseline thickness to be used to evaluate final coating system thickness.

(10) Any areas of galvanizing that have been blasted to bare steel or damaged during mechanical tool cleaning shall be touched up with an organic zinc rich paint prior to coating application. Organic zinc paint shall be selected from Section 666 – Blast, Clean, and Paint Existing Bridge Steel.

(C) COATING APPLICATION

(1) Surface Condition: The surface shall exhibit the degree of preparation specified immediately prior to painting. Coating of the prepared pieces shall be accomplished within 24 hours of completion of surface preparation. Pieces shall remain in the controlled shop environment for the duration of surface preparation, coating and cure.

(2) Surface cleanliness

- **a.** Prior to coating, thoroughly clean all surfaces to be coated and remove spent abrasive, dirt, dust, or other contaminants. Follow these cleaning steps on the initial cleaning and between coats of a multi-coat system and during the curing process.
- **b.** Adequate dust collection, containment and/or dust removal is required for the project. Proper ventilation shall be maintained during surface preparation coating application, and cure.
- **c.** No dust is allowed to remain on the substrate or allowed to fall on the freshly applied coating during the coating application and/or during the curing process.
- **d.** Embedded abrasive or dust on the substrate or in the coating film must be removed prior to any coating application.

(3) Grease and Oil: Remove any oil or grease that may have been deposited on the prepared surface prior to application of the specified coating system by solvent cleaning (SP-1).

(4) Ambient conditions: Apply coatings within the environmental condition ranges specified in the individual PDS. As a general rule, the

following conditions apply and supersede any published in the coating PDS:

a. Surface and Air Temperature - Between 50°F – 100°F

b. Relative Humidity – less than 85%

c. Dew Point - Surface temperature of substrates shall be at least 5°F greater than the dew point of the surrounding air and rising.

d. Atmosphere - Do not paint when the air adjacent to the surface contains a fog, mist, dust, or other particulate matter. Do not perform coating operations during winds exceeding 15 mph.

(D) COATING COVERAGE and CONTINUITY

(1) Stripe coat: Apply a stripe coat of the un-thinned intermediate (epoxy) coat by brush to all edges, corners, crevices, welds and pits or other surface continuities prior to the application of the intermediate coat.

(2) Coverage: Apply coatings via conventional spray or airless spray to all surfaces with special attention to hard-to-reach areas such as underneath support brackets, back-to-back angles, deep recesses, or inside of built up column/brace sections. The Contractor shall make their best effort to get even and full coverage in hard to reach/tight spaces. In some cases, access to areas may necessitate the use of hand brushing with extensions.

(3) Continuity: All coats shall have a smooth surface and be free of dry spray, overspray and orange peel. Pinholes, bubbles, and holidays are not acceptable. Brush out runs and sags while material is still wet.

(4) Observe all applicable recoat windows as specified in the PDS. If no recoat window is specified, a minimum of 12 hours and maximum of 24 hours shall be observed as the applicable window.

(5) Dry Film Thickness (DFT)

a. Apply each coat to the thickness range specified in the PDS. Applicators shall periodically use wet film thickness (WFT) gages to ensure proper DFT over the HDG surfaces. Contractor shall be required to record DFT readings as part of Quality Assurance records.

b. Average baseline galvanized steel thickness shall be subtracted from average DFT readings of each coat to calculate the true coating thickness.

(E) REPAIR OF DAMAGED COATINGS ON THE SUBSTRATE

Repair all damaged or deficient coatings prior to the project completion.

(1) Preparation of Localized Damages: Power tool clean the damaged area in accordance with SSPC-SP-3. After preparation the area shall

be needle gunned to re-establish a profile if any grinding was performed Follow ASTM D-6386 for galvanized substrate repairs.

(2) Preparation of extensive damage – Repair in accordance with the Baseline Specification.

(3) Coating Application: When the base of the substrate is exposed, re-apply all coats of the coating system. When the damage area does not extend to the bare substrate, re-apply only the affected coats. Exercise special care to maintain the specified thickness of the system in the overlapped area onto the existing coat.

(F) TOUCH-UP COATING OF GALVANIZED BOLTS AFTER ERECTION

All field bolted connections of galvanized and painted members shall have the bolt ends, nuts, and washers completely coated. This work shall be done by painting contractors engaged with a certified SSPC-QP-1 operation. This work shall not be performed by iron workers.

(1) Wire brush exposed end of bolt, nut, washer taking care not to damage surrounding paint on base metal.

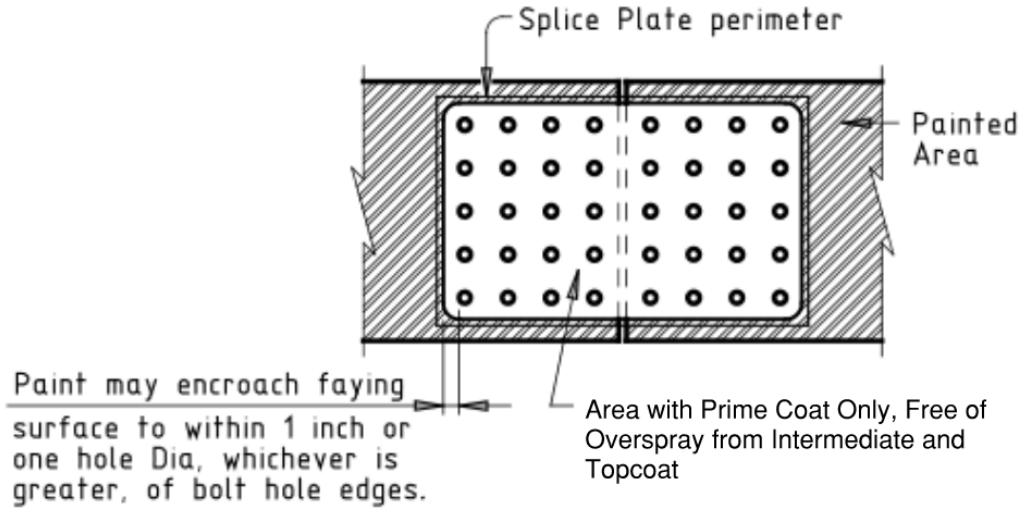
(2) Solvent wipe surface of bolt head, nut, and washer to the requirements of SSPC-SP-1

(3) Apply, by brush, an un-thinned application of the specified topcoat to the entire surface of the bolt, nut, and washer, ensuring the paint seals all edges back to the splice plate/gusset plate.

(G) SLIP CRITICAL CONNECTIONS AND TOUCH-UP COATING OF GALVANIZED BOLTS AFTER ERECTION

(1) NOTE for MASKING:

After galvanizing, slip critical splice connection surfaces shall be masked according to the detail below, using suitable means that will not damage the underlying HDG layer or surrounding area. Masking shall be removed from all splice connection areas within 48 hours of topcoat application. Masking will not be necessary for faying surfaces of the cross-frame connections to the girder stiffeners. Refer to the plans for locations where slip critical connections occur.



(2) Any faying surface in contact at a slip critical connection shall only be primed according to this specification with no additional coats. After erection, the primed surfaces and bolts shall be touched up with both the intermediate and topcoat according to this specification.

(3) Wire brush exposed end of bolt, nut, washer taking care not to damage surrounding paint on base metal.

(4) Solvent wipe surface of bolt head, nut, and washer to the requirements of SSPC-SP-1

(5) Apply, by brush, an un-thinned application of both the specified intermediate coat and topcoat to the entire surface of the bolt, nut, and washer, ensuring the paint seals all edges back to the splice plate/gusset plate.

(H) INSPECTION HOLD-POINTS

All hold-points for Quality Control listed in the base specification, Item 666, shall be recorded and accomplished, in addition to the following:

(1) Calculation of Baseline DFT of Galvanizing

(2) Surface Smoothing of Galvanizing Defects

(3) Surface Cleanliness (Water break Test), prior to surface preparation by Brush-Off Blasting

(4) Blast Air Quality

(5) Abrasive Cleanliness

(6) Visual examination for dust after blasting and prior to striping of bolted connections and crevices

(7) Visual Cleanliness examination prior to intermediate coat and topcoat application

(8) Profile of brush-off blasted surfaces

(9) Repair of coating defects and touch-up application of bolts

(10) Final DFT of galvanizing and Paint and Workmanship

(I) Submit to the Engineer the shop applicator's Certificate of Compliance that the prepared Hot Dip Galvanized coating surfaces meet or exceeds the requirements for successful painting of the surface.

667.04 Measurement.

(A) Clean and Paint New Steel Trestles will be paid on a lump sum basis. Measurement for payment will not apply. Removal and disposal of wash water/media abrasive and the use of an AMPP Certified Coating Inspector (Formerly NACE CIP Level 2 coating inspector) shall be considered incidental to Clean and Paint New Bridge Steel Trestles.

(B) Clean and Paint New Bridge Steel Cross Frames, Struts, Tie Plates, and Lateral Diagonal Bracing will be paid on a lump sum basis. Measurement for payment will not apply. Removal and disposal of wash water/media abrasive and the use of an AMPP Certified Coating Inspector (Formerly NACE CIP Level 2 coating inspector) shall be considered incidental to Clean and Paint New Bridge Steel Cross Frames, Struts, Tie Plates, and Lateral Diagonal Bracing.

(C) Touch-Up Paint Bolted Connections at Trestles After Erection will be paid on a lump sum basis. Measurement for payment will not apply. Equipment/Work platforms needed to gain access to the bolted connection locations shall be considered included in the other various pay items.

667.05 Payment. The Engineer will pay for the accepted pay item listed below at contract price per pay unit, as shown in the proposal schedule. Payment will be full compensation for the work prescribed in this section and the contract documents.

The Engineer will pay for the following pay item when included in the proposal schedule:

Pay Item	Pay Unit
Clean and Paint New Bridge Steel Trestles	Lump Sum
Clean and Paint New Bridge Steel Cross Frames, Struts, Tie Plates, and Lateral Diagonal Bracing	Lump Sum
Touch-Up Paint Bolted Connections at Trestles After Erection	Lump Sum

END OF SECTION 667”

Make the following Section a part of the Standard Specifications:

"SECTION 670 - GLASS FIBER REINFORCED POLYMER REBAR

670.01 Description. This work includes the furnishing and placing of Glass Fiber Reinforced Polymer (GFRP) Reinforcing Bar according to the contract.

670.02 Materials. GFRP Reinforcing shall conform to ASTM D7957, ACI 440.1-15 "Guide for the Design and Construction of Concrete Reinforced with FRP Bars" and AASHTO "LRFD Bridge Design Guide Specifications for GFRP – Reinforced Bridge Deck and Traffic Railings." In addition, GFRP reinforcing material properties shall be in accordance with ASTM D7205 and also meet the following minimum conditions and properties:

Tensile Strength: 21.6 kips, min. for #4 bar; 29.1 kips, min. for #5 bar. Per ASTM D7205

Tensile Modulus of Elasticity: 6,500,000 psi, min. Per ASTM D7205

Ultimate Tensile Strain: 1.1% min. Per ASTM D7205

Guaranteed Bond Strength to Concrete: 1,100 psi min. Per ASTM 7913.

Glass content by weight: 70% min. Per ASTM D2584.

Guaranteed Ultimate Tensile Force of Bent Portion of Bar: 60%. Per ASTM D7914

The product shall be non-magnetic, non-conducting and corrosion resistant. The use of ferrous materials is prohibited. The product shall exhibit chemical resistance to salts, acids and concrete chemistries.

(A) Materials shall be obtained from a manufacturer regularly engaged in the production of GFRP rebars. Six copies of the manufacturer's brochures shall be submitted.

(B) A copy of the manufacturer's Quality Assurance Manual shall be provided prior to delivery of any product to the site.

(C) Tensile test reports from the manufacturer shall be provided for every 3,000 feet of product supplied in accordance with ASTM D-3916-84.

(D) Assigned Lot traceability numbers from the manufacturer with each shipment shall be provided. These numbers shall change with each production shift.

(E) Daily resin impregnation test results shall be provided at the request of the Engineer.

(F) Certified test results of material properties shall be provided.

670.03 Construction Requirements.

(A) General.

(1) Straight Bars. All GFRP reinforcing bars shall consist of uniformly pretensioned continuous longitudinal fibers encapsulated in the matrix material. The outer surface shall be deformed by a helical wrap of glass and sand coating providing a mechanical bond between the bar and concrete. The GFRP reinforcing bars shall not be cut or taken from the production line until an initial curing state has been reached and the bars exhibit dimensional stability.

(2) Fabricated Bends. All bends shall be fabricated in the factory and straight thermal curing shall not take place until all fabrication has been completed. Such fabrication shall always be executed with the use of molds. Each radius shall transfer no less than 60% of ultimate tensile strength. ACI 318 minimum radius shall be adhered to unless otherwise permitted by the Engineer. Field bends are not possible and shall not be permitted.

(B) Installation. The product shall be field cut with masonry blades. A dust mask or other suitable protection shall be used during the cutting process. Due to the rebar's very low specific gravity, it may tend to float in concrete during vibration; therefore, care should be exercised to adequately secure GFRP in formwork using chairs with non-ferrous ties such as nylon zip ties. Nylon zip ties shall be used to tie GFRP at their junctures to keep them in place.

(C) Order Lists and Bending Diagrams. The Contractor shall submit six (6) copies of the GFRP rebars order lists and bending diagrams to the Engineer. The Contractor shall be wholly and completely responsible for the accuracy of the lists and diagrams.

(D) Storage, Surface Condition and Protection of Reinforcement. The Contractor shall store the GFRP rebars above the surface of the ground upon platforms, skids, or other supports. GFRP rebars shall be covered to protect them from ultraviolet exposure, high temperatures, and chemical substances. The Contractor shall protect the GFRP rebars from other surface damage. The GFRP rebars shall be free of mortar, oil, dirt, and other coatings that would destroy or reduce the bond. GFRP rebar shall not be dropped on the ground by workers at any time. The GFRP rebars shall also be free from injurious defects including cracks and laminations.

670.04 Measurement. GFRP Reinforcing will be paid on a lump sum basis. Measurement for payment will not apply.

670.05 Payment. The Engineer will pay for accepted GFRP reinforcing on a contract lump sum basis. Payment will be full compensation for the work prescribed in this section and Subsection 109.01 – Schedule of Agreed Prices for Lump Sum Price Items.

Pay under:

Pay Item	**Pay Unit**
GFRP Reinforcing for _____	Lump Sum

The Engineer will not pay for chairs, clips, ties, or other fastening reinforcement in place separately and will consider the cost for these items as included in the contract price. The cost is for the work prescribed in this section and the contract documents.“

END OF SECTION 670

Make the following section a part of the Standard Specifications:

"SECTION 671 – PROTECTION OF ENDANGERED SPECIES

671.01 Description. The endangered Hawaiian Hoary Bat (*Lasiurus cinereus semotus*), the endangered Band-rumped Storm-Petrel or 'ake'ake (*Oceanodroma castro*), the endangered Hawaiian Duck or Koloa Maoli (*Anas wyvilliana*), the endangered Hawaiian Coot or 'Alae ke'oke'o (*Fulica americana alai*), the threatened Hawaiian Goose or Nene (*Branta sandvicensis)*, the endangered Hawaii Petrel or 'ua'u (*Pterodroma sandwichensis*), the endangered Hawaiian Stilt or Ae'o (*Himantopus mexicanus knudseni*), the threatened Newell's Townsend's Shearwater or 'a'o (*Puffinus auricularis newelli*), the threatened Green Sea Turtle or Honu (*Chelonia mydas*), the endangered flowering plant Alani *(Melicope zahlbruckneri)*, the endangered flowering plant Nanu *(Gardenia remyi)*, the endangered plant *Deparia kaalaana*, and the endangered plant *Microlepia strigose var. mauiensis.* are in the general vicinity of the proposed project that may transit or visit the proposed project.

The Contractor shall protect these endangered species throughout the construction duration.

671.02 Materials. None

671.03 Construction.

(A) Pre-Construction and Construction Requirements. Comply with the following conditions and the notes in the Contract Plans:

(1) Hawaiian Hoary Bats. Hawaiian Hoary Bats nest in both exotic and native woody vegetation. There will be no disturbance, removal, or trimming of woody plants greater than 15 feet (4.6 meters) tall during the birthing and pup rearing season (June 1 through September 15).

Additionally, barbed wire will not be used for fencing.

(2) Sea Turtles. It is anticipated that the Project would have no effect on the Green Sea Turtle due to the lack of sandy beach areas within the action area. However, to avoid and minimize project-related adverse effects to the sea turtles, incorporate these conservation measures:

(a) No vehicle use or modifying the beach environment.

(b) Employ U.S. Fish and Wildlife Service Recommended Standard Best Management Practices when working in aquatic

environments.

(c) Remove any project-related debris, trash, and equipment from the beach.

(d) Do not stockpile project-related materials in the intertidal zone, reef flats, stream channels, or river channels.

Incorporate these measures to avoid and minimize project-related adverse effects to sea turtles and their young from lighting:

(a) No nighttime work during the nesting and hatching season, which extends from May through December.

(b) Minimize the use of lighting and shield all project-related lights to ensure this light is not visible from any beach.

(c) If full shielding of light is not possible, or if headlights are required, fully enclose the light source using light filtering tape or filters.

(3) Hawaiian Goose. Any Hawaiian Goose in or near the project area will not be approached, fed, or disturbed in any way.

If Hawaiian Goose are observed loafing, foraging, or otherwise present within the project area during the breeding season (September 1 through April 30), survey the area and conduct nest surveys around the project area by a biologist familiar with the nesting behavior of Hawaiian Goose prior to the resumption of any work. Surveys will be repeated after any delay in work of three or more days. If a nest is identified within 150 feet of the work area, all work will cease and the U.S. Fish and Wildlife Service (Service) will be contacted immediately for further guidance.

In areas where Hawaiian Goose are known to be present, reduced speed limits will be posted and implemented and project personnel and Contractors will be informed of the presence of endangered species on-site.

(4) Hawaiian Seabirds. Hawaiian seabirds may traverse the project area at night during breeding season, which extends from September 15 through December 15. If night time work will be required, all lights will be fully shielded so the bulb can only be seen from below bulb height and will only be in use when necessary to reduce the potential for interactions of nocturnally flying seabirds with external lights and man-made structures. All outdoor lights will be

turned off when human activity is not occurring in the lighted area.

No nighttime construction will occur during the peak seabird fledging period (September 15 through December 15).

(5) Hawaiian Waterbirds. Hawaiian waterbirds occupy fresh and brackish-water marshes and natural or manmade ponds. Hawaiian stilts also occupy areas with ephemeral or persistent standing water. Because this project occurs near water, threats to these species from this project may include disturbance from human activity and injury or mortality from vehicle strikes.

Contractor shall incorporate these measures to avoid and minimize project-related adverse effects to the Hawaiian waterbirds:

(a) In areas where known presence of Hawaiian waterbirds occurs, post and implement reduced speed limits, and inform project personnel and Contractors of the presence of these endangered species.

(b) Because water resources occur in the project site, employ U.S. Fish and Wildlife Service Recommended Standard Best Management Practices when working in aquatic environments.

(c) Survey for Hawaiian waterbirds in or near the project area prior to work using survey biologists. Survey biologists should be trained and capable of identifying adults and juveniles of each species, nesting behaviors, and nests.

i. Survey for species and nests shall be conducted within 3 days of project initiation and be repeated when a delay of work occurs that is three days or more (during which the birds may attempt to nest).

ii. If a nest or active brood is found, contact the Service within 24 hours for further guidance.

iii. Establish and maintain a 100-ft buffer around all active nests and/or broods until the chicks/ducklings have fledged. Do not conduct potentially disruptive activities or habitat alteration within this buffer.

iv. Have a biological monitor that is familiar with the species' biology present on the project site during all construction or earth moving activities until the

chicks/ducklings fledge to ensure that Hawaiian waterbirds and nests are not adversely affected.

(6) Vegetation. To avoid and minimize potential project impacts to flowering plants, ferns, and allies, follow Table 671.03 – BUFFER DISTANCE TO ENDANGERED VEGETATION.

TABLE 671.03 – BUFFER DISTANCE TO ENDANGERED VEGETATION

Action		Buffer Distance (feet(meters)) – Keep Project Activity This Far Away from Listed Plant	
		Grasses/Herbs/Shrubs and Terrestrial Orchids	**Trees and Arboreal Orchids**
Walking, hiking, surveys		3 ft (1 m)	3 ft (1 m)
Cutting and Removing Vegetation by Hand or Hand Tools (e.g., weeding)		3 ft (1 m)	3 ft (1 m)
Mechanical Removal of Individual Plants or Woody Vegetation (e.g., chainsaw, weed eater)		3 ft up to height of removed vegetation (whichever greater)	3 ft up to height of removed vegetation (whichever greater)
Removal of Vegetation with Heavy Equipment (e.g., bulldozer, tractor, "bush hog")		2x width equipment + height of vegetation	820 ft (250 m)
Use of Approved Herbicides (following label)	**Ground-based Spray Application; Hand Application (no wand applicator; spot treatment)**	10 ft (3 m)	Crown Diameter
	Ground-based Spray Application; manual pump with wand, backpack	50 ft (15 m)	Crown Diameter
	Ground-based Spray Application; vehicle-mounted tank sprayer	50 ft (15 m)	Crown Diameter
	Aerial Spray (ball applicator)	250 ft (76 m)	250 ft (76 m)
	Aerial Application – herbicide ballistic technology (individual plant treatment)	100 ft (30 m)	Crown Diameter
	Aerial Spray (boom)	Further consultation required	Further consultation required

Use of Insecticides (pollinators, seed dispersers)		Further consultation required	Further consultation required
Ground/Soil Disturbance/Outplanting/Fencing (Hand tools, e.g., shovel; Small mechanized tools, e.g., auger)		20 ft (6 m)	2x Crown Diameter
Ground/Soil Disturbance (Heavy Equipment)		328 ft (100 m)	820 ft (250 m)
Surface Hardening/Soil Compaction	**Trails (e.g., human, ungulates)**	20 ft (6 m)	2x Crown Diameter
	Roads/Utility Corridors/Buildings/Structures	328 ft (100 m)	820 ft (250 m)
Prescribed Burns		Further consultation required	Further consultation required
Farming/Ranching/Silviculture		820 ft (250 m)	820 ft (250 m)

(B) Compliance Requirements. The Contractor shall protect all species noted above for the duration of construction. Failure to comply with the construction requirements, harm or a taking of an individual during the construction duration shall be enforceable by the U.S. Fish and Wildlife Service as set forth by the Endangered Species Act. Resultant penalties and/or fines shall be at the Contractor's expense without cost or liability to the State.

671.04 Measurement. The Engineer will measure the work required for the protection of endangered species on a force account basis in accordance with Subsection 109.06 – Force Account Provisions and Compensation and as ordered by the Engineer.

671.05 Payment. The Engineer will pay for the accepted protection of endangered species on a force account basis in accordance with Subsection 109.06 – Force Account Provisions and Compensation. Payment will be full compensation for the work prescribed in this section, by the Engineer, and in the contract documents.

The Engineer will pay for the following pay item when included in the proposal schedule:

Pay Item	**Pay Unit**
Protection of Endangered Species	Force Account

An estimated amount may be allocated in the proposal schedule under "Protection of Endangered Species", but the actual amount to be paid will be the

sum shown on the accepted force account records, whether this sum be more or less than the estimated amount allocated in the proposal schedule."

END OF SECTION 671

Make this Section a part of the Standard Specifications:

"SECTION 677 – PENETRATING SEALER FOR BRIDGE DECKS

677.01 Description. This work consists of providing all labor, materials, and equipment required to prepare, clean, and apply a penetrating epoxy sealer system to concrete bridge decks.

677.02 Materials.

(A) Penetrating Sealer. All materials shall be virgin; free of secondary components, volatile solvents, and external/conventional flexibilizers. Component batches shall be interchangeable. Epoxy sealer shall be a solvent-free 0-VOC, two-component, 100% solids, moisture insensitive, low viscosity, low modulus epoxy penetrating sealer. Epoxy shall meet the current ASTM C881 and AASHTO M235, Type III, Grade 1, Classes B & C specifications and the requirements listed in Table 1 below.

Table 1 – Two-Component Resin Binder Requirements

Property	Requirement	Test Method
Viscosity	<150 cps	ASTM D2393
Tensile Properties, 7 day cure	Tensile Strength >1,000 psi (12.4 MPa)	ASTM D638
	Tensile Elongation: 50%	
Compressive Properties, 7 day cure	Compressive Strength: >2,500 psi (20.9 MPa)	ASTM D695
	Compressive Modulus: <130,000 psi (620 MPa)	
Bond Strength	250 psi (2.0 MPa)	ASTM C1583/ACI 503R
Thermal Compatibility	Pass	ASTM C884
Water Absorption	0.2% (24 hr)	ASTM D570
Chloride Ion Permeability	0.0 coulomb	AASHTO T277
Gel Time (60 g mass)	>15 minutes	
Tack Free Time (73º F or 23º C)	2 to 5 hours	

- A test report* consisting of a certification by an *AASHTO resource/CCRL* accredited independent testing laboratory showing compliance with the requirements of this specification and material properties. Include the laboratory's accreditation and the certification of the technician that performed the test for the test method performed with the test results.

- Product data sheets and specifications from the manufacturer showing instructions, application recommendations, methods, and product properties.

*Dated within 90 days of contract award.

Table 2 - Working Time

Surface Temperature (ºF)	Maximum Working Time* (minutes)
50	50
60	40
70	30
80	20
90	10
100	8
110	6
120	4

*Includes mix time, resin binder and aggregate placement.
Note: Consult manufacturer for surface temperatures exceeding 120ºF.

(B) Topping Aggregate. Furnish aggregate meeting the requirements listed in Table 3 – Topping Aggregate Properties and Table 4 – Gradation for Topping Aggregate below unless otherwise specified by the Engineer. Deliver the aggregate to the construction site in unopened bags or super sacks labeled clearly for identification. Provide aggregate that is virgin, clean, dry, and free from foreign matter. Ensure aggregate meets the requirements in Table 3 – Topping Aggregate Properties and Table 4 – Gradation for Topping Aggregate. Ensure aggregate is angular, consists of natural silica sand, basalt, or other nonfriable aggregate, and contains less than 0.5 percent moisture when tested in accordance with ASTM C 566. A sample of the aggregate lot/batch shall be supplied upon request.

Table 3 – Topping Aggregate Properties

Property	Test Method	Requirements
Gradation	ASTM C136	See Table 4
Moisture	ASTM C566	NCAT 0.5%
MOHS Hardness	MOHS Scale	>7.0
Micro-Deval	AASHTO T327	ODOT <10%
Absorption	ASTM C127	NCAT 2.0%

Table 4 – Gradation for Topping Aggregate

Armorstone	992-3 - #14 x #50
Sieve size	Individual % Retained
No. 12	0 – 0.1
No. 14	0 – 10
No. 16	0 – 25
No. 20	10 – 70
No. 30	10 – 90
No. 40	0 – 40
No. 50	0 – 5
No. 60	0 – 0.5
No. 100	0 – 0.5
Pan	0

(C) Storage and Handling. All materials shall be delivered in their original unopened containers bearing the manufacturer's label, specifying date of manufacturing, batch number, trade name, and quantity. Each shipment of resin binder shall be accompanied by a Safety Data Sheet (SDS).

The material shall be stored to prevent damage by the elements and to ensure the preservation of their quality and fitness for the work. The storage space shall be kept clean, cool, covered, and dry per manufacturer's recommendations.

Stored materials shall be inspected prior to their use, and shall meet the requirements of this Specification at the time of use.

Any material which is rejected based on failure to meet the required tests or that has been damaged to a point where it is unsuitable for use shall be immediately replaced at no additional cost to the State.

The Contractor shall arrange to have the material supplier furnish technical service related to application of material and health and safety training for personnel who are to handle the penetrating sealer.

Any recycled topping aggregates shall meet the same requirements listed in Table 3 – Topping Aggregate Properties and Table 4 – Gradation for Topping Aggregate. Recycled topping aggregates shall be stored separately from new topping aggregates.

677.03 Construction.

(A) Submittal Requirements. Prior to the Just-In-Time Training (JITT) and the start of this work, provide 6 copies (2 copies for Highways Division Materials Testing and Research Branch (HWY-L)) of the following submittals in one complete set for acceptance. Clearly indicate the section the material is being submitted for, including the test method identification, table it is located on in the section, name of the product and its manufacturer on pertinent submittals. No work that is related to these submittals shall be performed until written acceptance has been received.

(1) Name and contact information of the resin binder and aggregate manufacturer's technical representative and other key personnel.

(2) A warranty on the products provided by the epoxy binder manufacturer. Warranty shall be for a minimum of 10 years.

(B) Quality Control (QC) Plan. Submit a QC Plan to the Engineer for acceptance a minimum of 30 days prior to the installation and the Just-In-Time Training (JITT). Resubmittal of the document will require another 30 days for each resubmittal. Discuss the QC Plan requirements at the JITT and progress meetings. The JITT shall not be held unless the QC Plan is accepted 30 days before the scheduled JITT date. Work shall not start on the penetrating sealer, including the test application, until the JITT has been completed and the QC Plan and the Work Plan have both been accepted. The QC Plan shall contain at a minimum the following information:

(1) Names and contact information for key personnel, project superintendent, and lead technician responsible for field quality control sampling and testing.

(2) Location of resin binder production plants and batch production records.

(3) Location of aggregate production plants and batch production records.

(4) Proposed method of installation at each location identified to receive surfacing.

(5) Resin binder and aggregate manufacturer's material information including:

(a) Recommended placement instructions with adjustments for Hawaii's ambient weather conditions.

(b) Mixing instructions.

(c) Recommended installation temperatures.

(d) Anticipated gel and cure times at various expected ambient temperatures for all sites.

(e) Methods of safe storage and handling.

(f) Applicable installation and material limitations.

(g) Disposable methods for excess mixed resin binder and associated components.

(h) Means and methods for recycling of aggregates. QC/QA testing to ensure recycled aggregates meet requirements listed in Table 3 – Topping Aggregate Properties and Table 4 – Gradation for Topping Aggregate.

(i) Production plant location contact information for the quality control/quality assurance (QC/QA) personnel where additional information can be requested concerning record keeping methods, inspection methods, equipment calibration records, and accreditation certificates.

(j) Test reports of bond strengths shall be submitted once every 2 weeks.

The QC Plan shall designate a QC Manager, who shall be present at the jobsite and have full authority to request any action necessary for the operation of the QC Plan providing it complies with the contract documents and acceptance of the Engineer.

The QC Manager shall be certified in all test methods used and be responsible for the required field quality control in sampling and testing in conformance with the accepted quality control plan, test methods and contract documents. All sampling shall be performed in the presence of the Engineer. All testing must be performed by certified personnel. The certification must be for the test methods used. The Engineer is not responsible and shall not be regarded as part of the Contractor's QC team. It is the responsibility of the Contractor and the QC Manager to ensure that the test procedure being used is compliant with the test method standard. Inspections are performed for the exclusive benefit of the State. The inspection of or the failure to inspect the work shall not relieve the Contractor of obligations to fulfill the contract as prescribed, to correct defective work, and to replace unsuitable or rejected materials regardless of whether payment for such work has been made. The

Engineer has the right to reject the test if the Engineer feels that it is non-compliant, e.g., the technician who performed the test is not certified or the material testing laboratory is not accredited to perform the required tests. Maintain and have available upon request, the current test standard methods documentation being used, referenced documents, complete records of sampling, testing, corrective actions, and quality control inspection results.

A technical representative from the resin binder manufacturer shall be present at the JITT, Test Application, e.g., deck repair, surface preparation, installation and acceptance of the penetrating sealer, and at the construction site for at least the first two days of the penetrating sealer installation.

(C) Work Plan. Submit a Work Plan to the Engineer for approval 30 days prior to the JITT. No installation work shall start until the Work Plan is accepted and discussed in the JITT. Discuss the Work Plan requirements at the progress meetings. The Work Plan shall contain at a minimum the following information:

(1) Detailed information on all equipment and materials that will be used for all aspects of the work.

(2) Method of surface preparation and required surface condition for adequate bonding.

(3) Method of crack repair and defective concrete repair of existing concrete deck.

(4) Construction during inclement weather. Plan for the occurrence of rain, moisture in the pavement, and temperature requirements for the materials being used.

(5) Mixing ratio and application rates for resin binder and aggregate. Refer to Table 2 – Working Time.

(6) Paving Plan (Jointing Plan, Installation sequence, Direction of Paving, etc.).

(7) Application Method.

(8) Curing time and requirements for opening to traffic.

(9) Testing for bond.

(10) Corrective actions that will be taken for unsatisfactory installation practices. Any corrective actions that have not been discussed in this submittal shall be submitted for approval by the Engineer.

If any work during the entirety of the project does not comply with or follow the approved work plan, a new work plan shall be submitted and approved prior to any work resuming.

(D) Just-In-Time-Training. JITT shall be held and shall conform to Section 695 – JUST IN TIME TRAINING.

(E) Equipment. For the epoxy penetrating sealer, provide a distribution system or distributor capable of accurately blending the epoxy resin and hardening agent, and uniformly and accurately applying the epoxy materials at the specified rate to the bridge deck in such a manner as to cover 100 percent of the work area. Provide a fine aggregate spreader capable of uniformly and accurately applying dry aggregate to cover 100 percent of the epoxy material. Provide a self-propelled vacuum truck to remove all loose aggregate.

(1) For hand applications, provide calibrated containers, a-Jiffy® type mixer for mixing, and equipment or tools suitable for applying the epoxy. Aggregate shall be broadcast by hand until refusal onto the wet epoxy.

(2) For mechanical applications, provide meter-mixing equipment that will automatically and accurately proportion the components in accordance with the manufacturer's recommendations and will mix and continuously place the penetrating sealer. Ensure the operation proceeds in such a manner that will not allow the mixed materials to segregate, dry, be exposed or otherwise harden in such a way as to impair the retention and bonding of broadcasted aggregate.

(F) Surface Preparation. Remove entire AC overlay on the existing bridge prior to starting surface preparation for the existing concrete bridge deck. Surface preparation shall conform to the following requirements:

(1) The existing concrete deck shall be roughened by shotblasting or approved equal. If HPC is not placed within 48 hours of shotblasting then the existing concrete deck will need to be shotblasted again at no extra cost to the State.

(2) Sweep the surface clean with a vacuum sweeper. Then blow the surface clean with oil-free compressed air to remove dust and laitance.

(3) Clean and prepare cracks greater than 0.010-inches wide per resin binder manufacturer's recommendations.

(4) Clean and prepare divots/depressions per resin binder manufacturer's recommendations.

(5) All laitance, contaminants, paint, markers, and foreign material that may be detrimental to the bonding of the new overlay must be removed from the existing concrete surface.

The Contractor shall take extra care not to damage the existing expansion joints during the surface preparation of the existing concrete deck.

An approved moisture meter shall be used to check the moisture in the existing substrate prior to application of any surface treatment. An equal or better method may be submitted to the Engineer for approval. A maximum moisture reading of under 3% will be allowed. If rain occurs for more than 10 minutes no application of penetrating sealer will be allowed for the remainder of the work shift.

During surface preparation and application, precaution shall be taken to assure that traffic is protected from rebound, dust and construction activities. Dust in the air at night may become an opaque vision barrier to motorists due to headlights and floodlights. The Contractor must not allow this to happen. Appropriate shielding shall be provided as required and as directed by the Engineer at no additional cost. The Contractor shall provide suitable protection as needed to protect all exposed areas not to receive penetrating sealer such as parapets, drains, etc. All damage and defacement resulting from the application shall be cleaned and, or repaired to the Engineer's satisfaction at no additional cost to the State.

(G) Test Application. The test application shall be a part of the production location before starting production work. Resin binder manufacturer's representative shall be present during the test application. The test application shall meet the following requirements:

(1) Install a minimum of 1000 square feet.

(2) Construct using the same method and equipment as the production work.

(3) Construct an additional test application for each method proposed for the production work.

(4) Replicate field conditions, including ambient and surface temperatures, time period, anticipated for production work.

(5) Demonstrate surface preparation method as outlined in the QC plan.

(6) Demonstrate that the data management system is capable of documenting ambient and surface temperatures, quantities of resin binder and aggregate, coverage rates and reporting application rates in real time.

(7) Determine the initial set time for the resin binder.

The Contractor shall perform three pull-off tests on the trial pour in accordance with ASTM C1583 Standard Test Method for Tensile Strength of Concrete Surfaces and Bond Strength or Tensile Strength of Concrete Repair and Overlay Materials by Direct Tension (Pull-off Method) and the manufacturer's recommendations. The pull-off tests shall have a minimum tensile bond strength of 250 psi at 7 days or 100% substrate failure. The Contractor shall record the pull-off test results and the amount of any failure into the base concrete, and shall provide written documentation of the test results. The Engineer will designate the location of the pull-off tests. After the completion of the tests, repair all test areas using penetrating sealer and topping aggregate.

The Contractor shall not begin construction operations at the site receiving penetrating sealer until receiving approval of the completed test application. If the test application is rejected then the Contractor shall perform another test application at no additional cost or contract time to the State. Rejected test application shall be removed per Subsection 105.12 - Removal of Non-Conforming and Unauthorized Work.

(H) Placement.

(1) Mixing.

(a) Hand Mixing. Precondition material to 75°-85°F before using. Measure and mix one part by volume of Part A with one part by volume of Part B for three minutes with a low speed (< 450 rpm) drill using a jiffy mixer or paddle. Mix only as much material as can be used within the pot life. Air, material, and surface temperature must be a minimum of 50°F (10°C) prior to mixing or installation. The Contractor shall limit hand applications and only use it where absolutely necessary. Hand applications must be approved by the Engineer prior to starting work.

(b) Mechanical Mixing. Application equipment shall be calibrated, self-propelled, and capable of continuously and thoroughly blending the resin binder components to the ratio recommended by the manufacturer. For mechanical applications consult material manufacturer for proper mixing and dispensing equipment.

(2) Application. Expansion joints, drains and grates shall be adequately isolated to prevent any penetrating sealer from entering drainage and joint systems. The penetrating sealer discharged from the mixer shall be uniform in composition and consistency. Mixing capability shall be such that initial and final finishing operations can proceed at a steady pace.

Continuous application must be performed by approved, calibrated, self-propelled application equipment capable of continuously and thoroughly blending the resin binder components to the ratio recommended by the manufacturer. An equal or better method may be submitted to the Engineer for approval. After the epoxy mixture has been prepared, immediately distribute evenly and work into concrete with a squeegee or approved equal for a minimum of 5 minutes for maximum penetration. Keep ponding epoxy into cracks until refusal. Existing surface profile of substrate shall be factored into volume calculations. All tines and surface irregularities shall be filled with this material. Penetrating sealer shall have a minimum thickness of 25-30 mils. Verify thickness using a Wet-Mil film thickness gauge for each placement at 700 square feet intervals and at the discretion of the Engineer. Thickness measurements shall not be taken in the tines, but on the surface of the concrete (top of the tines).

The continuous application equipment shall have an aggregate distribution system capable of mechanically placing aggregate into the wet resin binder evenly across the full width of the installation. The application equipment shall install the penetrating sealer at a minimum application rate of 240 square feet per minute. An equal or better method may be submitted to the Engineer for approval. Ensure the topping aggregate is applied uniformly within the working time.

Ensure handling and mixing of the epoxy resin and hardening agent is performed in a safe manner to achieve the desired results in accordance with the manufacturer's recommendations or as directed by the Engineer. Do not place penetrating sealer when the concrete surface is less than 50 degrees Fahrenheit (F) or ambient air temperature is forecast to fall below 50 degrees F within 8 hours of application. Do not place penetrating sealer materials if weather or surface conditions are such that the material cannot be properly handled, placed, and cured according to the manufacturer's requirements and the specified requirements for traffic control. Penetrating sealer shall only be placed after the existing concrete is cleaned according to Subsection 677.03 (F) - Surface Preparation.

Ensure no bleed through or wet spots are visible once the topping aggregate is applied. Minimize all foot traffic on the uncured epoxy and ensure any foot traffic will only be done with steel spiked shoes approved by the Engineer. Do not allow traffic or equipment on the penetrating sealer surface during the curing period. Remove all loose aggregate after the curing period with a vacuum or broom without tearing or damaging the surface. Perform a final sweep of loose aggregates and debris from the areas adjacent to the applied penetrating sealer within end of work shift. Ensure all expansion joints are free of loose aggregate, epoxy and other debris.

For repairing individual cracks follow manufacturer's recommendations on mixing and placement.

(3) Curing. Traffic and construction equipment shall not be permitted on the completed penetrating sealer for 3 hours after placement or until the penetrating sealer is tack free whichever is later.

(I) Testing. Test for any raveling, delamination, streaking, or bond test failure according to the manufacturer's recommendations. A minimum of three pull-off tests at locations selected by the Engineer shall be performed for each placement. Testing will be performed in accordance with ASTM C1583 Standard Test Method for Tensile Strength of Concrete Surfaces and Bond Strength or Tensile Strength of Concrete Repair and Overlay Materials by Direct Tension (Pull-off Method) and the manufacturer's recommendations. A passing test occurs when the failure of the concrete substrate or bond strength is above 250 psi at 7 days. Fill cored holes with penetrating sealer material approved by the Engineer. A passing substrate failure is when more than 50% of the substrate covers the specimen being tested. Fill cored holes with material approved by the Engineer.

(J) Acceptance and Corrective Action. The completed penetrating sealer shall be free of any smooth or wet areas such as those resulting from insufficient quantities of topping aggregate. Completed surface must smooth out the existing deck to achieve a uniform thickness, texture and appearance.

Correct all defects in material and work, as directed, at no additional cost to the Engineer, according to the following:

(1) Remove and replace any penetrating sealer that the Engineer determines has any raveling, delamination, streaking, or bond test failure. Removal and replacement shall be in accordance with the manufacturer's recommendations and accepted by the Engineer.

(2) Ensure the minimum replacement is the full lane width and the length of the defect plus five lane feet on the up-station and down-station side of the edge of the defect area and as accepted by the Engineer.

Replaced areas will be retested and evaluated for acceptance or further corrective action.

(3) Any roadway features disturbed, damaged or defaced by the work or the Contractor's operations shall be restored with the same materials and design as directed by the Engineer at no additional cost to the State.

The Engineer shall have the right to reject all work which is not in compliance with the requirements of the drawings and specifications. Rejected work shall be removed per Subsection 105.12 – Removal of Non-Conforming and Unauthorized work.

677.04 Measurement. Penetrating sealer will be measured per square foot as shown on the plans and contract documents.

Crack Repair will be paid on a force account basis in accordance with subsection 109.06 – Force Account Provisions and Compensation.

677.05 Payment. The Engineer will pay for the accepted quantities of penetrating sealer complete in place at the contract unit price per square foot. Payment for JITT shall be considered as incidental for this section. The Engineer will pay for the accepted crack repairs on a force account basis in accordance with subsection 109.06 – Force Account Provisions and Compensation. Payment will be full compensation for the work prescribed in this section and the contract documents.

Payment will be full compensation for furnishing and placing all materials, and for furnishing all equipment, labor, and incidentals necessary to complete the work as specified.

No separate or additional payment will be made for preparing road surface, placing materials in final position, sweeping or for the minimum testing of the materials and placement as defined in this specification.

No separate or additional payment will be made for reinstallation and retesting of penetrating sealer where the initial installation was determined to be defective.

The Engineer will pay for the following pay items when included in the proposal schedule:

Pay Item	**Pay Unit**
Penetrating Sealer _____	Square Foot
Additional Penetrating Sealer for Filling Top of Deck Cracks	Force Account"

END OF SECTION 677

Make the following Section a part of the Standard Specifications:

"SECTION 678 – HYBRID POLYMER CONCRETE (HPC)

678.01 Description. The work shall include the furnishing of all labor, materials, equipment and any other related miscellaneous items necessary to completely construct all HPC as shown on the plans and as specified herein.

HPC shall be 100% solids, thermosetting hybrid polymer concrete and composed of the following four components: two-component reactive hybrid polymer resin binder, a blend of specified aggregates to be mixed with the resin binder, and topping aggregate.

678.02 Materials.

(A) Two-component Resin Binder. The resin binder shall be solvent-free, 0-VOC, moisture-insensitive, two-component reactive thermoset polymer binder conforming to the following requirements in Table 1 – Physical Requirements for HPC Resin Binder:

Table 1 – Physical Requirements for HPC Resin Binder

Quality Characteristic	Test Method	Requirement
Viscosity (RV2 @ 20 RPM)	ASTM C881 / AASHTO M 235	1000 – 1500 cP
Flash Point	ASTM D3278	>250° F
VOC Content	ASTM D2369*	<10 g/L
Gel Time	C881 / AASHTO M 235	10 minutes minimum
Tensile Strength (7 days)	ASTM D638, Type I Specimen	1500 – 2500 psi
Tensile Elongation	ASTM D638	40% minimum at 7 days
Adhesion to Concrete	ASTM C1583 (ACI 503R)	250 psi or 100%
		substrate failure at 24 hrs
Water Absorption (24 hrs.)	ASTM D570	0.5% maximum
Type D Hardness	ASTM D2240	60 – 80
Thermal Compatibility	ASTM C884	PASS
Chloride Ion Permeability	AASHTO T277	<10.0 Coulombs
Compressive Modulus	ASTM C579	<450,000 psi
(7 day)	(Extended)	

*Method E, 55-60 mil thickness

-No volatile chemical odors
-No explosive catalysts or ingredients allowed
-Material must be MADE IN THE USA

(B) Aggregates. The aggregate for the HPC shall conform to this section and conform to the following:

(1) Gradation shall be in accordance with Table 2 – Gradation for HPC Aggregate.

Table 2 – Gradation for HPC Aggregate

Sieve size	Percentage passing
1/2"	100
3/8"	98-100
No. 4	77-100
No. 8	60-82
No. 16	34-56
No. 30	5-25
No. 50	0-15
No. 100	0–7
No. 200	0–3

(2) The aggregate absorption shall not exceed 1.5% as determined by AASHTO T 85 or as otherwise approved by the Engineer.

(3) At the time of mixing with the resin, the moisture content of the aggregate, as determined by AASHTO T 255, shall not exceed one half of the aggregate absorption.

(4) The HPC aggregate temperature must be between 45 deg. F and 100 deg. F at the time of mixing.

(C) Topping Aggregate. Furnish aggregate meeting the requirements listed in Table 3 – Topping Aggregate Properties and Table 4 – Gradation for Topping Aggregate unless otherwise specified by the Engineer. Aggregate shall be a dull black in color. Deliver the aggregate to the construction site in bags or super sacks labeled clearly for identification. Provide aggregate that is virgin, clean, dry, and free from foreign matter. A sample of the aggregate lot/batch shall be supplied upon request.

Table 3 – Topping Aggregate Properties

Test Data Description	Test Procedure	Requirements
Gradation	ASTM C136	See Table 4
Moisture	ASTM C566	NCAT 0.5%
MOHS Hardness	MOHS Scale	>7.0
Micro-Deval	ASTM D6928	2.3% loss
Absorption	ASTM C128	<0.9%

Table 4 – Gradation for Topping Aggregate

Armorstone	980-3 - #4 x #16
Sieve size	Percentage passing
No. 4	100
No. 8	15-25
No. 16	0-5
No. 30	0-1

(D) Storage and Handling. All materials shall be delivered in their original unopened containers in new undamaged condition, bearing the manufacturer's label, specifying date of manufacturing, batch number, trade name, and quantity. Each shipment of resin binder shall be accompanied by a Safety Data Sheet (SDS).

The material shall be stored to prevent damage by the elements and to ensure the preservation of their quality and fitness for the work. The storage space shall be kept clean, covered, cool and dry.

Stored materials shall be inspected prior to their use, and shall meet the requirements of this Specification at the time of use.

Any material which is rejected because of failure to meet the required tests or that has been damaged so as to cause rejection shall be immediately replaced at no additional expense to the State.

The Contractor shall arrange to have the material supplier furnish technical service related to application of material and health and safety training for personnel who are to handle the HPC.

Any recycled topping aggregates shall meet the same requirements listed in Table 3 – Topping Aggregate Properties and Table 4 – Gradation for Aggregate Topping. Recycled topping aggregates shall be stored separately from new topping aggregates.

678.03 Construction Requirements. Conform to the requirements of Section 503 – Concrete Structures and Section 601 – Structural Concrete in these specifications.

(A) Submittal Requirements. Prior to the Just-In-Time Training (JITT) and the start of this work, provide 6 copies (2 copies for Highways Division Materials Testing and Research Branch (HWY-L)) of the following submittals in one complete set for acceptance. Indicate clearly the name of the product and its manufacturer on pertinent submittals. No work that is related to these submittals shall be performed until written acceptance has been received. Submit all items listed to the Engineer for approval

30 days prior to installation.

(1) A warranty on the entire overlay system provided by the manufacturer. Warranty shall be for a minimum of 10 years.

(2) Work Plan. Submit a Work Plan to the Engineer for approval 30 days prior to the JITT, pre-construction meeting, and pre-installation meeting, whichever is earliest. No installation work shall start until the Work Plan is accepted and discussed in the JITT, pre-construction meeting, and pre-installation meeting. Discuss the Work Plan requirements at the pre-construction, pre-installation, and progress meetings. The Work Plan shall contain detailed step by step procedures for all aspects of the work and at a minimum the following information:

(a) Detailed information on all equipment, materials, and staging areas that will be used for all aspects of the work.

(b) Method of surface preparation and required surface condition for adequate bonding. The procedure shall include the method and materials used to contain, collect, and dispose of the concrete debris generated by the scarifying process, including provisions for protecting adjacent traffic from flying debris.

(c) Method of crack repair/defective concrete repair of existing concrete deck prior to placement of HPC.

(d) Method of determining surface profiles.

(e) The HPC mix design and the estimated curing time based on anticipated temperatures.

(f) Paving plan (Jointing Plan, Installation sequence, Direction of Paving, etc.). Construction joints shall be located away from the wheel path.

(g) Method of placement (handling, mixing, consolidating, finishing, curing, and texturing) of HPC. This includes placing topping aggregate.

(h) Testing for bond, compressive strengths, and delaminations.

(i) Construction during inclement weather. Plan for the occurrence of rain, moisture and temperature requirements for the materials being used.

(j) Corrective actions shall be taken for unsatisfactory

installation practices. Any corrective actions that have not been discussed in this submittal shall be submitted for approval by the Engineer.

If any work during the entirety of the project does not comply with or follow the approved Work Plan, a new work plan shall be submitted and approved prior to any work resuming.

(3) Quality Control (QC) Plan. Submit a QC Plan to the Engineer for acceptance a minimum of 30 days prior to the installation and the JITT. Resubmittal of the document will require another 30 days for each resubmittal. Discuss the QC Plan requirements at the JITT, pre-construction, pre-installation, and progress meetings. The JITT shall not be held unless the QC Plan is accepted 30 days before the scheduled JITT date. Work shall not start on the HPC overlay test application, until the JITT has been completed and the QC Plan and the Work Plan have both been accepted. The QC Plan shall contain at a minimum the following information:

(a) Names and contact information for key personnel, project superintendent, and lead technician responsible for field quality control sampling and testing. Submit the laboratory's accreditation for the test method used and the technician's and the QC Manager's certification for all the test methods used.

(b) The name of the manufacturer of the HPC materials including the name and phone number of the Manufacturer's Technical Representative.

(c) Certificates of compliance and test reports for all materials used in the HPC mix.

(d) Manufacturer's written instructions for the installation of the overlay system and the storage of all overlay materials.

This shall include means and methods for recycling of aggregates. Quality Control (QC)/Quality Assurance (QA) testing to ensure recycled aggregates meet requirements listed in Table 3 – Topping Aggregate Properties and Table 4 – Gradation for Aggregate Topping.

(e) Information on the HPC including shelf life, working times, pot life (at anticipated ambient temperatures) and placement rates.

(f) Detailed plans and procedures to be in compliance with Section 107 - Legal Relations and Responsibility to Public

including complying to noise variances, and controlling of work to appropriately minimize dust and air borne debris from cleaning and roughening the substrata, mixing and placing HPC, and cleaning operations, and to prevent water runoffs.

(g) Planned actions to maintain adherence to limitations and requirements of the following variables with regards to HPC work:

(1) Equipment and traffic control near or on work areas during placement and curing operations

(2) Inclement weather

(3) Moisture and temperature requirements for the materials being used

(h) Produce test reports of compressive strengths and bond strengths, during the progress of the work. Reports shall be submitted once every 2 weeks.

The QC Plan shall designate a QC Manager, who shall be present at the jobsite and have full authority to request any action necessary for the operation of the QC Plan providing it complies with the contract documents and acceptance of the Engineer.

The QC Manager shall be certified in all test methods used and be responsible for the required field quality control in sampling and testing in conformance with the accepted quality control plan, test methods and contract documents. All sampling shall be performed in the presence of the Engineer. All testing must be done at an accredited material testing laboratory performed by certified technicians. The accreditation and certification must be for the test methods used. The Engineer is not responsible and shall not be regarded as part of the Contractor's QC team. It is the responsibility of the Contractor and the QC Manager to ensure that the test procedure being used is compliant with the test method standard. Inspections are performed for the exclusive benefit of the State. The inspection of or the failure to inspect the work shall not relieve the Contractor of obligations to fulfill the contract as prescribed, to correct defective work, and to replace unsuitable or rejected materials regardless of whether payment for such work has been made. The Engineer has the right to reject the test if the Engineer feels that it is non-compliant, e.g., the technician who performed the test is not certified or the material testing laboratory is not accredited to perform the required tests. Maintain and have available upon request, the current test standard methods

documentation being used, referenced documents, complete records of sampling, testing, corrective actions, and quality control inspection results.

A technical representative from the resin binder manufacturer shall be present at the JITT, Test Application, e.g., deck repair, surface preparation, installation and acceptance of the HPC overlay, and at the construction site for at least the first two days of the HPC overlay installation.

(B) General. The HPC manufacturer shall have a representative on the job site for the startup of the project. The HPC representative must report any work or materials that may result in non-compliant work to the Engineer, who may suspend any item of work that is suspect and does not meet the requirements of this specification. Resumption of work will occur only after the manufacturer's representative and the Engineer are satisfied that appropriate remedial action has been taken by the Contractor. No work shall proceed and materials will not be accepted if manufacturer's technical representative is not on site for the startup of the project.

During surface preparation and application, precaution shall be taken to assure that traffic is protected from rebound, dust and construction activities. Dust in the air at night may become an opaque vision barrier to motorists due to headlights and floodlights. The Contractor must not allow this to happen. Appropriate shielding shall be provided as required and as directed by the Engineer at no additional cost. The Contractor shall provide suitable protection as needed to protect all exposed areas not to receive HPC such as parapets, drains, etc. All damage and defacement resulting from the application shall be cleaned and, or repaired to the Engineer's satisfaction at no additional cost to the State.

(C) Equipment. Use a continuous automated volumetric mixer. Mechanically operated mixers or hand mixing may only be used as a backup during repairs, or for applications less than a cubic yard. Follow manufacturer's recommendations. The Contractor must submit all mechanical and hand application methods for approval by the Engineer prior to starting any work.

When mixing and applying manually, mix only the amount of material that can be used within its pot life. Proportion each liquid component carefully into a clean pail or drum. Mix thoroughly for 3 minutes with a Jiffy mixer on low speed (400-600rpm). To prepare HPC, slowly add 200-250 lbs. of the engineered aggregate to every 4-gal of mixed polymer. Mix only until all aggregate is wetted out. Manufacturer's representative shall be present during hand mixing operations.

(D) Just -In-Time Training. JITT shall conform to Section 695 – JUST IN TIME TRAINING.

(E) Pre-Operational Conference. Schedule a meeting with the Contractor, and supplier's representatives involved in the construction operation of the HPC and the Engineer, at a mutually agreed time, to discuss and verify the methods of accomplishing all phases of the HPC operations, contingency planning, and standards of workmanship for the completed items of work. Include the Contractor's superintendents, foremen, subcontractors, and supplier's technical representatives, and all key personnel involved with the HPC work as attendees of the pre-operation conference. Do not begin placement of HPC before the Engineer accepts the pre-operational conference as completed.

(F) Surface Preparation. Use the procedures of ICRI (International Concrete Repair Institute) Guideline No. 03730 "Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcement Steel Corrosion" and ICRI Guideline 03732 "Selecting and Specifying Concrete Surface, Surface Preparation for Sealers, Coatings and Polymer Overlays" sections of ACI 546.14 "Guide for Concrete Repair". The Contractor shall be responsible for any falsework requirements, debris, noise and pollution control on and below the repair area.

The concrete surface shall be prepared by removing all material which may act as a bond breaker between the existing surface and the HPC.

The textured or scarified pavement preparation method shall remove all dirt, oil and other foreign materials, as well as any unsound concrete or laitance from the surface and edges against which new HPC is to be placed. The concrete surface may require retexturing where penetration of foreign material is evident. No contamination of the retextured or scarified concrete surface shall be permitted.

The surface preparation shall meet the following requirements:

(1) New Pavement. On new concrete, the surface shall be given a very rough texture while still plastic by use of a wire comb or other approved texturing device which will produce a bondable surface acceptable to the engineer.

(2) Existing Pavement or Bridge Deck. On existing concrete, the surface shall be prepared by shot blasting or approved equal. Pneumatic chipping tools weighing 15 pounds or less or an approved equal may be used for areas where the Contractor is unable to shot blast upon approval of the Engineer. Produce a concrete substrate surface with a minimum roughness of approximately ¼-inch amplitude or an ICRI concrete surface profile (CSP) of 7. The preparation method shall not produce a polished or slick surface.

(3) Existing concrete containing previously placed repair materials.

On existing concrete with previously placed unsound or magnesium phosphate repair products, these materials shall be removed prior to placing the HPC. The Contractor shall follow Section 680 – Defective Concrete Repairs. The exposed concrete surface shall meet the requirements contained in Subsection 678.03(F)(2) of this specification.

(4) Existing Concrete with Penetrating Sealer and aggregate topping. Remove all loose sand/aggregate. Clean surface to be free of any dust, dirt, oil, and debris prior to placing any HPC. Penetrating sealer with aggregate topping shall be considered unclean and contaminated if the surface has not been shotblasted within 48 hours. Surface shall be cleaned prior to placing HPC overlay.

(G) Trial Pour. The Contractor shall place a trial pour of HPC using the approved equipment and procedures as detailed in the approved work plan. The Contractor shall notify the Engineer of the time and location of the trial pour at least seven (7) calendar days prior to the scheduled trial pour.

The trial pour may be a part of the production location before starting production work. HPC manufacturer's representative shall be present during the trial pour. The trial pour shall meet the following requirements:

(1) Install a minimum of 11 ft (lane width) x 112 ft (length) x 1½ inch (thickness) trial overlay. 112 foot length is based off of typical length between expansion joints. Trial overlay shall be from expansion joint to expansion joint.

(2) Shall be constructed using the same method and equipment as the production work.

(3) Shall construct an additional trial pour for each method proposed for the production work.

(4) Shall replicate field conditions, including ambient and surface temperatures, time period, anticipated for production work.

(5) Shall demonstrate surface preparation method as outlined in the Work Plan.

(6) Shall demonstrate that the data management system is capable of documenting ambient and surface temperatures, quantities of resin binder and aggregate, coverage rates and reporting application rates in real time.

(7) Determine the initial set time for the HPC overlay.

The Contractor shall perform three pull-off tests on the trial pour in

accordance with ASTM C1583 Standard Test Method for Tensile Strength of Concrete Surfaces and Bond Strength or Tensile Strength of Concrete Repair and Overlay Materials by Direct Tension (Pull-off Method) and the manufacturer's recommendations. The pull-off tests shall have a minimum tensile bond strength of 250 psi at 7 days or a substrate failure. A passing substrate failure is when more than 50% of the substrate covers the specimen being tested. The Contractor shall record the pull-off test results and the amount of any failure into the base concrete, and shall provide written documentation of the test results. The Engineer will designate the location of the pull-off tests. After the completion of the tests, repair all test areas using HPC and aggregate topping.

The Contractor shall perform three compressive strength tests on the trial pour in accordance with ASTM C579 Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes and manufacturer's recommendations. The HPC samples shall have a minimum compressive strength of 1000 psi at 24 hours and 5000 psi at 7 days. The Contractor shall record the strengths for each sample and shall provide written documentation of the results.

The Contractor shall not begin construction operations at the site receiving the HPC until receiving approval of the completed trial pour. If the trial pour is rejected then the Contractor shall perform another trial pour at no additional cost or contract time to the State. Rejected trial pour shall be removed per Subsection 105.12 - Removal of Non-Conforming and Unauthorized Work.

(H) Traffic and Equipment Control on Bridge.

(1) Equipment, vehicles, and personnel, etc. shall not contaminate the prepared deck surface.

(2) Equipment shall not be located on spans undergoing deck HPC work unless approved by the Engineer.

(3) The Contractor shall not permit compressors or other equipment that produce vibrations on the span undergoing deck HPC work.

(4) Vehicular traffic shall not exceed a 35-mph speed limit on the bridge span during HPC placement and curing.

(5) The bridge deck shall not be used as a storage area for equipment or for stockpiling materials. Loads exceeding eight tons shall not be used on the bridge unless approved by the Engineer.

(I) Placement of HPC. After surface preparation, concrete surfaces shall be structurally sound, clean, free of dirt, powdered concrete, loose mortar

particles, paint, film, protective coatings, efflorescence, laitance, and other matter detrimental to proper adhesion of the new HPC. The Contractor shall ensure proper cleanliness. Work surfaces must be free of ridges, fins or sharp projections. All reinforcing bars in the repair area shall be made free of all scale and loose rust by using either powered rotary wire bristle brush or abrasive blasting. Needle gunning may be used as preliminary step for removal of loose rust. Do not overly vibrate the reinforcing bars.

Expansion joints, drains and grates shall be adequately isolated prior to placing the HPC as approved. HPC shall not affect the design and function of the expansion joints, drains, and grates. Do not place HPC within 6 feet of another area where the deck surface is being prepared.

The HPC discharged from the mixer shall be uniform in composition and consistency. Mixing capability shall be such that initial and final finishing operations can proceed at a steady pace.

The hybrid polymer resin binder in the HPC shall be 12-15 percent by weight of the dry aggregate. The Contractor shall determine the exact percentage as approved by the Engineer.

The HPC overlay shall be placed at a minimum thickness of 3/4 inch.

Any falsework and formwork required shall be considered incidental to this work.

(J) Hot Weather Concreting. Do not place HPC where ambient temperature is above 90 degrees F unless design mix and placement method conform to ACI 305 R-20 Hot Weather Concreting. When ambient temperature is above 90 degrees F, cool reinforcing steel, forms, and other surfaces to below 90 degrees F with approved methods by the Engineer before placing of HPC.

(K) Finishing HPC. Finishing equipment shall be capable of consolidating the HPC, striking off the HPC to the final grade, and providing the thickness and cross-sections as shown in the contract documents.

For repairs or placements of less than 2 cubic yards or areas inaccessible to self-propelled finishing equipment, finish while the HPC is plastic and workable using a roller screed, air screed, or approved equal. The Contractor has the option of using other methods of finishing HPC as long as the selected method leaves a uniform, level finish, free of slick or puddled resin areas. Engineer must approve methods prior to constructing trial overlay. Finish the HPC to meet the requirements of Subsection 678.03(N) Surface Testing.

Topping aggregate. The Contractor shall use methods and equipment

for broadcasting the surface topping aggregate on to the plastic, in-place HPC overlay material in accordance with the manufacturer's recommendations. Aggregate topping shall be initiated immediately after final finishing operations of the HPC overlay and while the HPC surface is still wet to ensure proper embedment of the aggregate topping. Sweep, vacuum, or blow excess aggregate topping from surface after the HPC is tack-free.

(L) Curing. Traffic and construction equipment shall not be permitted on the HPC for at least 3 hours after placement and until the HPC surface is tack free. Refer to HPC technical data sheet curing schedule for estimated cure times.

(M) Construction Joints. Use construction joints only with the acceptance of the Engineer and in accordance with the Contract documents.

(N) Surface Testing. The finished HPC shall conform to the following requirements when tested by the Contractor in the presence of the Engineer within 14 days following the placement of HPC:

(1) Surface Flatness. The surface of the HPC shall not vary more than 1/8 inch under a 10-foot straightedge placed parallel to the traffic lanes. Construction joints shall not vary more than 1/8 inch under a 10-foot straight edge.

(2) Surface Condition. The surface of the HPC shall be sound and free from delaminations and cracks greater than 0.01 inch in width.

(O) Testing HPC.

(1) A minimum of three compressive strength tests shall be performed for each LOT. A LOT shall be one day's production per mixing and placement method and once every maximum of 10 cubic yards of HPC. When more than one production facility or continuous volumetric mixers is used for the same mix design, apply the sampling and testing frequency per production facility or per continuous volumetric mixer, e.g., two continuous volumetric mixers equal a minimum of two LOTS. Testing shall be performed in accordance with ASTM C579 Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing's, and Polymer Concretes and the manufacturer's recommendations. The compressive strength shall be a minimum of 1000 psi at 3 hours and 5000 psi at 7 days.

(2) A minimum of three pull-off tests at locations selected by the Engineer shall be performed for each LOT. Testing shall be performed in accordance with ASTM C1583 Standard Test Method for Tensile Strength of Concrete Surfaces and Bond Strength or Tensile Strength of Concrete Repair and Overlay Materials by Direct Tension (Pull-off

Method) and the manufacturer's recommendations. A passing test is the failure of the concrete substrate or bond strength above 250 psi at 7 days. A passing substrate failure is when more than 50% of the substrate covers the specimen being tested. Fill cored holes with HPC approved by the Engineer.

The pull off tests shall also be used as a means to verify thickness. A minimum of ¾" thickness for the HPC overlay is required.

(P) Quality Control (QC):

(1) HPC Sampling and Testing. Perform QC HPC sampling and testing in accordance with the QC plan and following requirements:

(a) QC tests shall include temperature and preparing compressive strength cubes for testing at later dates. Perform HPC tests on the initial delivery for each mix each day. Ensure that QC technicians are certified, and the materials testing laboratory are accredited in the test method being used and in accordance with the HDOT's Quality Assurance Manual for Materials dated October 2001. Ensure all technicians that are performing the sampling and performing the testing are certified in the test placement operation at each placement site and the testing is done in an accredited material testing laboratory. Cast a set of cubes representing the LOT from the same sample of HPC.

(b) Maintain a logbook with records of relevant details of all tests. Provide a copy of new entries at the end of each work day. Make available for inspection by the Engineer during the normal working hours of construction. At the end of the project, deliver the original logbook to the Engineer. The original logbook will become property of the Engineer.

(Q) Acceptance and Corrective Action. The completed HPC overlay surface with topping aggregate must be uniform in texture and appearance. HPC shall meet the compressive strength and bond strength requirements. The Contractor shall repair or replace all HPC that does not meet the approval of the Engineer at no additional cost to the State. Repair methods shall be submitted to the Engineer for approval.

Correct all defects in material and work, as directed, at no additional cost to the Engineer, according to the following:

(1) Remove and replace HPC overlay that the Engineer determines has any raveling, delamination, streaking, compressive strength test failure, or bond test failure.

(2) Replace with acceptable HPC overlay at the Contractor's expense. Ensure the minimum replacement is the full lane width and the length of the defect plus five lane feet on the up-station and down-station side of the edge of the defect area and as accepted by the Engineer. Replaced areas will be retested and evaluated for acceptance or further corrective action.

(3) Any roadway features disturbed by the work or the Contractor's operations shall be restored with the same materials and design as directed by the Engineer at no additional cost to the State.

The Engineer shall have the right to reject all work which is not in compliance with the requirements of the drawings and specifications. Rejected work shall be removed per Subsection 105.12 – Removal of Non-Conforming and Unauthorized work.

(R) Verification and Independent Assurance. HDOT may perform verification sampling and testing for its own use for internal assurance and acceptance testing. Furnish sufficient quantity of each mix for verification and independent assurance sampling and testing as required by the Engineer. When the Engineer performs verification, the Contractor may perform the same tests on the HPC at the same time. HDOT's Independent Assurance Program will be conducted to evaluate all sampling and testing used in the acceptance material.

678.04 Measurement. The Engineer will measure HPC overlay per square foot in accordance with the contract documents.

678.05 Payment. The Engineer will pay for accepted HPC overlay on a square foot basis. Payment for JITT shall be considered as incidental for this section. Payment will be full compensation for the work prescribed in this section and the contract documents.

Payment will be full compensation for furnishing and placing all materials, and for furnishing all equipment, labor, and incidentals necessary to complete the work as specified.

No separate or additional payment will be made for preparing road surface, placing materials in final position, sweeping or for the minimum testing of materials and placement as defined in this specification.

No separate or additional payment will be made for reinstallation and retesting of HPC where the initial installation was determined to be defective.

The Engineer will pay for the accepted pay items when included in the proposal schedule:

Pay Item	Pay Unit
Hybrid Polymer Concrete (HPC) Overlay _____	Square Foot”

END OF SECTION 678

Make the following Section a part of the Standard Specifications:

"SECTION 679 – VERY EARLY STRENGTH LATEX MODIFIED CONCRETE (VESLMC)

679.01 Description. The work in this section describes the construction of very early strength latex modified concrete (VESLMC) at the abutment seats.

Related works for the VESLMC are applicable and specified in Section Section 503 - Concrete Structures, Section 601 - Structural Concrete, Section 602 - Reinforcing Steel, and Section 680 – Defective Concrete Repairs.

679.02 Materials.

(A) VESLMC. A factory blended cementitious patching material (containing no gypsum) combined with a polymer type admixture, water, corrosion inhibitor, and fibers which provides a low color contrast with the existing concrete. The nominal maximum size of coarse aggregate shall be 3/8 inch. The Engineer may accept an alternative concrete that is equal or better in performance, when compared to the characteristics and requirements of the VESLMC stated herein. The 3-hour bond strength shall be at least 250 psi. The repair material must be able to bond to itself achieving the minimum bond strength of 250 psi. Epoxy bonding agents approved by the Engineer may be used to assist in achieving the minimum bond strength required. If the material is not able to achieve the required bond strength to itself, then the Contractor will only be allowed to construct monolithic pours to avoid any construction joints.

(1) The VESLMC shall use cement which is a finished calcium – sulfo-aluminate that contains no more than 2 percent C3A and not greater than 0.03 percent shrinkage in accordance with ASTM C 157 for hardened-cement mortar based on air storage at relative humidity of 50 +/- 4 percent and at a temperature of 73 +/- 3 deg F. The amount of cement in the VESLMC shall not exceed 760 lbs/cy.

(2) The VESLMC shall include a modified styrene butadiene copolymer latex that meets the requirements of FHWA Research Report RD-78-35, except for curing or an accepted equal.

(3) The VESLMC shall include 1 1/2 inch length alkali-resistant (AR) glass fiber at 4 lbs/cy or approved equal.

(4) Corrosion inhibitor in the VESLMC shall be migrating amine carboxylate. Use a minimum of 24 ounces per cubic yard or as recommended by the manufacturer.

(5) The VESLMC shall also meet the following requirements:

Characteristics	Requirements	Test Methods
Minimum Compressive Strength: At 3 hours At 28 days	 3000 psi 6000 psi (unless otherwise noted)	 ASTM C1074 ASTM C39
Bond and Tensile Strength	250 psi	ASTM C1583
Ring Test	No cracking at age less than 28 days	ASTM C 1581
Rapid Chloride Permeability Test	Charge passed less than 150 coulombs @ 63 days	ASTM C1202

(a) Provide certified test data from the concrete manufacturer and cement manufacturer that the concrete complies with these requirements. Perform the material sampling and testing in the presence of the Engineer or as acceptable to the Engineer. Certification shall be submitted prior to the placement of the VESLMC.

(b) In addition to the aforementioned requirements, use ASTM C1074 to provide test results of three cylinder and provide a strength-maturity relationship for each 3, 4, 6, and 12-hour test ages from trial batches of the proposed concrete.

(c) VESLMC shall provide the minimum bond requirement of 250 psi to all concrete including itself.

(B) Other Materials.

(1)	Fine Aggregate for Concrete	703.01
(2)	Coarse Aggregate for Portland Cement Concrete	703.02
(3)	Admixtures	711.03
(4)	Water	712.01
(5)	Reinforcing Steel including GFRP bars	602

679.03 Construction Requirements. Conform to the requirements of Section 503 Concrete Structures and as required in these specifications.

(A) Submittal Requirements. Prior to the start of this work, provide six

copies of the following submittals in one complete set for acceptance. Indicate clearly the name of the product and its manufacturer on pertinent submittals. No work that is related to these submittals shall be performed until written acceptance has been received.

(1) Certifications, test data and assurances.

(2) Information on the concrete including shelf life, working times, and placement rates.

(3) Detailed information on all equipment and materials that will be used for all aspects of the work including but not limited to determining surface profiles and compressive strengths, quality control (QC) plan, placing (handling, mixing, consolidating, finishing, curing, and texturing) of concrete, and testing for delaminations.

(4) Detailed step by step procedures for all aspects of the work including determining surface profiles and compressive strengths, cleaning and roughening substrata, placement (handling, mixing, consolidating, finishing, curing, and texturing) of concrete, and testing for delaminations.

(5) Detailed plans and procedures to be in compliance with the requirements of Section 107 - Legal Relations and Responsibility to Public including complying to noise variances, and controlling of work to appropriately minimize dust and air borne debris from cleaning and roughening the substrata, mixing and placing concrete, and cleaning operations, and to prevent water runoffs.

(6) Planned actions to maintain adherence to limitations and requirements of the following variables with regards to concrete work:

(a) Evaporation rate as determined from ACI 305 Hot Weather Concreting

(b) Rain

(c) Equipment and traffic control near or on work areas during placement and curing operations

(7) Test reports of compressive strengths and bond strengths during the progress of the work.

(B) Just -In-Time Training. JITT shall be held and shall conform to SECTION 695 JUST-IN-TIME TRAINING.

(C) Pre-Operational Conference. Schedule a meeting with the Contractor,

and suppliers representatives involved in construction operation of the VESLMC and the Engineer, at a mutually agreed time, to discuss and verify the methods of accomplishing all phases of the VESLMC operations, contingency planning, and standards of workmanship for the completed items of work. Include the Contractor's superintendents, foremen, subcontractors, and supplier's technical representatives, and all key personnel involved with the VESLMC work as attendees of the pre-operation conference. Do not begin placement of VESLMC before the Engineer accepts the pre-operational conference as completed.

(D) Authorization to Work. Proceed with the work within the project limits when the following items have met the requirements and are accepted by the Engineer in writing.

(1) Subsection 679.03(A) Submittal Requirements.

(2) Subsection 679.03(B) Just-In-Time Training.

(3) Subsection 679.03(C) Pre-Operational Conference.

(E) Preparation of Substrate. Use the procedures of ICRI (International Concrete Repair Institute) Guideline No. 03730 "Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcement Steel Corrosion", ICRI Guideline 03732 "Selecting and Specifying Concrete Surface, Surface Preparation for Sealers, Coatings and Polymer Overlays" sections of ACI 546.1R-80 (Reapproved 1997) "Guide for Repair of Concrete Bridge Superstructures". The Contractor shall be responsible for any falsework requirements, debris, noise and pollution control on and below the repair area. Prepare the repair areas as follows:

(1) Removing Material:

(a) Protect surfaces outside the placement areas from damage during concrete removal operations. The Contractor is responsible for any and all damages, repairs, or replacement of existing surfaces and items to remain. Carefully cut and remove materials without damaging adjacent material surfaces or items that are to remain. Provide catchment device or platform to collect all concrete chips and other debris for proper disposal offsite.

(b) Begin by making vertical and horizontal sawcuts at a depth of 1/2-inch along the perimeter of the removal work. Angles between sawcuts shall be 90-degrees. Adjust the sawcut depth so as not to cut existing concealed reinforcing bars. Do not extend the sawcut beyond the limits of removal work. When a sawcut edge cannot be achieved because of tool interferences, the Contractor shall chip a vertical face.

(c) Remove the existing concrete at the abutment seats. Hydrodemolition, pneumatic tools weighing less than 15 pounds, or approved equal may be used. Special care shall be taken to ensure compliance with Section 679.03(A) Submittal Requirements. All concrete surfaces to receive VESLMC shall be roughened to a minimum of 1/4-inch amplitude or a Concrete Surface Profile (CSP) of 7 in accordance with ICRI guidelines 310.2 to ensure proper adhesion with VESLMC.

(2) Preparation. Prepare the concrete substrate and any reinforcing steel in the area by removing any contaminants, dust, loose concrete and mortar that may affect bonding of the VESLMC. Remove debris, wash water and waste material using vacuum machines and properly dispose outside the project limits at a disposal site accepted by the Engineer. Brooms shall not be used on the prepared surface for cleaning. The areas to receive VESLMC shall be free of dust, dirt, oil, grease and other contaminants that may affect bonding of the VESLMC. The Contractor shall protect the public from dust pollution and other damages resulting from the preparation of the construction area. The Contractor shall prevent abrasives and debris from entering drainage systems and streams.

(F) Traffic and Equipment Control on Bridge.

(1) Construction vehicles shall not exceed a 5-mph speed limit within the placement area in both directions during VESLMC placement and curing.

(2) Equipment and vehicles shall not contaminate the prepared deck surface.

(3) The Contractor shall not permit compressors or other equipment that produce vibrations on the span undergoing deck VESLMC work. Equipment shall not be located on spans undergoing deck VESLMC unless approved by the Engineer.

(4) Vehicular traffic shall not exceed a 15-mph speed limit on the bridge span during VESLMC pour and cure.

(5) The VESLMC shall have a minimum compressive strength of 3000 psi as determined by Early Strength Monitoring and by testing according to manufacturer's recommendations prior to opening to traffic.

(6) The bridge deck shall not be used as a storage area for equipment or for stockpiling materials. Loads exceeding eight tons shall not be used on the bridge unless approved by the Engineer.

(G) Placement of VESLMC.

(1) The concrete manufacturer's and cement manufacturer's technical representatives shall be present during initial work and as requested by the Engineer at no increase in contract time or contract price.

(2) A technical representative shall be capable and knowledgeable about the product he represents, e.g., know under what conditions the product should be placed for optimal results, know what causes defects or problems, and know how to troubleshoot the product. These are topics that should be discussed in the JITT.

(3) A technical representative shall provide aid and field supervision to assure that the work is properly installed and performed as recommended by the manufacturer and accepted by the Engineer at no increase in contract time or contract price.

(4) The Contractor shall adhere to recommendations made by the technical representative and accepted by the Engineer at no increase in contract time or contract price.

(5) Place the VESLMC according to the concrete manufacturer's and cement manufacturer's recommendations and instructions and as accepted by the Engineer. The Contractor shall inform the Engineer in writing of any work that is not in conformance with the manufacturer's recommendation.

(6) A bonding agent recommended by the cement manufacturer may be used where concrete is placed against existing concrete. Use bonding agent in accordance with the manufacturer's recommendations.

(7) Unless otherwise directed by the manufacturer, maintain the interface surface wet for a minimum of 1 hour prior to placement and remove all excess surface moisture using oil free compressed air just prior to placing the concrete.

(8) Any falsework and formwork required shall be considered incidental to this work.

(9) Concrete shall be mixed as recommended in writing by the manufacturer.

(J) Consolidation. Consolidate the concrete as recommended by the manufacturer.

(H) Finishing. Finish while the concrete is plastic and workable. The surface of the VESLMC shall have a smooth trowel finish. Finish the top of the seats according to the Contract Plans.

(I) Protection and Curing. Protect freshly placed concrete from plastic shrinkage, premature drying, excessive hot temperatures and direct wind. Provide Submittals as required in Subsection 679.03(A) – Submittal Requirements. Cure the concrete as recommended by the concrete, cement, and curing manufacturers.

(J) Construction Joints. Use construction joints only with the acceptance of the Engineer and in accordance with the Contract.

(K) Quality Control (QC):

(1) Sampling: The Contractor's representative shall prepare concrete cylinders for compressive strength testing by an independent testing laboratory once per LOT in accordance with ASTM C39. A LOT shall be defined as one day's production, per mixing method, and every cubic yard.

Testing: An accredited independent testing laboratory shall have the compressive strength tests performed by personnel certified in the test method used. Notify the Engineer 72 hours in advance of the test date and time so it may attend compressive strength tests.

Test the QC laboratory cured samples for compressive strength at the ages of 3 hours, 7 days, and 28 days for the VESLMC samples. Test the compressive strengths of the VESLMC samples at 7-days and 28-days. Testing shall be completed in a laboratory meeting and maintaining at all times the qualification requirements in the Highways Division's Quality Assurance Manual for Materials. Notify the Engineer of the Quality Control Laboratory compressive test results within 24 hours.

If the compressive strength test results fail to meet the specified requirements after two tests, the repairs made using the batched material represented by the samples tested shall be rejected. Areas of rejected repairs shall be removed, replaced and re-tested until acceptable at no additional cost to the State. The inspection of or the failure to inspect the work by the Engineer shall not relieve the Contractor of obligations to fulfill the contract as prescribed, to correct defective work, and to replace unsuitable or rejected materials regardless of whether payment for such work has been made.

(L) Quality Assurance.

(1) The Contractor shall be experienced (5 years or more) and have expertise in the field of repairs of reinforced concrete structures, proper application of migrating corrosion inhibiting admixtures and protective coatings, and be familiar with the materials, repair and protection systems specified for this project. The Contractor will employ and provide a full-time supervisor to be on site at all times during the duration of the work covered in this Section. This person shall work very closely with the manufacturer, the Engineer, and the State's representative.

(2) Codes and Standards: Comply with all locally applicable codes, regulations and requirements pertaining to this work.

(3) Rejection of Installed Work: The Engineer shall have the right to reject all work which is not in compliance with the requirements of the drawings and specifications. Rejected work shall be removed per Subsection 105.12 – Removal of Non-Conforming and Unauthorized work.

(a) Indication of lack of skill on the part of installation and application mechanics shall be sufficient grounds for the Engineer to reject applied products and to require their immediate removal and complete reinstallation and application at no additional cost to the State. Mechanics lacking skill shall be replaced.

(b) Replacement of rejected work may require that the materials in places be stripped back to solid substrate and that special additional surface preparation and a change of surface preparation or primer materials may be required. The Contractor shall research and define these procedures and complete the additional surface preparation and reapplication of the materials at no extra cost to the State.

(4) A minimum of three specimens per test age of the VESLMC shall be prepared and tested by the Engineer for each LOT in accordance with ASTM C39 – Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens. These test ages are 3 hours and 28-days. A LOT shall be one day's production.

(M) Acceptance. Hardened VESLMC will be accepted or rejected on the basis of strength tests and sounding methods.

The Engineer will accept full payment of each LOT of VESLMC when the QC strength test results are verified. The compressive strength results of the LOT shall meet the specified minimum strengths of 3000 psi at 3 hours and

6000 psi at 28-days.

(N) Post-Construction Survey, Sealing Cracks and Repairing Delaminations. Perform then submit a post-construction survey with the Engineer present between three and nine months after VESLMC placement. Contractor shall survey all VESLMC repairs in accordance with ASTM D4580 Standard Practice for Measuring Delaminations in Concrete Bridge Decks by Sounding including visual inspections for cracks and other defects in the presence of the Engineer. Seal cracks that are greater than 0.01 inch in width with epoxy materials which are compatible with VESLMC and acceptable to the Engineer. Remedy, remove, or replace unacceptable areas with VESLMC using installation methods as specified in this section at no increase in contract time or contract price. Repaired areas will be subject to re-inspection. Provide documents of the post construction surveys that are acceptable to the Engineer.

679.04 Measurement. VESLMC at the abutment seats will be paid on a lump sum basis. Measurement of payment will not apply.

679.05 Payment. The payment will be full compensation for locating and repairing existing reinforcing steel bars, cleaning and preparing concrete surfaces; removing corrosion damage from reinforcing steel; replacing any necessary reinforcing steel; coating the reinforcing steel with a corrosion inhibitor epoxy bonding agent; providing forms and falsework; providing temporary support structures (work platform scaffolding), placing, finishing and curing of the VESLMC; sampling and testing concrete; for clean-up; and for furnishing equipment, tools, labor, materials and other incidentals necessary to complete the work.

The Engineer will not pay for removal of concrete seats at abutments. This work shall be included in the various pay items included in Section 202 – Removal of Structures and Obstructions.

The Engineer will pay for the following accepted pay items when included in the proposal schedule:

Pay Item	**Pay Unit**
VESLMC at Abutment Seats	Lump Sum”

END OF SECTION 679

Make the following Section a part of the Standard Specifications:

"SECTION 680 – DEFECTIVE CONCRETE REPAIRS

680.01 Description. This section is for the repair of all concrete spalls, delaminations, honeycombing, reinforcing repairs, and other defective concrete. This section applies to the locations as designated on the plans as well as all other locations encountered by the Contractor.

680.02 Materials. Depending on the location of the repair, the Contractor shall use a non-sag repair mortar (repair mortar) or very early strength latex modified concrete (VESLMC). Repair mortars and repair materials shall conform to the contract documents.

(A) Non-Sag Polymer Modified Repair Mortar (For Vertical and Overhead Repairs without Formwork):

(1) Defective concrete repair mortar shall be a pre-blended, pre-bagged, shrinkage compensated, polymer-modified, fiber-reinforced material with an internal corrosion inhibitor capable of developing 4,500 psi in 24 hours and 9,000 psi in 28 days such as FasTrac V/O Mortar or approved equal.

(B) Very Early Strength Latex Modified Concrete (VESLMC, For Horizontal Repairs)

(1) VESLMC shall conform to Section 679 – Very Early Strength Latex Modified Concrete (VESLMC) of the Special Provisions.

(C) Water. Potable.

(D) Curing Method. For curing of the non-sag polymer modified repair mortars follow manufacturer's recommendations.

(E) Other Materials: All other materials, not specifically described but required for the successful completion and installation of the work shall be as selected by the Contractor, subject to the acceptance of the Engineer.

(F) Substitution of Materials. The Engineer may accept an alternative replacement material that is equal or better in performance, when compared to the characteristics and requirements of the VESLMC, non-sag polymer modified repair mortars, and bonding agents stated herein.

Submission of incomplete, inadequate, incongruous, vague material and installation data will be grounds for disapproval without review.

For substitution requests, submit documentation signed by the manufacturer stating their product is equal or better.

680.03 Construction.

(A) Submittals.

(1) Material Safety Data Sheets: Furnish the manufacturer's Material Safety Data Sheets for each of the materials present at any time on the job site.

(2) Manufacturer's data sheets and certificates of compliance signed by the manufacturer for the following:

(a) Bonding agent and anti-corrosion coating for reinforcing steel bars if compatible and recommended by the repair mortar manufacturer.

(b) Pre-packaged concrete and repair mortar which contains a migrating corrosion inhibitor.

(c) Materials for curing the VESLMC and repair mortars.

(d) Equipment: Submit descriptive literature describing the kinds, types, model numbers and operational features of the mixing and application equipment proposed for use on this project.

(3) The Contractor shall provide a manufacturer’s written certification of compatibility of materials. The Contractor shall verify with the manufacturers that the products to be used together do not adversely affect each other.

(4) Equipment for demolition of concrete structures. The Contractor shall submit the catalog cuts for all equipment and tools that will be utilized for the removal of defective concrete.

(B) Quality Assurance.

(1) The Contractor shall be experienced (5 years or more) and have expertise in the field of spall repairs of reinforced concrete structures, proper application of migrating corrosion inhibiting admixtures and protective coatings, and be familiar with the materials, repair and protection systems specified for this project. The repairs and protection systems shall be made in accordance with the appropriate International Concrete Repair Institute (ICRI) publications. The Contractor will employ and provide a full-time supervisor to be on site at all times during the duration of the work covered in this Section. This person shall work very closely with

the manufacturer of the repair systems, the Engineer and the State's representative.

(2) Codes and Standards: Comply with all locally applicable codes, regulations and requirements pertaining to this work.

(3) Rejection of Installed Work: The Engineer shall have the right to reject all work which is not in compliance with the requirements of the drawings and specifications. Rejected work shall be removed per Subsection 105.12 – Removal of Non-Conforming and Unauthorized work.

(a) Indication of lack of skill on the part of installation and application mechanics shall be sufficient grounds for the Engineer to reject applied products and to require their immediate removal and complete reinstallation and application at no additional cost to the State. Mechanics lacking skill shall be replaced.

(b) Replacement of rejected work may require that the materials in places be stripped back to solid substrate and that special additional surface preparation and a change of surface preparation or primer materials may be required. The Contractor shall research and define these procedures and complete the additional surface preparation and reapplication of the materials at no extra cost to the State.

(4) A minimum of three specimens per test age of the VESLMC shall be prepared and tested by the Engineer for each LOT in accordance with ASTM C39 – Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens. These test ages are 3 hours and 28-days. A LOT shall be one day's production.

(5) A minimum of three specimens per test age of the non-sag repair mortar shall be prepared and tested by the Engineer for each LOT in accordance with ASTM C109 – Standard Test Method for Compressive Strength of Hydraulic Cement Mortars. These test ages are 7-days and 28-days.

(C) Delivery, Handling, and Storage.

(1) Delivery of Materials: Deliver all materials in original tightly sealed containers or unopened packages, clearly labeled and containing manufacturer's name, labels, date of manufacture, lot number, product identification, manufacturer's instructions for mixing, and warning for handling and toxicity.

(2) Storage: Store materials at the Contractor's place of

business in cool, dry and safe location out of weather in original containers or unopened packages as recommended by the manufacturer. Temperature and humidity requirements of the manufacturer are to be adhered to at all times.

(3) Handling: Handle all materials in a safe manner and in a way to avoid breaking container seals.

(4) Environmental Requirements: Container shall comply with manufacturer's recommendations as to environmental conditions under which the materials may be applied.

(D) Job Conditions.

(1) Adhere to the manufacturer's printed instructions regarding weather and climate condition restrictions on the use of all materials supplied in this section.

(2) Do not man scaffolds or lift equipment in conditions that makes working dangerous.

(3) Protection: Precautions shall be taken to avoid damage to any surface near the work area due to spillage.

(4) Barricades: Erect temporary barricades and railings, to prevent the public from entering the project area per HIOSHA requirements. Coordinate with the State's representative on final location and placement.

(E) Protection of the Work. Use all means necessary to protect the materials of this section before, during and after installation and to protect this work and the work of all other trades. In the event of damage, immediately make repairs and replacements necessary to the approval of the State's representative at no additional cost to the State.

(F) Execution.

(1) All repairs shall be made in accordance with the appropriate Repair Application Procedures (RAP) publications by the American Concrete Institute (ACI).

(2) The Contractor shall inspect all concrete surfaces around the repair area for spalling and/or other deterioration by hammer sounding and/or exploratory removal methods. Areas identified for repair shall be marked on the surface, and recorded on the project as-built plans.

(3) Defective Concrete Removal:

(a) General: Execute all work in an orderly and careful

manner. Protect all surfaces and items to remain. The Contractor is responsible for any and all damages, repairs or replacement of existing surfaces and items to remain. Carefully cut and remove defective materials indicated or found without damaging adjacent material surfaces or items that are to remain. Provide catchment device or platform to collect all concrete chips and other debris for proper disposal offsite.

(b) Begin concrete repairs by making a sawcut at a depth of 1/2-inch along the perimeter of the repair area. The perimeter of the repair area shall be 1 inch beyond the defective concrete area in sound concrete. Angles between sawcuts shall be 90-degrees. Adjust sawcut depth so as not to cut existing concealed reinforcing bars. Do not extend sawcut beyond the limits of removal work. Use pneumatic tools weighing 15 pounds or less, or an approved equal, to remove defective concrete from the repair area. When a sawcut edge cannot be achieved because of tool interferences, the face of the top edge of the patch shall be chipped out to provide a vertical face a minimum of 3/4-inch depth, for repair areas utilizing non-sag repair mortar. Remove the remainder of the defective concrete in the defect area.

Concrete removal shall not damage the portion of the structure that is to remain. If the structure is damaged beyond the repair area limits required by the contract, Contractor shall repair the damaged portion according to the contract at no increase in contract time or contract price.

(c) Spalled and Loose Surfaces: Remove all loose concrete and check all spalled areas that are indicated or are obvious upon visual examination.

(d) Sounding: Inspect the remaining exterior concrete surfaces around the repair area for any other defective concrete by tapping with a hammer throughout the exterior surface of the area around the repair and listening for dull or hollow sounds. In areas where tapping does not produce a solid tone, remove loose and spalled concrete until testing produces a solid tone. Use pneumatic tools weighing 15 pounds or less, or an approved equal, to deepen cavity.

(e) Partially exposed reinforcing bar(s) exposed when prying and chipping off concrete shall be fully exposed

throughout its length, within the patch area. There shall be a minimum of 1/2-inch of clear space around the exposed reinforcing bars. The exposed reinforcing bars shall be free of dirt, loose rust, mortar, paint, grease, oil, or other coatings that would destroy or reduce the bond between the reinforcing and the bonding agent. Remove enough concrete within the repair area to force reinforcing bar back away from the finished exterior face of the structure. Do not vibrate and avoid striking the reinforcing bar when removing concrete.

Strengthen any reinforcing steel that is found to have lost 25% or more of the original cross-sectional area by lap splicing or epoxy doweling new reinforcing steel as shown in the Contract Documents. All individuals performing anchor and dowel work shall hold a current ACI/CRSI installer certification.

(f) Remove deteriorated concrete, prepare and clean surfaces to be patched. Clean all chipped concrete surfaces to remove all foreign material and laitance before application of repair material or repair mortar or placement of formwork for cast-in-place concrete repairs.

(g) All concrete surfaces to receive repair material or repair mortar shall be roughened to a minimum of 1/4-inch amplitude or a Concrete Surface Profile (CSP) of 7 in accordance with International Concrete Repair Institute (ICRI) guidelines 310.2 to ensure proper adhesion with repair material or repair mortar.

(h) No material is allowed to fall or flow into streams or drainage systems.

(4) Surface Preparation:

(a) Cleaning: After removal of all defective concrete, remaining concrete surfaces to be patched shall be structurally sound, clean, free of dirt, powdered concrete, loose mortar particles, paint, film, protective coatings, efflorescence, laitance, and other matter detrimental to proper adhesion of the new patch materials. The Contractor shall use methods such as pressure washing or approved equal to ensure proper cleanliness. Work surfaces must be free of ridges, fins or sharp projections. All reinforcing bars in the repair area shall made free of all scale and loose rust by using either powered rotary wire bristle brush or abrasive

blasting. Needle gunning may be used as preliminary step for removal of loose rust. Do not overly vibrate the reinforcing bars. Following all concrete removal and steel cleaning, the entire repair area shall be cleaned. Any areas not patched within 24 hours after needle gunning shall be recleaned. The Contractor shall inform the Engineer if more than 25% of the area of the reinforcing steel has been lost due to corrosion. No material is allowed to fall or flow into streams or drainage systems.

(5) Application of Repair Mortar (Not Requiring Formwork):

(a) Repair mortar manufacturer's representative shall be present for initial repair to ensure proper preparation and application techniques are being utilized. The Contractor shall adhere to recommendations made by the technical representative and accepted by the Engineer at no increase in contract time or contract price.

(a) Mix repair mortar and apply in strict conformance with the manufacturer's published instructions or job specific written instructions.

(b) Existing concrete substrate of the repair area shall be Saturated Surface Dry (SSD) immediately prior to placement of repair mortar.

(c) Apply bonding agent, as specified by manufacturer, to all surfaces of reinforcing steel in repair area.

(d) Extend repair mortar with pea gravel as directed by the manufacturer if the repair thickness exceeds allowable neat mortar tolerances.

(e) Mix repair mortar and apply in strict conformance with the manufacturer's published instructions or job specific written instructions. If patch exceeds maximum lift thickness, extend with aggregate as recommended by manufacturer.

(f) Make batches small enough to assure placement before binder sets.

(g) For all hand, trowel placed vertical and overhead repair areas, apply repair mortar in layers as recommended by the manufacturer not exceeding maximum lift thickness. Work and press mortar onto the prepared substrate surfaces

to ensure bond. For repair areas that require multiple lifts, the top surface of each lift must be roughened to create a mechanical bond for the following layer of repair mortar. All layers for each patch shall be placed on the same day. There shall be no cold joints in the repair area. Use vibratory floats, plates, or hand tampers to consolidate the patching material layers. Level each layer and screed the final surface unless a built-up section is required to maintain 1-inch minimum concrete cover. Remove excess repair mortar on the adjacent surfaces before it hardens.

(h) Finish: Finish all patch work to match existing surfaces in texture and appearance or as otherwise directed by the State's representative. Do not feather edge repair mortar onto adjacent surfaces.

(i) Curing:

(i) Immediately after the final layer of repair mortar has been placed and finished, curing shall begin.

(ii) Cure according to Subsection 680.02.D – Curing Method.

(6) Field Quality Control

(a) Sampling: The Contractor's representative shall prepare concrete cube specimens of non-sag repair mortar for compressive strength testing by an independent testing laboratory once per LOT.

(b) Testing: An accredited independent testing laboratory shall have the compressive strength tests performed by personnel certified in the test method used. Notify the Engineer 72 hours in advance of the test date and time so it may attend compressive strength tests.

A minimum of three specimens per test age of the non-sag repair mortar shall be prepared and tested by the Engineer for each LOT in accordance with ASTM C109 – Standard Test Method for Compressive Strength of Hydraulic Cement Mortars. These test ages are 7-days and 28-days.

Test the QC laboratory cured samples for compressive strength at the ages of 3 hours, 7 days, and 28

days for the VESLMC samples. Test the compressive strengths of the non-sag repair mortar samples at 7-days and 28-days. Testing shall be completed in a laboratory meeting and maintaining at all times the qualification requirements in the Highways Division's Quality Assurance Manual for Materials. Notify the Engineer of the Quality Control Laboratory compressive test results within 24 hours after testing.

If the compressive strength test results fail to meet the specified requirements after two tests, the repairs made using the batched material represented by the samples tested shall be rejected. Areas of rejected repairs shall be removed, replaced and re-tested until acceptable at no additional cost to the State. The inspection of or the failure to inspect the work by the Engineer shall not relieve the Contractor of obligations to fulfill the contract as prescribed, to correct defective work, and to replace unsuitable or rejected materials regardless of whether payment for such work has been made.

(c) Special Inspection:

(i) The State's representative will examine the repair materials and repair mortars at the job site to verify that the materials used at the jobsite are the selected and approved materials referenced in the test results of design mixes or certificates of compliance.

(ii) The State's representative will examine the surface preparations, mixing, application and curing procedures of the repair materials and repair mortars to determine conformance with the requirements specified.

(d) In-Place Test of Repairs:

(i) The State's representative, utilizing a 2-pound hammer, will test all completed concrete spall repairs to locate hollow or ringing sounding areas. A hollow sound generally will indicate that either the repair material or repair mortar has not completely filled the space from which the damaged concrete was removed or that it has not adequately bonded to the concrete substrate.

(ii) The Contractor shall remove the repair material or repair mortar from those hollow or ringing sounding areas, prepare the surfaces of the exposed reinforcing bars and the sound concrete substrate, if necessary form and then place, cure and finish the new repair material or repair mortar at no additional cost to the State. Upon completion, the repairs will be retested by the State's representative.

(7) Cleaning:

(a) Surfaces Not Involved in the Repairs: Adjacent surfaces damaged by staining left by concrete work, or other concrete materials shall be completely restored to original condition with respect to color and texture to the acceptance by the State's representative.

(b) Removal: Remove debris and rubbish from the site daily. Prevent debris and rubbish from entering the Stream. Debris and rubbish shall not be allowed to accumulate on the site. Debris shall be removed and transported in a manner that will prevent spillage into the open channel, onto the adjacent ground and streets.

Upon completion of the work, remove all materials, tools, forming materials, catchments, work platforms, refuse and debris generated by the work specified in this section.

(8) Traffic and Equipment Control on Bridge.

(a) Construction vehicles shall not exceed a 5-mph speed limit within 200 feet of the placement area in both directions during concrete repairs and curing.

(b) Equipment and vehicles shall not contaminate the prepared deck surface.

(c) The Contractor shall not permit compressors or other equipment that produce vibrations on the span undergoing concrete repair work. Equipment shall not be located on spans undergoing concrete repairs unless approved by the Engineer.

(d) Vehicular traffic shall not exceed a 20-mph speed limit on the bridge span during concrete repairs and curing.

(e) The bridge deck shall not be used as a storage area for equipment or for stockpiling materials. Equipment and material exceeding eight tons shall not be used on the bridge unless approved by the Engineer.

(f) Traffic control shall be provided on the bridge deck for defective concrete repairs on the bridge deck soffit, girders, and beams. Both the non-sag repair mortar and bonding agent shall cure for a minimum of 3 hours prior to opening to traffic. Traffic shall not be allowed within 3 feet laterally of the defective concrete repairs for the duration of the traffic control.

(9) Acceptance. Hardened non-sag repair mortar will be accepted or rejected on the basis of strength tests and sounding methods.

The Engineer will accept full payment of each LOT of repair material and repair mortar only when the QC strength test results are verified. The compressive strength results of the LOT shall meet the specified minimum strengths of 5,000 psi at 7-days and 6,000 psi at 28-days for non-sag repair mortar. The compressive strength results of the LOT shall meet the specified minimum strengths of 3,000 psi at 3-hours and 6,000 psi at 28-days for VESLMC.

680.04 Measurement. The Engineer will measure the Defective Concrete Repair per square foot of repaired and accepted section. The Engineer will not measure Defective Concrete Repair - Temporary Support Structure (Work Platform Scaffolding).

680.05 Payment. The Engineer will pay for the accepted quantities of Defective Concrete Repair at the contract unit price per square foot, complete in place.

The payment will be full compensation for chipping, removing and disposing of defective concrete found within the limits of the spall and patch repair work; locating and repairing existing reinforcing steel bars, extending the probing to beyond the end of corrosion and removing concrete around the corroded reinforcing steel; cleaning and preparing concrete surfaces; removing corrosion damage from reinforcing steel; replacing any necessary reinforcing steel; coating the reinforcing steel with a corrosion inhibitor epoxy bonding agent; providing forms and falsework; providing temporary support structures (work platform scaffolding), placing, finishing and curing concrete repair materials and repair mortars; repairing defects; sampling and testing concrete; for clean-up;

and for furnishing equipment, tools, labor, materials and other incidentals necessary to complete the work.

Pay Item	Pay Unit
Defective Concrete Repair - _____	Square Feet”

END OF SECTION 680

Make the following Section a part of the Standard Specifications:

"SECTION 694 – CRACK REPAIR BY EPOXY INJECTION

694.01 Description. This work includes the repair of cracks in concrete by pressure-injecting epoxy into cracks that intersect at least one accessible surface of the concrete or masonry member. It does not cover the repair of delaminations where the intersection of the cracked concrete with the surface of the concrete member is not accessible nor can be made accessible.

694.02 Materials.

(A) General. Deliver all injection adhesives to the job site in sealed containers with labels intact. Store all injection adhesives between 4 and 32°C (40 and 90°F) unless otherwise specified by the manufacturer.

(B) Surface Seal. Use the materials to seal the crack faces that have the strength and adhesion to contain the injection adhesive in the crack during the injection process and while the injection adhesive cures, and, if required to be removed, shall not leave a residue or damage the surfaces.

(C) Injection Adhesives. Injection adhesives for cracks that can be sealed on all faces – Use an adhesive that conforms to the requirements of ASTM C 881/C 881M, Type IV, Grade 1, and any additional requirements as defined in the Project Specifications.

If all faces of the crack cannot be reached to apply a surface seal, use an injection adhesive that conforms to the requirements of ASTM C 881/C 881M, Type IV, Grades 1, 2, or 3, and has a viscosity that will allow it to achieve and maintain full depth penetration requirements.

694.03 Construction.

(A) Submittals.

(1) Qualification testing – Submit an independent laboratory test report, including all test results, certifying that the injection adhesive meets all the requirements specified in Subsection 694.02(C) – Injection Adhesives.

(2) Manufacturer's certification – Submit the manufacturer's certification verifying conformance to the requirements of Subsection 694.02(C) – Injection Adhesives, of each lot of injection adhesive to be used in the Work.

(3) Additional testing – Submit additional test results when required.

(B) Quality Assurance.

(1) Metering Accuracy. Use equipment or tools for continuous (metering) or batch proportioning for the two components of the injection adhesive that are able to establish and maintain a ratio of the components within the tolerance specified by the manufacturer of the injection adhesive over the full range of operating pressures and temperatures. If the manufacturer of the adhesive does not specify a tolerance for the mixture ratio, maintain a mixture ratio within ±3% of the nominal mixture ratio specified by the manufacturer of the adhesive.
turer of the adhesive.
the adhesive.

(2) Qualification Test for Metering Accuracy.

(a) When a continuous metering and mixing pump is required, test the metering accuracy of equipment before the start of the Work to demonstrate that the pump is capable of maintaining the ratio within the tolerances required in Subsection 694.03(B)(1) – Metering Accuracy.

(1) Conduct the test using a pump discharge pressure that ranges from the lowest to the highest discharge pressure at which the equipment is expected to be operated during the injection process.

(2) The device used to measure metering accuracy shall be capable of controlling the discharge pressure of each of the components separately as they are simultaneously discharged into separate containers.

(3) Conduct one test by discharging both adhesive components simultaneously into separate containers while maintaining a discharge pressure on both components equal to the lowest operating discharge pressure. Conduct a second test at the highest operating discharge pressure.

(4) Measure injection pressure with a gauge mounted upstream of and within 300 mm (12 in.) of the mixing chamber.

(5) Discharge a minimum of 200 g (7 oz) of each component into separate graduated containers or into containers that can be weighed. If the ratio determination is made by mass, the volumetric ratio may be determined by calculation using the specific gravity of each component. (The volumetric ratio is determined by multiplying the mass ratio by the inverse of the ratio of the specific gravities of the components.)

(b) Demonstrate that the injection equipment does not have more than a 35 kPa (5 psi) drop in pressure in either of the two component lines after operating with no flow for 3 minutes with at least 80% or more of the operating pressure.

(C) Qualification Tests for Mixing Effectiveness of Equipment. Before the start of the test injection Work, conduct the bond strength 2-day cure and compressive yield and compressive modulus tests in ASTM C 881/C 881M on the specified injection adhesive processed with the equipment and tools to be used to meter, and mix the injection adhesive in the Work. If the test results do not meet the requirements of ASTM C 881/C 881M, modify or replace the equipment.

(D) Qualification of Injection Procedures. As the first item of Work, repair a test crack selected by the Engineer not less than 3.0 m (10 ft) in total length. If there are no cracks at least 3.0 m (10 ft) in length, the Engineer will select a number of shorter cracks whose total length will approximately equal 3.0 m (10 ft). Inject the test crack(s) using the specified injection adhesive. Use the same surface seal, equipment, and application methods that are to be used in executing the Work. Do not begin the remaining injection work until the equipment and application methods are accepted.

(E) Quality Control

(1) Metering Accuracy Tests for Continuous Mixing. The first time any piece of two-component continuous metering and mixing equipment is used in the Work and any time each piece of equipment is used in the Work and any time each piece of equipment is used after a 4-hour or longer shutdown period, test two-component continuous metering and mixing equipment to demonstrate that the equipment is operating as required. If the ratio of the two components is not within the specified tolerance, stop injection work until the equipment is brought into compliance with Subsection 694.03(B)(1) – Metering Accuracy. Maintain a

record of all such tests and temperature of each adhesive component. Submit the record to the Engineer at the end of each workday.

(2) Metering Accuracy Test for Batch Mixing. For every batch of adhesive mixed, record the amount of each component and the total amount of mixed adhesive within ±3%. Maintain a record of all batches, including date, time, and mixture ratio.

(F) Evaluation and Preparation

(1) Crack Width. Inspect all cracks to determine if they are within the scope described in the Project Specifications. When required, measure the width of the crack to make this determination, and make the measurement at the time of day when the cracks are at their widest as measured at the surface of the concrete member. Submit to the Engineer a list of crack widths and lengths of all cracks greater than 0.01 inches. All cracks 0.01 inches or larger shall be repaired when approved by the Engineer.

(2) Crack Movement. If the width of a crack changes because of daily temperature cycles or other external loading of the structure, inject the crack when it is at its widest.

(3) Crack Preparation.

(a) Remove foreign material, such as dirt, oil, grease, or other chemicals, from the cracks before injection.

(b) Water in Cracks. Unless the crack is in submerged concrete, remove any water that can be seen by visual inspection from the cracks before the injection process, and remove water that appears during the injection process.

(c) Temperature of the Concrete. Do not inject adhesive if the temperature of the concrete is not within the range of application temperatures recommended by the manufacturer of the adhesive.

(4) Test Injection. After the test crack(s) has (have) been prepared, conduct the test injection specified in Subsection 694.03(D) – Qualification of Injection Procedures. If results do not meet the requirements of the contract documents, modify crack preparation and injection procedures, as approved, until satisfactory results can be obtained.

(5) Surface Sealing. Apply a surface seal over all exterior faces of the crack that can be reached to contain the injection adhesive in the crack.

(6) Injection. Inject cracks so that the requirements of the contract documents are met.

(7) Cleanup

(a) Surface Seal and Ports. Remove surface seal and any installed injection ports that protrude from the surface of the concrete.

(b) Spills and Leaks. Clean and remove all spills and leaks of injection adhesive and stains caused by the injection adhesives.

(G) Daily Log. Maintain a written daily log for each day of injection work that includes:

(1) Ambient temperatures at the start and end of the workday and 4 hours after the end of the workday;

(2) Weather conditions, such as rain, and wind, including changes during the shift;

(3) Crack cleaning methods, if any, including locations,

(4) Record of injection adhesive, including manufacturer, product and batch number, and amount used each day; and

(5) Signature and printed name of person responsible for record keeping.

Submit the log to the Engineer each workday.

694.04 Measurement. The Engineer will measure crack repair by epoxy injection per linear foot according to the dimensions shown in the contract documents or as ordered by the Engineer.

694.05 Payment. The Engineer will pay for the accepted crack repair by epoxy injection by the linear foot. Payment will be full compensation for the work prescribed in this section and the contract documents.

The Engineer will pay for the following pay items when included in the proposal schedule:

Pay Item	Pay Unit
Crack Repair by Epoxy Injection	Linear Foot”

The requirements of Specification Section **104.07 Variations in Estimate Quantities** is not applicable to this pay item. Crack Repair by Epoxy Injection can vary by as much as 30% before an adjustment in the contract price can be made.

END OF SECTION 694

Make this Section a part of the Standard Specifications:

SECTION 695 - JUST IN TIME TRAINING

695.01 Description. This Section describes the Just-In-Time Training (JITT) requirements.

695.02 Materials. Not applicable

695.03 Construction. Just-In-Time Training (JITT). JITT shall be mandatory, and consist of a Pre-Operational Conference and a formal joint training class on the work the Engineer considers “new technology”, areas that workmanship needs improvement or an area of work where the work needs to be discussed openly between the Contractor and the State or an area of work that the Engineer may feel should be included. The Engineer may include other areas of work after the bid but the Contractor will only be required to have the JITT for the added training as soon as possible and is not required to have it before the work involved starts although the Contractor is encouraged to do so. However, the JITT shall be no later if the Engineer allows it. Construction operations for the work listed at bid time shall not begin until the Contractor’s and the Engineer’s personnel have completed the mandatory JITT. The Contractor’s list of participants for the Pre-Operational Conference along with the Engineer’s representatives shall attend the JITT.

(1) Mandatory Pre-Operational Conference.

(a) Prior to the start of work, but no later than 3 days prior, the Contractor shall attend an on-site Pre-Operational Conference to discuss construction procedures, timelines, and contract requirements. Required attendees should be HDOT, the Contractor, Designer of Record, and material manufacturer’s representative.

(b) No Pre-Operational Conference shall be held until all material submittals, material samples and required documentation related to this Section have been submitted and accepted by the Engineer. Work related to this section shall not start until the pre-construction meeting has been successfully held and completed.

The JITT session shall be conducted for not less than 4 hours, unless allowed by the Engineer, on the listed work. Training classes, if deemed as necessary by the Engineer, may be an extension of the Pre-Operational Conference. Both of these events shall be conducted at a location convenient for both the Contractor’s and Engineer’s project staffs. Scheduling and completion of the JITT session shall be completed between 5 – 10 working days prior to the start of construction of the activity. The classes in general will be held during normal working hours. However, the Engineer, at its option, may choose to schedule the classes outside normal working hours.

The JITT instructor shall be experienced in the construction methods, materials, and test methods associated with the listed work. The instructor shall not be an employee of the Contractor unless the Engineer allows it. A copy of the syllabus, handouts, and presentations materials shall be submitted to the Engineer at least 14 days before the day of the training. Selection of the course instructor, the course content and training site shall be approved by the Engineer.

The Contractor's or Engineer's personnel involved with the type of work to be covered will not be required to attend if they have completed similar training within the previous 12 months of the date of the JITT. The determination for exclusion of any staff member's participation will be determined by the Engineer.

The Contractor shall make every effort possible to have the workers, subcontractors and suppliers attend the JITT for the work they will be performing.

It is expressly understood that Just-In-Time Training shall not relieve the Contractor of any responsibility under the contract for the successful completion of the work in conformity with the requirements of the plans and specifications.

695.04 Measurement. JITT will not be measured for payment.

695.05 Payment. JITT will not be paid for separately. The costs shall be incidental to the various work items.

END OF SECTION 695

SECTION 696 – FIELD OFFICE AND PROJECT SITE LABORATORY

Make the following amendment to said Section:

(I) Amend **696.05 Payment** by revising line 232 to read as follows:

“Field Office Trailer (Not to Exceed $50,000.00) Lump Sum”

END OF SECTION 696

SECTION 699 – MOBILIZATION

Make the following amendments to said Section:

(I) Amend **699.03 Applicability** by revising from lines 21 to 24 to read as follows:

"**699.03 Applicability.** Maximum bid allowed for this item is an amount not to exceed 6 percent of the sum of all items excluding the bid price of this item."

(II) Amend **699.05 Payment** by revising from lines 44 to 47 to read as follows:

"Mobilization (Not to exceed 6 percent of the sum of all items excluding the bid price of this item) Lump Sum"

END OF SECTION 699

SECTION 701 – HYDRAULIC CEMENT

Make the following amendments to said Section:

(I) Amend **Subsection 701.01 Portland Cement** by replacing lines 7 to 8 to read as follows:

"**701.01 Portland Cement.** Portland cement shall consist of Type 1 or Type II Portland cement, Type IP Portland-pozzolan cement, or Type IL Portland-limestone cement."

(II) Amend **Subsection 701.01 Portland Cement** by revising the following sentence in line 13:

"Type IL Portland-limestone cement and Type IP Portland-pozzolan cement shall conform to AASHTO M 240."

END OF SECTION 701

SECTION 702 – BITUMINOUS MATERIALS

Make the following amendments to said Section:

(I) Amend **Subsection 702.01** by replacing lines 4 to 5 to read:

"**702.01 Asphalt Cement.**

(A) PG 64-16. Performance graded (PG) asphalt binder (neat or unmodified) shall conform to AASHTO M 320.

(B) PG 64E-22. Performance graded binder (polymer modified) shall conform to AASHTO M 332 and meet the following additional requirement:

AASHTO T 315 Determining the Rheological Properties of Asphalt Binder Using a Dynamic Shear Rheometer (DSR). Phase angle on original binder shall be less than 77 degrees.

(C) Submittals. Submit, before usage, a Certificate of Compliance, accompanied by substantiating test data, showing conformance with Performance Graded Asphalt Binder Specification. The Engineer will not accept the PG binder without adequate documentation."

(II) Amend **Subsection 702.06 (Unassigned)** by replacing line 23 to read:

"**702.06 Warm Mix Asphalt (WMA) Additive.** Additives for WMA shall be approved by the Engineer."

END OF SECTION 702

SECTION 705 – JOINT MATERIALS FOR CONCRETE STRUCTURES

Make the following amendments to said Section:

(I) Amend **705.05 Flashing Compound** from lines 37 to 45 to read as follows:

"**705.05 Flashing Compound.** Flashing compound for waterproofing of joints as specified on the contract drawings shall be asphaltic mastic, asbestos free, conforming to ASTM D4586. Product furnished shall adhere to damp concrete and masonry surfaces. The concrete shall be primed, prepared, and allowed to cure for the minimum time as required by the flashing compound manufacturer"

(II) Amend **705 Joint Materials for Concrete Structures** by adding the following Subsection:

"705.13 **Asphalt Roll Roofing (Organic Felt)**. Asphalt roll roofing, roofing felt shall conform to ASTM D6380 Type III or ASTM D224 Type III."

END OF SECTION 705

SECTION 713 – STRUCTURAL STEEL AND RELATED MATERIALS

Make the following amendments to said Section:

(I) Amend **713.01(A) (1)** line 8 to read as follows:

"(1) Carbon structural steel shall conform to ASTM A709/AASHTO M270 Grade 36 and Grade 50, as designated in the contract documents, depending on the particular structural part."

END OF SECTION 713

SECTION 718 – STEEL FASTENERS

Make the following amendments to said Section:

(I) Amend **718.01 Standard Fasteners** from lines 6 to 7 to read as follows:

"Anchor Bolts shall conform to ASTM F1554 Grade 105. Anchor Bolts shall be hot-dip zinc galvanized in accordance with ASTM F2329.

Stainless steel bolts, threaded rods, nuts, and washers shall be manufactured in accordance with UNS designation S31803/S32205."

(II) Amend **718.02 High-Strength Bolts and Studs** from lines 13 to 21 to read as follows:

"**718.02 High-Strength Bolts and Studs.** Bolts and studs shall conform to AASHTO LRFD Bridge Design Specifications, Subsection 6.4.3.1. Bolts designated as high-strength bolts shall be ASTM F3125, Grade A325, Type 1. Bolts shall be hot-dip zinc galvanized in accordance with ASTM F2329."

(III) Amend **718.03 Nuts** from lines 32 to 50 to read as follows:

"718.03 Nuts. Nuts shall conform to AASHTO M291/ASTM A563.

Nuts shall be Grade DH heavy hex for use with AASHTO M164/ASTM F3125, Grade A325, Type 1 Bolts. Nut shall be marked on one face with grade symbol DH, as appropriate. Grade marking shall be impressed on bearing surface of nut.

Nuts shall conform to requirements for heavy semi-finished nuts in ANSI B18.2, and dimensions shown in Table 718.92-1 – Bolt and Nut Dimensions (Inches). Bearing surface of nut under bolt head shall not be less than dimensions shown in Table 718.02-1 – Bolt and Nut Dimensions.

Nuts shall be hot-dip zinc galvanized in accordance with ASTM F2329. Nut threads shall be tapped oversized PRIOR to galvanizing in accordance with ASTM A563. Tapping/Reaming/Chasing threads after galvanizing is not allowed.

Hot-Dip zinc coated nuts shall be lubricated by the manufacturer with lubricant containing visible dye."

(IV) Amend 718.04 Washers. From lines 52 to 56 to read as follows:

"718.04 Washers. Washers shall be hardened steel washers conforming to AASHTO M293/ASTM F436 with a hardness of Rc 38-45.

Hardened steel washers shall have flat and smooth surfaces and nominal dimensions conforming to Table 718.04-1 – Washer Dimensions (Inches).

Washers shall be hot-dip zinc galvanized in accordance with ASTM F2329.

Direct Tension Indicating (DTI) washers shall conform to ASTM F959 and shall be accompanied with a hardened washer in every bolt assembly. DTI washers shall be mechanically zinc galvanized in accordance with ASTM B695, Class 55."

END OF SECTION 718

SECTION 750 – TRAFFIC CONTROL SIGN AND MARKER MATERIALS

Make the following amendments to said Section:

(I) Amend **Subsection 750.01(A)(1) Retroreflectorization** by replacing lines 8 through 31 to read:

"(1) Retroreflectorization. The following shall be retroreflectorized:

(a) Background for illuminated guide signs and exit number panels ("E" designation) with ASTM D 4956 Type XI retroreflective sheeting.

(b) Background for non-illuminated guide signs and exit number panels ("D" designation) with ASTM D 4956 Type XI retroreflective sheeting.

(c) Messages, arrows, and borders of guide signs and exit number panels ("D" and "E" designations) with ASTM D 4956 Type XI retroreflective sheeting.

(d) Regulatory and warning signs, directional signs ("DIR" designation), route and auxiliary markers, shield symbols, yellow "EXIT ONLY" panels, construction warning signs, and barricade rails, completely, with Type III, IV, or IX retroreflective sheeting.

(e) Pedestrian, school, bicycle crossing series, completely with Type IX fluorescent yellow green retroreflective sheeting."

(II) Amend **Subsection 750.01(B) Backing** by replacing lines 72 through 73 to read:

"Aluminum sheet shall conform to ASTM B 209, alloy 5052-H38 or 6061-T6 flat sheet."

(III) Amend **Subsection 750.01(E) Retroreflective Sheeting Materials** by replacing lines 1126 through 1137 to read:

"**(E) Retroreflective Sheeting Materials.** Retroreflective sheeting includes white or colored sheeting having smooth outer surface.

Retroreflective sheeting shall be classified in accordance with ASTM D 4956.

The coefficient of retroflection shall meet the minimum requirements of ASTM D 4956 for the type of reflective sheeting specified.

The color shall conform to the latest appropriate standard color tolerance chart issued by the U.S. Department of Transportation, Federal Highway

Administration and to the daytime and nighttime color requirements of ASTM D 4956.

Test methods and procedures shall be in accordance with ASTM."

(IV) Amend **Subsection 750.02 Sign Posts** by replacing lines 1168 through 1172 to read:

"**(C) Square Tube Posts.** Square and other tube posts shall conform to ASTM A 653 for cold-rolled, carbon steel sheet, commercial quality; or ASTM A 787 for electric-resistance-welded, metallic-coated carbon steel mechanical tubing."

END OF SECTION 750

SECTION 755 – PAVEMENT MARKING MATERIALS

Make the following amendments to said Section:

(I) Amend **Subsection 755.02 (C) Retroreflective Pavement Markers** by revising lines 223 to 236 to read:

"Exterior surface of shell shall be smooth and contain one or two retroreflective faces of specified color."

(II) Amend **Subsection 755.05 (C)(1) Glass Beads** by adding the following after line 869:

> "**(f)** The glass spheres shall not contain more than 200 ppm (total) arsenic, 200 ppm (total) antimony nor more than 200 ppm (total) lead, when tested according to EPA Methods 3052 and 6010C. Other suitable x-ray fluorescence spectrometry analysis methods may be used to screen samples of glass spheres for arsenic and lead content."

END OF SECTION 755

Requirements of Chapter 104, HRS
Wages and Hours of Employees on Public Works Law

Chapter 104, HRS, applies to every public works construction project over $2,000, regardless of the method of procurement or financing (purchase order, voucher, bid, contract, lease arrangement, warranty, SPRB).

Rate of Wages for Laborers and Mechanics

- Minimum prevailing wages (basic hourly rate plus fringe benefits), as determined by the Director of Labor and Industrial Relations and published in wage rate schedules, shall be paid to the various classes of laborers and mechanics working on the job site. [§104-2(a), (b), Hawaii Revised Statutes (HRS)]

- If the Director of Labor determines that prevailing wages have increased during the performance of a public works contract, the rate of pay of laborers and mechanics shall be raised accordingly. [§104-2(a) and (b), HRS; §12-22-3(d) Hawaii Administrative Rules (HAR)]

Overtime

- Laborers and mechanics working on a Saturday, Sunday, or a legal holiday of the State or more than eight hours a day on any other day shall be paid overtime compensation at not less than one and one-half times the basic hourly rate plus the cost of fringe benefits for all hours worked. If the Director of Labor determines that a prevailing wage is defined by a collective bargaining agreement, the overtime compensation shall be at the rates set by the applicable collective bargaining agreement [§§104-1, 104-2(c), HRS; §12-22-4.1, HAR]

Weekly Pay

- Laborers and mechanics employed on the job site shall be paid their full wages at least once a week, without deduction or rebate, except for legal deductions, within five working days after the cutoff date. [§104-2(d), HRS]

Posting of Wage Rate Schedules

- Wage rate schedules with the notes for prevailing wages and special overtime rates, shall be posted by the contractor in a prominent and easily accessible place at the job site. A copy of the entire wage rate schedule shall be given to each laborer and mechanic employed under the contract, except when the employee is covered by a collective bargaining agreement. [§104-2(d), HRS]

Withholding of Accrued Payments

- If necessary, the contracting agency may withhold accrued payments to the contractor to pay to laborers and mechanics employed by the contractor or subcontractor on the job site any difference between the wages required by the public works contract or specifications and the wages received. [§104-2(e), HRS]

Certified Weekly Payrolls and Payroll Records

- A certified copy of all payrolls shall be submitted weekly to the contracting agency. [§104-3(a), HRS; §12-22-10, HAR]

- The contractor is responsible for the submission of certified copies of the payrolls of all subcontractors. The certification shall affirm that the payrolls are correct and complete, that the wage rates listed are not less than the applicable rates contained in the applicable wage rate schedule, and that the classifications for each laborer or mechanic conform with the work the laborer or mechanic performed. [§104-3(a), HRS; §12-22-10, HAR]

- Payroll records shall be maintained by the contractor and subcontractors for three years after completion of construction. The records shall contain: [§104-3(b), HRS; §12-22-10, HAR]
  - the name and home address of each employee
  - the last four digits of social security number
  - a copy of the apprentice's registration with DLIR
  - the employee's correct classification
  - rate of pay (basic hourly rate + fringe benefits)
  - itemized list of fringe benefits paid
  - daily and weekly hours worked
  - weekly straight time and overtime earnings
  - amount and type of deductions
  - total net wages paid
  - date of payment

- Records shall be made available for examination by the contracting agency, the Department of Labor and Industrial Relations (DLIR), or any of its authorized representatives, who may also interview employees during working hours on the job. [§§104-3(c), 104-22(a), HRS; §12-22-10, HAR]

Termination of Work on Failure to Pay Wages

- If the contracting agency finds that any laborer or mechanic employed on the job site by the contractor or any subcontractor has not been paid prevailing wages or overtime, the contracting agency may, by written notice to the contractor, terminate the contractor's or subcontractor's right to proceed with the work or with the part of the work in which the required wages or overtime compensation have not been paid. The contracting agency may complete this work by contract or otherwise, and the contractor or contractor's sureties shall be liable to the contracting agency for any excess costs incurred. [§104-4, HRS]

Apprentices

- Apprentice wage rates apply to contractors who are a party to a bona fide apprenticeship program which has been registered with the DLIR. In order to be paid apprentice rates, apprentices must be parties to an agreement either registered with or recognized as a USDOL nationally approved apprenticeship program by the DLIR, Workforce Development Division, (808) 586-8877, and the apprentice must be individually registered by name with the DLIR. [§12-22-6(1) and (2), HAR]

- The number of apprentices on any public work in relation to the number of journeyworkers in the same craft classification as the apprentices employed by the same employer on the same public work may not exceed the ratio allowed under the apprenticeship standards registered with or recognized by the DLIR. A registered or recognized apprentice receiving the journeyworker rate will not be considered a journeyworker for the purpose of meeting the ratio requirement. [§12-22-6(3), HAR]

Enforcement

- To ensure compliance with the law, DLIR and the contracting agency will conduct investigations of contractors and subcontractors. If a contractor or subcontractor violates the law, the penalties are: [§104-24, HRS]

  - First Violation — Equal to 25% of back wages found due or $250 per offense up to $2,500, whichever is greater.
  - Second Violation — Equal to amount of back wages found due or $500 for each offense up to $5,000, whichever is greater.
  - Third Violation — Equal to two times the amount of back wages found due or $1,000 for each offense up to $10,000, whichever is greater; and
    Suspension from doing any new work on any public work of a governmental contracting agency for three years.

  ▪ A violation would be deemed a second violation if it occurs within two years of the **first notification of violation**, and a third violation if it occurs within three years of **the second notification of violation**. [§104-24, HRS; §12-22-25(b), HAR]

  ▪ **Suspension**: For a first or second violation, the department shall immediately suspend a contractor who fails to pay wages or penalties until all wages and penalties are paid in full. For a third violation, the department shall penalize and suspend the contractor as described above, **except that if the contractor continues to violate the law, then the department shall immediately suspend the contractor for a mandatory three years. The contractor shall remain suspended until all wages and penalties are paid in full.** [§§104-24, 104-25, HRS]

- **Suspension**: Any contractor who fails to make payroll records accessible or provide requested information within 10 days, or fails to keep or falsifies any required record, shall be assessed a penalty including suspension as provided in Section 104-22(b) and 104-25(a)(3), HRS. [§104-3(c), HRS; §12-22-26, HAR]

- If any contractor interferes with or delays any investigation, the contracting agency shall withhold further payments until the delay has ceased. Interference or delay includes failure to provide requested records or information within ten days, failure to allow employees to be interviewed during working hours on the job, and falsification of payroll records. The department shall assess a penalty of $10,000 per project, and $1,000 per day thereafter, for interference or delay. [§104-22(b), HRS; §12-22-26, HAR]

- Failure by the contracting agency to include in the provisions of the contract or specifications the requirements of Chapter 104, HRS, relating to coverage and the payment of prevailing wages and overtime, is not a defense of the contractor or subcontractor for noncompliance with the requirements of this chapter. [§104-2(f), HRS]

For additional information, visit the department's website at *http://labor.hawaii.gov/wsd*
or contact any of the following DLIR offices:

Oahu (Wage Standards Division) .....(808) 586-8777
Hawaii Island.....(808) 974-6464
Maui and Kauai .....(808) 243-5322

"General Decision Number: HI20240001 10/04/2024

Superseded General Decision Number: HI20230001

State: Hawaii

Construction Types: Building, Heavy (Heavy and Dredging), Highway and Residential

Counties: Hawaii Statewide.

BUILDING CONSTRUCTION PROJECTS; RESIDENTIAL CONSTRUCTION PROJECTS (consisting of single family homes and apartments up to and including 4 stories); HEAVY AND HIGHWAY CONSTRUCTION PROJECTS AND DREDGING

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	. Executive Order 14026 generally applies to the contract. . The contractor must pay all covered workers at least $17.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2024.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	. Executive Order 13658 generally applies to the contract. . The contractor must pay all covered workers at least $12.90 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2024.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at http://www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/05/2024
1	01/12/2024
2	01/19/2024
3	04/19/2024
4	05/17/2024
5	06/07/2024
6	07/19/2024
7	08/30/2024
8	09/06/2024
9	10/04/2024

ASBE0132-001 09/01/2024

	Rates	Fringes
Asbestos Workers/Insulator		
Includes application of all insulating materials, protective coverings, coatings and finishes to all types of mechanical systems. Also the application of firestopping material for wall openings and penetrations in walls, floors, ceilings and curtain walls	$ 45.80	30.35

BOIL0627-005 01/01/2021

	Rates	Fringes
BOILERMAKER	$ 37.25	31.25

BRHI0001-001 09/05/2023

	Rates	Fringes
BRICKLAYER		
Bricklayers and Stonemasons	$ 48.03	32.23
Pointers, Caulkers and Weatherproofers	$ 48.28	32.23

BRHI0001-002 09/05/2023

	Rates	Fringes
Tile, Marble & Terrazzo Worker		
Terrazzo Base Grinders	$ 44.69	33.00
Terrazzo Floor Grinders and Tenders	$ 43.14	33.00
Tile, Marble and Terrazzo Workers	$ 46.50	33.00

CARP0745-001 10/01/2021

	Rates	Fringes
Carpenters:		
Carpenters; Hardwood Floor Layers; Patent Scaffold Erectors (14 ft. and		

over); Piledrivers;
Pneumatic Nailers; Wood
Shinglers and Transit
and/or Layout Man.....$ 51.25 24.84
Millwrights and Machine
Erectors.....$ 51.50 24.84
Power Saw Operators (2
h.p. and over).....$ 51.40 24.84

CARP0745-002 09/04/2023

	Rates	Fringes
Drywall and Acoustical Workers and Lathers	$ 53.00	27.74

ELEC1186-001 08/25/2024

	Rates	Fringes
Electricians:		
Cable Splicers	$ 62.77	32.46
Electricians	$ 55.55	32.25
Telecommunication worker	$ 40.00	15.50

ELEC1186-002 08/25/2024

	Rates	Fringes
Line Construction:		
Cable Splicers	$ 62.77	32.46
Groundmen/Truck Drivers	$ 41.66	26.50
Heavy Equipment Operators	$ 50.00	29.90
Linemen	$ 55.55	32.25
Telecommunication worker	$ 40.00	15.50

ELEV0126-001 01/01/2024

	Rates	Fringes
ELEVATOR MECHANIC	$ 70.90	37.885+a+b

a. VACATION: Employer contributes 8% of basic hourly rate for 5 years service and 6% of basic hourly rate for 6 months to 5 years service as vacation pay credit.

b. PAID HOLIDAYS: New Year's Day, Memorial Day, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day, the Friday after Thanksgiving Day and Christmas Day.

ENGI0003-002 09/03/2018

	Rates	Fringes
Diver (Aqua Lung) (Scuba))		
Diver (Aqua Lung) (Scuba) (over a depth of 30 feet)	$ 66.00	31.26
Diver (Aqua Lung) (Scuba) (up to a depth of 30 feet)	$ 56.63	31.26
Stand-by Diver (Aqua Lung) (Scuba)	$ 47.25	31.26
Diver (Other than Aqua Lung)		
Diver (Other than Aqua Lung)	$ 66.00	31.26

Diver Tender (Other than Aqua Lung)	$ 44.22	31.26
Stand-by Diver (Other than Aqua Lung)	$ 47.25	31.26
Helicopter Work		
Airborne Hoist Operator for Helicopter	$ 45.80	31.26
Co-Pilot of Helicopter	$ 45.98	31.26
Pilot of Helicopter	$ 46.11	31.26
Power equipment operator - tunnel work		
GROUP 1	$ 42.24	31.26
GROUP 2	$ 42.35	31.26
GROUP 3	$ 42.52	31.26
GROUP 4	$ 42.79	31.26
GROUP 5	$ 43.10	31.26
GROUP 6	$ 43.75	31.26
GROUP 7	$ 44.07	31.26
GROUP 8	$ 44.18	31.26
GROUP 9	$ 44.29	31.26
GROUP 9A	$ 44.52	31.26
GROUP 10	$ 44.58	31.26
GROUP 10A	$ 44.73	31.26
GROUP 11	$ 44.88	31.26
GROUP 12	$ 45.24	31.26
GROUP 12A	$ 45.60	31.26
Power equipment operators:		
GROUP 1	$ 41.94	31.26
GROUP 2	$ 42.05	31.26
GROUP 3	$ 42.22	31.26
GROUP 4	$ 42.49	31.26
GROUP 5	$ 42.80	31.26
GROUP 6	$ 43.45	31.26
GROUP 7	$ 43.77	31.26
GROUP 8	$ 43.88	31.26
GROUP 9	$ 43.99	31.26
GROUP 9A	$ 44.22	31.26
GROUP 10	$ 44.28	31.26
GROUP 10A	$ 44.43	31.26
GROUP 11	$ 44.58	31.26
GROUP 12	$ 44.94	31.26
GROUP 12A	$ 45.30	31.26
GROUP 13	$ 42.22	31.26
GROUP 13A	$ 42.49	31.26
GROUP 13B	$ 42.80	31.26
GROUP 13C	$ 43.45	31.26
GROUP 13D	$ 43.77	31.26
GROUP 13E	$ 43.88	31.26

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Fork Lift (up to and including 10 tons); Partsman (heavy duty repair shop parts room when needed).

GROUP 2: Conveyor Operator (Handling building material); Hydraulic Monitor; Mixer Box Operator (Concrete Plant).

GROUP 3: Brakeman; Deckhand; Fireman; Oiler; Oiler/Gradechecker; Signalman; Switchman; Highline Cableway Signalman; Bargeman; Bunkerman; Concrete Curing Machine (self-propelled, automatically applied unit on streets, highways, airports and canals); Leveeman; Roller (5 tons and under); Tugger Hoist.

GROUP 4: Boom Truck or dual purpose ""A"" Frame Truck (5 tons

or less); Concrete Placing Boom (Building Construction); Dinky Operator; Elevator Operator; Hoist and/or Winch (one drum); Straddle Truck (Ross Carrier, Hyster and similar).

GROUP 5: Asphalt Plant Fireman; Compressors, Pumps, Generators and Welding Machines (""Bank"" of 9 or more, individually or collectively); Concrete Pumps or Pumpcrete Guns; Lubrication and Service Engineer (Grease Rack); Screedman.

GROUP 6: Boom Truck or Dual Purpose ""A""Frame Truck (over 5 tons); Combination Loader/Backhoe (up to and including 3/4 cu. yd.); Concrete Batch Plants (wet or dry); Concrete Cutter, Groover and/or Grinder (self-propelled unit on streets, highways, airports, and canals); Conveyor or Concrete Pump (Truck or Equipment Mounted); Drilling Machinery (not to apply to waterliners, wagon drills or jack hammers); Fork Lift (over 10 tons); Loader (up to and including 3 and 1/2 cu. yds); Lull High Lift (under 40 feet); Lubrication and Service Engineer (Mobile); Maginnis Internal Full Slab Vibrator (on airports, highways, canals and warehouses); Man or Material Hoist; Mechanical Concrete Finisher (Large Clary, Johnson Bidwell, Bridge Deck and similar); Mobile Truck Crane Driver; Portable Shotblast Concrete Cleaning Machine; Portable Boring Machine (under streets, highways, etc.); Portable Crusher; Power Jumbo Operator (setting slip forms, etc., in tunnels); Rollers (over 5 tons); Self-propelled Compactor (single engine); Self-propelled Pavement Breaker; Skidsteer Loader with attachments; Slip Form Pumps (Power driven by hydraulic, electric, air, gas, etc., lifting device for concrete forms); Small Rubber Tired Tractors; Trencher (up to and including 6 feet); Underbridge Personnel Aerial Platform (50 feet of platform or less).

GROUP 7: Crusher Plant Engineer, Dozer (D-4, Case 450, John Deere 450, and similar); Dual Drum Mixer, Extend Lift; Hoist and/or Winch (2 drums); Loader (over 3 and 1/2 cu. yds. up to and including 6 yards.); Mechanical Finisher or Spreader Machine (asphalt), (Barber Greene and similar) (Screedman required); Mine or Shaft Hoist; Mobile Concrete Mixer (over 5 tons); Pipe Bending Machine (pipelines only); Pipe Cleaning Machine (tractor propelled and supported); Pipe Wrapping Machine (tractor propelled and supported); Roller Operator (Asphalt); Self-Propelled Elevating Grade Plane; Slusher Operator; Tractor (with boom) (D-6, or similar); Trencher (over 6 feet and less than 200 h.p.); Water Tanker (pulled by Euclids, T-Pulls, DW-10, 20 or 21, or similar); Winchman (Stern Winch on Dredge).

GROUP 8: Asphalt Plant Operator; Barge Mate (Seagoing); Cast-in-Place Pipe Laying Machine; Concrete Batch Plant (multiple units); Conveyor Operator (tunnel); Deckmate; Dozer (D-6 and similar); Finishing Machine Operator (airports and highways); Gradesetter; Kolman Loader (and similar); Mucking Machine (Crawler-type); Mucking Machine (Conveyor-type); No-Joint Pipe Laying Machine; Portable Crushing and Screening Plant; Power Blade Operator (under 12); Saurman Type Dragline (up to and including 5 yds.); Stationary Pipe Wrapping, Cleaning and Bending Machine; Surface Heater and Planer Operator, Tractor (D-6 and similar); Tri-Batch Paver; Tunnel Badger; Tunnel Mole and/or Boring Machine Operator Underbridge Personnel Aerial Platform (over 50 feet of platform).

GROUP 9: Combination Mixer and Compressor (gunite); Do-Mor Loaderand Adams Elegrader; Dozer (D-7 or equal); Wheel and/or Ladder Trencher (over 6 feet and 200 to 749 h.p.).

GROUP 9A: Dozer (D-8 and similar); Gradesetter (when required by the Contractor to work from drawings, plans or specifications without the direct supervision of a foreman or superintendent); Push Cat; Scrapers (up to and including 20 cu. yds); Self-propelled Compactor with Dozer; Self-Propelled, Rubber-Tired Earthmoving Equipment (up to and including 20 cu. yds) (621 Band and similar); Sheep's Foot; Tractor (D-8 and similar); Tractors with boom (larger than D-6, and similar).

GROUP 10: Chicago Boom; Cold Planers; Heavy Duty Repairman or Welder; Hoist and/or Winch (3 drums); Hydraulic Skooper (Koehring and similar); Loader (over 6 cu. yds. up to and including 12 cu. yds.); Saurman type Dragline (over 5 cu. yds.); Self-propelled, rubber-tired Earthmoving Equipment (over 20 cu. yds. up to and including 31 cu. yds.) (637D and similar); Soil Stabilizer (P & H or equal); Sub-Grader (Gurries or other automatic type); Tractors (D-9 or equivalent, all attachments); Tractor (Tandem Scraper); Watch Engineer.

GROUP 10A: Boat Operator; Cable-operated Crawler Crane (up to and including 25 tons); Cable-operated Power Shovel, Clamshell, Dragline and Backhoe (up to and including 1 cu. yd.); Dozer D9-L; Dozer (D-10, HD41 and similar) (all attachments); Gradall (up to and including 1 cu. yd.); Hydraulic Backhoe (over 3/4 cu. yds. up to and including 2 cu. yds.); Mobile Truck Crane Operator (up to and including 25 tons) (Mobile Truck Crane Driver Required); Self-propelled Boom Type Lifting Device (Center Mount) (up to and including 25 tons) (Grove, Drott, P&H, Pettibone and similar; Trencher (over 6 feet and 750 h.p. or more); Watch Engineer (steam or electric).

GROUP 11: Automatic Slip Form Paver (concrete or asphalt); Band Wagon (in conjunction with Wheel Excavator); Cable-operated Crawler Cranes (over 25 tons but less than 50 tons); Cable-operated Power Shovel, Clamshell, Dragline and Backhoe (over 1 cu. yd. up to 7 cu. yds.); Gradall (over 1 cu. yds. up to 7 cu. yds.); DW-10, 20, etc. (Tandem); Earthmoving Machines (multiple propulsion power units and 2 or more Scrapers) (up to and including 35 cu. yds.,"" struck"" m.r.c.); Highline Cableway; Hydraulic Backhoe (over 2 cu. yds. up to and including 4 cu. yds.); Leverman; Lift Slab Machine; Loader (over 12 cu. yds); Master Boat Operator; Mobile Truck Crane Operator (over 25 tons but less than 50 tons); (Mobile Truck Crane Driver required); Pre-stress Wire Wrapping Machine; Self-propelled Boom-type Lifting Device (Center Mount) (over 25 tons m.r.c); Self-propelled Compactor (with multiple-propulsion power units); Single Engine Rubber Tired Earthmoving Machine (with Tandem Scraper); Tandem Cats; Trencher (pulling attached shield).

GROUP 12: Clamshell or Dipper Operator; Derricks; Drill Rigs; Multi-Propulsion Earthmoving Machines (2 or more Scrapers) (over 35 cu. yds ""struck""m.r.c.); Operators (Derricks, Piledrivers and Cranes); Power Shovels and Draglines (7 cu. yds. m.r.c. and over); Self-propelled rubber-tired Earthmoving equipment (over 31 cu. yds.) (657B and similar); Wheel Excavator (up to and including 750 cu. yds.

per hour); Wheel Excavator (over 750 cu. yds. per hour).

GROUP 12A: Dozer (D-11 or similar or larger); Hydraulic Excavators (over 4 cu. yds.); Lifting cranes (50 tons and over); Pioneering Dozer/Backhoe (initial clearing and excavation for the purpose of providing access for other equipment where the terrain worked involves 1-to-1 slopes that are 50 feet in height or depth, the scope of this work does not include normal clearing and grubbing on usual hilly terrain nor the excavation work once the access is provided); Power Blade Operator (Cat 12 or equivalent or over); Straddle Lifts (over 50 tons); Tower Crane, Mobile; Traveling Truss Cranes; Universal, Liebher, Linden, and similar types of Tower Cranes (in the erection, dismantling, and moving of equipment there shall be an additional Operating Engineer or Heavy Duty Repairman); Yo-Yo Cat or Dozer.

GROUP 13: Truck Driver (Utility, Flatbed, etc.)

GROUP 13A: Dump Truck, 8 cu.yds. and under (water level); Water Truck (up to and including 2,000 gallons).

GROUP 13B: Water Truck (over 2,000 gallons); Tandem Dump Truck, over 8 cu. yds. (water level).

GROUP 13C: Truck Driver (Semi-trailer. Rock Cans, Semi-Dump or Roll-Offs).

GROUP 13D: Truck Driver (Slip-In or Pup).

GROUP 13E: End Dumps, Unlicensed (Euclid, Mack, Caterpillar or similar); Tractor Trailer (Hauling Equipment); Tandem Trucks hooked up to Trailer (Hauling Equipment)

BOOMS AND/OR LEADS (HOURLY PREMIUMS):

The Operator of a crane (under 50 tons) with a boom of 80 feet or more (including jib), or of a crane (under 50 tons) with leads of 100 feet or more, shall receive a per hour premium for each hour worked on said crane (under 50 tons) in accordance with the following schedule:

Booms of 80 feet up to but not including 130 feet or Leads of 100 feet up to but not including 130 feet	0.50
Booms and/or Leads of 130 feet up to but not including 180 feet	0.75
Booms and/or Leads of 180 feet up to and including 250 feet	1.15
Booms and/or Leads over 250 feet	1.50

The Operator of a crane (50 tons and over) with a boom of 180 feet or more (including jib) shall receive a per hour premium for each hour worked on said crane (50 tons and over) in accordance with the following schedule:

Booms of 180 feet up to and including 250 feet	1.25
Booms over 250 feet	1.75

	Rates	Fringes
Dredging: (Boat Operators)		
Boat Deckhand	$ 41.22	30.93
Boat Operator	$ 43.43	30.93
Master Boat Operator	$ 43.58	30.93
Dredging: (Clamshell or Dipper Dredging)		
GROUP 1	$ 43.94	30.93
GROUP 2	$ 43.28	30.93
GROUP 3	$ 42.88	30.93
GROUP 4	$ 41.22	30.93
Dredging: (Derricks)		
GROUP 1	$ 43.94	30.93
GROUP 2	$ 43.28	30.93
GROUP 3	$ 42.88	30.93
GROUP 4	$ 41.22	30.93
Dredging: (Hydraulic Suction Dredges)		
GROUP 1	$ 43.58	30.93
GROUP 2	$ 43.43	30.93
GROUP 3	$ 43.28	30.93
GROUP 4	$ 43.22	30.93
GROUP 5	$ 37.88	26.76
Group 5	$ 42.88	30.93
GROUP 6	$ 37.77	26.76
Group 6	$ 42.77	30.93
GROUP 7	$ 36.22	26.76
Group 7	$ 41.22	30.93

CLAMSHELL OR DIPPER DREDGING CLASSIFICATIONS

GROUP 1: Clamshell or Dipper Operator.
GROUP 2: Mechanic or Welder; Watch Engineer.
GROUP 3: Barge Mate; Deckmate.
GROUP 4: Bargeman; Deckhand; Fireman; Oiler.

HYDRAULIC SUCTION DREDGING CLASSIFICATIONS

GROUP 1: Leverman.
GROUP 2: Watch Engineer (steam or electric).
GROUP 3: Mechanic or Welder.
GROUP 4: Dozer Operator.
GROUP 5: Deckmate.
GROUP 6: Winchman (Stern Winch on Dredge)
GROUP 7: Deckhand (can operate anchor scow under direction of Deckmate); Fireman; Leveeman; Oiler.

DERRICK CLASSIFICATIONS

GROUP 1: Operators (Derricks, Piledrivers and Cranes).
GROUP 2: Saurman Type Dragline (over 5 cubic yards).
GROUP 3: Deckmate; Saurman Type Dragline (up to and including 5 yards).
GROUP 4: Deckhand, Fireman, Oiler.

ENGI0003-044 09/03/2018

	Rates	Fringes
Power Equipment Operators (PAVING)		
Asphalt Concrete Material		

Transfer	$ 42.92	32.08
Asphalt Plant Operator	$ 43.35	32.08
Asphalt Raker	$ 41.96	32.08
Asphalt Spreader Operator	$ 43.44	32.08
Cold Planer	$ 43.75	32.08
Combination Loader/Backhoe (over 3/4 cu.yd.)	$ 41.96	32.08
Combination Loader/Backhoe (up to 3/4 cu.yd.)	$ 40.98	32.08
Concrete Saws and/or Grinder (self-propelled unit on streets, highways, airports and canals)	$ 42.92	32.08
Grader	$ 43.75	32.08
Laborer, Hand Roller	$ 41.46	32.08
Loader (2 1/2 cu. yds. and under)	$ 42.92	32.08
Loader (over 2 1/2 cu. yds. to and including 5 cu. yds.)	$ 43.24	32.08
Roller Operator (five tons and under)	$ 41.69	32.08
Roller Operator (over five tons)	$ 43.12	32.08
Screed Person	$ 42.92	32.08
Soil Stabilizer	$ 43.75	32.08

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* IRON0625-001 09/01/2024

	Rates	Fringes
Ironworkers:	$ 48.00	41.86

a. Employees will be paid $.50 per hour more while working in tunnels and coffer dams; $1.00 per hour more when required to work under or are covered with water (submerged) and when they are required to work on the summit of Mauna Kea, Mauna Loa or Haleakala.

LABO0368-001 09/02/2024

	Rates	Fringes
Laborers:		
Driller	$ 44.75	25.96
Final Clean Up	$ 31.40	21.37
Gunite/Shotcrete Operator and High Scaler	$ 42.25	25.96
Laborer I	$ 41.75	25.96
Laborer II	$ 39.15	25.96
Mason Tender/Hod Carrier	$ 42.25	25.96
Powderman	$ 42.75	25.96
Window Washer (bosun chair)	$ 41.25	25.96

LABORERS CLASSIFICATIONS

Laborer I: Air Blasting run by electric or pneumatic compressor; Asphalt Laborer, Ironer, Raker, Luteman, and Handroller, and all types of Asphalt Spreader Boxes; Asphalt Shoveler; Assembly and Installation of Multiplates, Liner Plates, Rings, Mesh, Mats; Batching Plant (portable and temporary); Boring Machine Operator (under streets and sidewalks); Buggymobile; Burning and Welding; Chainsaw, Faller, Logloader, and Bucker; Compactors (Jackson Jumping Jack and similar); Concrete Bucket Dumpman; Concrete Chipping; Concrete Chuteman/Hoseman (pouring concrete) (the

handling of the chute from ready-mix trucks for such jobs as walls, slabs, decks, floors, foundations, footings, curbs, gutters, and sidewalks); Concrete Core Cutter (Walls, Floors, and Ceiling); Concrete Grinding or Sanding; Concrete: Hooking on, signaling, dumping of concrete for treme work over water on caissons, pilings, abutments, etc.; Concrete: Mixing, handling, conveying, pouring, vibrating, otherwise placing of concrete or aggregates or by any other process; Concrete: Operation of motorized wheelbarrows or buggies or machines of similar character, whether run by gas, diesel, or electric power; Concrete Placement Machine Operator: operation of Somero Hammerhead, Copperheads, or similar machines; Concrete Pump Machine (laying, coupling, uncoupling of all connections and cleaning of equipment); Concrete and/or Asphalt Saw (Walking or Handtype) (cutting walls or flatwork) (scoring old or new concrete and/or asphalt) (cutting for expansion joints) (streets and ways for laying of pipe, cable or conduit for all purposes); Concrete Shovelers/Laborers (Wet or Dry); Concrete Screeding for Rough Strike-Off: Rodding or striking-off, by hand or mechanical means prior to finishing; Concrete Vibrator Operator; Coring Holes: Walls, footings, piers or other obstructions for passage of pipes or conduits for any purpose and the pouring of concrete to secure the hole; Cribbers, Shorer, Lagging, Sheeting, and Trench Jacking and Bracing, Hand-Guided Lagging Hammer Whaling Bracing; Curbing (Concrete and Asphalt); Curing of Concrete (impervious membrane and form oiler) mortar and other materials by any mode or method; Cut Granite Curb Setter (setting, leveling and grouting of all precast concrete or stone curbs); Cutting and Burning Torch (demolition); Dri Pak-It Machine; Environmental Abatement: removal of asbestos, lead, and bio hazardous materials (EPA and/or OSHA certified); Falling, bucking, yarding, loading or burning of all trees or timber on construction site; Forklift (9 ft. and under); Gas, Pneumatic, and Electric tools; Grating and Grill work for drains or other purposes; Green Cutter of concrete or aggregate in any form, by hand, mechanical means, grindstone or air and/or water; Grout: Spreading for any purpose; Guinea Chaser (Grade Checker) for general utility trenches, sitework, and excavation; Headerboard Man (Asphalt or Concrete); Heat Welder of Plastic (Laborers' AGC certified workers) (when work involves waterproofing for waterponds, artificial lakes and reservoir) heat welding for sewer pipes and fusion of HDPE pipes; Heavy Highway Laborer (Rigging, signaling, handling, and installation of pre-cast catch basins, manholes, curbs and gutters); High Pressure Nozzleman - Hydraulic Monitor (over 100# pressure); Jackhammer Operator; Jacking of slip forms: All semi and unskilled work connected therewithin; Laying of all multi-cell conduit or multi-purpose pipe; Magnesite and Mastic Workers (Wet or Dry)(including mixer operator);Mortar Man; Mortar Mixer (Block, Brick, Masonry, and Plastering); Nozzleman (Sandblasting and/or Water Blasting): handling, placing and operation of nozzle; Operation, Manual or Hydraulic jacking of shields and the use of such other mechanical equipment as may be necessary; Pavement Breakers; Paving, curbing and surfacing of streets, ways, courts, under and overpasses, bridges, approaches, slope walls, and all other labor connected therewith; Pilecutters; Pipe Accessment in place, bolting and lining up of sectional metal or other pipe including corrugated pipe; Pipelayer performing all services in the laying and installation of pipe from the point of receiving pipe in the ditch until completion of operation, including

any and all forms of tubular material, whether pipe, HDPE, metallic or non-metallic, conduit, and any other stationary-type of tubular device used for conveying of any substance or element, whether water, sewage, solid, gas, air, or other product whatsoever and without regard to the nature of material from which tubular material is fabricated; No-joint pipe and stripping of same, Pipewrapper, Caulker, Bander, Kettlemen, and men applying asphalt, Laykold, treating Creosote and similar-type materials (6-inch) pipe and over); Piping: resurfacing and paving of all ditches in preparation for laying of all pipes; Pipe laying of lateral sewer pipe from main or side sewer to buildings or structure (except Contactor may direct work be done under proper supervision); Pipe laying, leveling and marking of the joint used for main or side sewers and storm sewers; Laying of all clay, terra cotta, ironstone, vitrified concrete, HDPE or other pipe for drainage; Placing and setting of water mains, gas mains and all pipe including removal of skids; Plaster Mortar Mixer/Pump; Pneumatic Impact Wrench; Portable Sawmill Operation: Choker setters, off bearers, and lumber handlers connected with clearing; Posthole Digger (Hand Held, Gas, Air and Electric); Powderman's Tender; Power Broom Sweepers (Small); Preparation and Compaction of roadbeds for railroad track laying, highway construction, and the preparation of trenches, footings, etc., for cross-country transmission by pipelines, electrical transmission or underground lines or cables (by mechanical means); Raising of structure by manual or hydraulic jacks or other methods and resetting of structure in new locations, including all concrete work; Ramming or compaction; Rigging in connection with Laborers' work (except demolition), Signaling (including the use of walkie talkie) Choke Setting, tag line usage; Tagging and Signaling of building materials into high rise units; Riprap, Stonepaver, and Rock Slinger (includes placement of stacked concrete, wet or dry and loading, unloading, signaling, slinging and setting of other similar materials); Rotary Scarifier (including multiple head concrete chipping Scarifier); Salamander Heater, Drying of plaster, concrete mortar or other aggregate; Scaffold Erector Leadman; Scaffolds: (Swing and hanging) including maintenance thereof; Scaler; Septic Tank/Cesspool and Drain Fields Digger and Installer; Shredder/Chipper (tree branches, brush, etc.); Stripping and Setting Forms; Stripping of Forms: Other than panel forms which are to be re-used in their original form, and stripping of forms on all flat arch work; Tampers (Barko, Wacker, and similar type); Tank Scaler and Cleaners; Tarman; Tree Climbers and Trimmers; Trencher (includes hand-held, Davis T-66 and similar type); Trucks (flatbed up to and including 2 1/2 tons when used in connection with on-site Laborers'work; Trucks (Refuse and Garbage Disposal) (from job site to dump); Vibra-Screed (Bull Float in connection with Laborers' work); Well Points, Installation of or any other dewatering system.

Laborer II: Asphalt Plant Laborer; Boring Machine Tender; Bridge Laborer; Burning of all debris (crates, boxes, packaging waste materials); Chainman, Rodmen, and Grade Markers; Cleaning, clearing, grading and/or removal for streets, highways, roadways, aprons, runways, sidewalks, parking areas, airports, approaches, and other similar installations; Cleaning or reconditioning of streets, ways, sewers and waterlines, all maintenance work and work of an unskilled and semi-skilled nature; Concrete Bucket Tender

(Groundman) hooking and unhooking of bucket; Concrete Forms; moving, cleaning, oiling and carrying to the next point of erection of all forms; Concrete Products Plant Laborers; Conveyor Tender (conveying of building materials); Crushed Stone Yards and Gravel and Sand Pit Laborers and all other similar plants; Demolition, Wrecking and Salvage Laborers: Wrecking and dismantling of buildings and all structures, with use of cutting or wrecking tools, breaking away, cleaning and removal of all fixtures, All hooking, unhooking, signaling of materials for salvage or scrap removed by crane or derrick; Digging under streets, roadways, aprons or other paved surfaces; Driller's Tender; Chuck Tender, Outside Nipper; Dry-packing of concrete (plugging and filling of she-bolt holes); Fence and/or Guardrail Erector: Dismantling and/or re-installation of all fence; Finegrader; Firewatcher; Flagman (Coning, preparing, stablishing and removing portable roadway barricade devices); Signal Men on all construction work defined herein, including Traffic Control Signal Men at construction site; General Excavation; Backfilling, Grading and all other labor connected therewith; Digging of trenches, ditches and manholes and the leveling, grading and other preparation prior to laying pipe or conduit for any purpose; Excavations and foundations for buildings, piers, foundations and holes, and all other construction. Preparation of street ways and bridges; General Laborer: Cleaning and Clearing of all debris and surplus material. Clean-up of right-of-way. Clearing and slashing of brush or trees by hand or mechanical cutting. General Clean up: sweeping, cleaning, wash-down, wiping of construction facility and equipment (other than ""Light Clean up (Janitorial) Laborer. Garbage and Debris Handlers and Cleaners. Appliance Handling (job site) (after delivery unlading in storage area); Ground and Soil Treatment Work (Pest Control); Gunite/Shotcrete Operator Tender; Junk Yard Laborers (same as Salvage Yard); Laser Beam ""Target Man"" in connection with Laborers' work; Layout Person for Plastic (when work involves waterproofing for waterponds, artificial lakes and reservoirs); Limbers, Brush Loaders, and Pilers; Loading, Unloading, carrying, distributing and handling of all rods and material for use in reinforcing concrete construction (except when a derrick or outrigger operated by other than hand power is used); Loading, unloading, sorting, stockpiling, handling and distribution of water mains, gas mains and all pipes; Loading and unloading of all materials, fixtures, furnishings and appliances from point of delivery to stockpile to point of installation; hooking and signaling from truck, conveyance or stockpile; Material Yard Laborers; Pipelayer Tender; Pipewrapper, Caulker, Bander, Kettlemen, and men applying asphalt, Laykold, Creosote, and similar-type materials (pipe under 6 inches); Plasterer Laborer; Preparation, construction and maintenance of roadbeds and sub-grade for all paving, including excavation, dumping, and spreading of sub-grade material; Prestressed or precast concrete slabs, walls, or sections: all loading, unloading, stockpiling, hooking on of such slabs, walls or sections; Quarry Laborers; Railroad, Streetcar, and Rail Transit Maintenance and Repair; Roustabout; Rubbish Trucks in connection with Building Construction Projects (excluding clearing, grubbing, and excavating); Salvage Yard: All work connected with cutting, cleaning, storing, stockpiling or handling of materials, all cleanup, removal of debris, burning, back-filling and landscaping of the site; Sandblasting Tender (Pot Tender): Hoses and pots or markers; Scaffolds:

Erection, planking and removal of all scaffolds used for support for lathers, plasters, brick layers, masons, and other construction trades crafts; Scaffolds: (Specially designed by carpenters) laborers shall tend said carpenter on erection and dismantling thereof, preparation for foundation or mudsills, maintenance; Scraping of floors; Screeds: Handling of all screeds to be reused; handling, dismantling and conveyance of screeds; Setting, leveling and securing or bracing of metal or other road forms and expansion joints; Sheeting Piling/trench shoring (handling and placing of skip sheet or wood plank trench shoring); Ship Scalers; Shipwright Tender; Sign Erector (subdivision traffic, regulatory, and street-name signs); Sloper; Slurry Seal Crews (Mixer Operator, Applicator, Squeegee Man, Shuttle Man, Top Man); Snapping of wall ties and removal of tie rods; Soil Test operations of semi and unskilled labor such as filling sand bags; Striper (Asphalt, Concrete or other Paved Surfaces); Tool Room Attendant (Job Site); Traffic Delineating Device Applicator; Underpinning, lagging, bracing, propping and shoring, loading, signaling, right-of-way clearance along the route of movement, The clearance of new site, excavation of foundation when moving a house or structure from old site to new site; Utilities employees; Water Man; Waterscape/Hardscape Laborers; Wire Mesh Pulling (all concrete pouring operations); Wrecking, stripping, dismantling and handling concrete forms an false work.

LABO0368-002 09/03/2024

	Rates	Fringes
Landscape & Irrigation Laborers		
GROUP 1	$ 28.40	17.15
GROUP 2	$ 29.40	17.15
GROUP 3	$ 23.00	17.15

LABORERS CLASSIFICATIONS

GROUP 1: Installation of non-potable permanent or temporary irrigation water systems performed for the purposes of Landscaping and Irrigation architectural horticultural work; the installation of drinking fountains and permanent or temporary irrigation systems using potable water for Landscaping and Irrigation architectural horticultural purposes only. This work includes (a) the installation of all heads, risers, valves, valve boxes, vacuum breakers (pressure and non-pressure), low voltage electrical lines and, provided such work involves electrical wiring that will carry 24 volts or less, the installation of sensors, master control panels, display boards, junction boxes, conductors, including all other components for controllers, (b) and metallic (copper, brass, galvanized, or similar) pipe, as well as PVC or other plastic pipe including all work incidental thereto, i.e., unloading, handling and distribution of all pipes fittings, tools, materials and equipment, (c) all soldering work in connection with the above whether done by torch, soldering iron, or other means; (d) tie-in to main lines, thrust blocks (both precast and poured in place), pipe hangers and supports incidental to installation of the entire irrigation system, (e) making of pressure tests, start-up testing, flushing, purging, water balancing, placing into operation all

irrigation equipment, fixtures and appurtenances installed under this agreement, and (f) the fabrication, replacement, repair and servicing oflandscaping and irrigation systems. Operation of hand-held gas, air, electric, or self-powered tools and equipment used in the performance of Landscape and Irrigation work in connection with architectural horticulture; Choke-setting, signaling, and rigging for equipment operators on job-site in the performance of such Landscaping and Irrigation work; Concrete work (wet or dry) performed in connection with such Landscaping and Irrigation work. This work shall also include the setting of rock, stone, or riprap in connection with such Landscape, Waterscape, Rockscape, and Irrigation work; Grubbing, pick and shovel excavation, and hand rolling or tamping in connection with the performance of such Landscaping and Irrigation work; Sprigging, handseeding, and planting of trees, shrubs, ground covers, and other plantings and the performance of all types of gardening and horticultural work relating to said planting; Operation of flat bed trucks (up to and including 2 1/2 tons).:

GROUP 2. Layout of irrigation and other non-potable irrigation water systems and the layout of drinking fountains and other potable irrigation water systems in connection with such Landscaping and Irrigation work. This includes the layout of all heads, risers, valves, valve boxes, vacuum breakers, low voltage electrical lines, hydraulic and electrical controllers, and metallic (coppers, brass, galvanized, or similar) pipe, as well as PVC or other plastic pipe. This work also includes the reading and interpretation of plans and specifications in connection with the layout of Landscaping, Rockscape, Waterscape, and Irrigation work; Operation of Hydro-Mulching machines (sprayman and driver), Drillers, Trenchers (riding type, Davis T-66, and similar) and fork lifts used in connection with the performance of such Landscaping and Irrigation work; Tree climbers and chain saw tree trimmers, Sporadic operation (when used in connection with Landscaping, Rockscape, Waterscape, and Irrigation work) of Skid-Steer Loaders (Bobcat and similar), Cranes (Bantam, Grove, and similar), Hoptos, Backhoes, Loaders, Rollers, and Dozers (Case, John Deere, and similar), Water Trucks, Trucks requiring a State of Hawaii Public Utilities Commission Type 5 and/or type 7 license, sit-down type and ""gang"" mowers, and other self-propelled, sit-down operated machines not listed under Landscape & Irrigation Maintenance Laborer; Chemical spraying using self-propelled power spraying equipment (200 gallon capacity or more).

GROUP 3: Maintenance of trees, shrubs, ground covers, lawns and other planted areas, including the replanting of trees, shrubs, ground covers, and other plantings that did not ""take"" or which are damaged; provided, however, that re-planting that requires the use of equipment, machinery, or power tools shall be paid for at the rate of pay specified under Landscape and Irrigation Laborer, Group 1; Raking, mowing, trimming, and runing, including the use of ""weed eaters"", hedge trimmers, vacuums, blowers, and other hand-held gas, air, electric, or self-powered tools, and the operation of lawn mowers (Note: The operation of sit-down type and ""gang"" mowers shall be paid for at the rate of pay specified under Landscape & Irrigation Laborer, Group 2); Guywiring, staking, propping, and supporting trees; Fertilizing, Chemical spraying using spray equipment

with less than 200 gallon capacity, Maintaining irrigation and sprinkler systems, including the staking, clamping, and adjustment of risers, and the adjustment and/or replacement of sprinkler heads, (Note: the cleaning and gluing of pipe and fittings shall be paid for at the rate of pay specified under Landscape & Irrigation Laborer(Group 1); Watering by hand or sprinkler system and the peformance of other types of gardening, yardman, and horticultural-related work.

LABO0368-003 09/05/2023

	Rates	Fringes
Underground Laborer		
GROUP 1	$ 41.25	24.96
GROUP 2	$ 42.75	24.96
GROUP 3	$ 43.25	24.96
GROUP 4	$ 44.25	24.96
GROUP 5	$ 44.50	24.96
GROUP 6	$ 44.60	24.96
GROUP 7	$ 44.85	24.96

GROUP 1: Watchmen; Change House Attendant.

GROUP 2: Swamper; Brakeman; Bull Gang-Muckers, Trackmen; Dumpmen (any method); Concrete Crew (includes rodding and spreading); Grout Crew; Reboundmen

GROUP 3: Chucktenders and Cabletenders; Powderman (Prime House); Vibratorman, Pavement Breakers

GROUP 4: Miners - Tunnel (including top and bottom man on shaft and raise work); Timberman, Retimberman (wood or steel or substitute materials thereof); Blasters, Drillers, Powderman (in heading); Microtunnel Laborer; Headman; Cherry Pickerman (where car is lifted); Nipper; Grout Gunmen; Grout Pumpman & Potman; Gunite, Shotcrete Gunmen & Potmen; Concrete Finisher (in tunnel); Concrete Screed Man; Bit Grinder; Steel Form Raisers & Setters; High Pressure Nozzleman; Nozzleman (on slick line); Sandblaster-Potman (combination work assignment interchangeable); Tugger

GROUP 5: Shaft Work & Raise (below actual or excavated ground level); Diamond Driller; Gunite or Shotcrete Nozzleman; Rodman; Groundman

GROUP 6: Shifter

GROUP 7: Shifter (Shaft Work & Raiser)

PAIN1791-001 01/01/2024

	Rates	Fringes
Painters:		
Brush	$ 41.65	30.05
Sandblaster; Spray	$ 41.65	30.05

PAIN1889-001 07/01/2024

	Rates	Fringes
Glaziers	$ 46.00	37.15

PAIN1926-001 03/05/2023

	Rates	Fringes
Soft Floor Layers	$ 39.77	33.80

PAIN1944-001 01/07/2024

	Rates	Fringes
Taper	$ 45.20	31.40

PLAS0630-001 09/04/2023

	Rates	Fringes
PLASTERER	$ 46.12	34.53

PLAS0630-002 09/04/2023

	Rates	Fringes
Cement Masons:		
Cement Masons	$ 44.12	33.63
Trowel Machine Operators	$ 44.27	33.63

PLUM0675-001 01/07/2024

	Rates	Fringes
Plumber, Pipefitter, Steamfitter & Sprinkler Fitter	$ 52.83	31.02

ROOF0221-001 11/06/2022

	Rates	Fringes
Roofers (Including Built Up, Composition and Single Ply)	$ 43.15	21.21

SHEE0293-001 03/05/2023

	Rates	Fringes
Sheet metal worker	$ 47.37	31.71

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* SUHI1997-002 09/15/1997

	Rates	Fringes
Drapery Installer	$ 13.60 **	1.20
FENCE ERECTOR (Chain Link Fence)	$ 9.33 **	1.65

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 ($17.20) or 13658 ($12.90). Please see the Note at the top of the wage

determination for more information. Please also note that the minimum wage requirements of Executive Order 14026 are not currently being enforced as to any contract or subcontract to which the states of Texas, Louisiana, or Mississippi, including their agencies, are a party.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at https://www.dol.gov/agencies/whd/government-contracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

State Adopted Rate Identifiers

Classifications listed under the ""SA"" identifier indicate that the prevailing wage rate set by a state (or local) government was adopted under 29 C.F.R §1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 01/03/2024 reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for

the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION"

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

HONOLULU, HAWAII

P R O P O S A L

6/02/98

PROPOSAL TO THE

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

PROJECT: **Hawaii Belt Road**
Nanue Stream Bridge Rehabilitation
Vicinity of Hilo
Island of Hawaii

FEDERAL-AID PROJECT NO.: BR-019-2(077)

COMPLETION TIME: **780 Working days from the Start Work Date from the Department.**

DBE PROJECT GOAL: **2.4 %**

DESIGN PROJECT MANAGER:

NAME: **Amy Sunahara**
ADDRESS: **601 Kamokila Boulevard, Rm 609**
Kapolei, HI 96707
PHONE NO.: **(808) 692-7575**
EMAIL: **Amy.my.sunahara@hawaii.gov**
FAX NO.: **(808) 692-7590**

ELECTRONIC SUBMITTAL: **Bidders shall submit and upload the complete proposal to HIePRO prior to the bid opening date and time. Any additional support documents explicitly designated as confidential and/or proprietary shall be uploaded as a separate file to HIePRO. Bidders shall refer to SPECIAL PROVISION 102.09 Delivery of Proposal for complete details. FAILURE TO UPLOAD THE COMPLETE PROPOSAL TO HIePRO SHALL BE GROUNDS FOR REJECTION OF THE BID.**

Director of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Sir:

The undersigned Bidder declares the following:

1. It has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with this proposal.

2. It has not been assisted or represented on this matter by any individual who has, in a State capacity, been involved in the subject matter of this contract within the past two years.

3. It has not and will not, either directly or indirectly offered or given a gratuity (i.e., an entertainment or gift) to any State or County employee to obtain a contract or favorable treatment under a contract.

4. It will not maintain for its employees any segregated facilities at any of its establishments.

5. Does not and will not permit its employees to perform their services at any location under its control, where segregated facilities are maintained.

The undersigned Bidder further agrees to the following:

1. If this proposal is accepted, it shall execute a contract with the Department to provide all necessary labor, machinery, tools, equipment, apparatus and any other means of construction, to do all the work and to furnish all the materials specified in the contract in the manner and within the time therein prescribed in the contract, and that it shall accept in full payment therefore the sum of the unit and/or lump sum prices as set forth in the attached proposal schedule for the actual quantities of work performed and materials furnished and furnish satisfactory security in accordance with Section 103D-324, Hawaii Revised Statutes, within 10 days after the award of the contract or within such time as the Director of Transportation may allow after the undersigned has received the contract documents for execution, and is fully aware that non-compliance with the aforementioned terms will result in the forfeiture of the full amount of the bid guarantee required under Section 1032D-323, Hawaii Revised Statutes.

2. That the quantities given in the attached proposal schedule are approximate only and are intended principally to serve as a guide in determining and comparing the bids.

3. That the Department does not either expressly or by implication, agree that the actual amount of work will correspond therewith, but reserves the right to increase or decrease the amount of any class or portion of the work, or to omit portions of the work, as may be deemed necessary or advisable by the Director of Transportation, and that all increased or decreased quantities of work shall be performed at the unit prices set forth in the attached proposal schedule except as provided for in the specifications.

4. In case of a discrepancy between unit prices and the totals in said Proposal Schedule, the unit prices shall prevail.

5. Unless amended by Special Provision, agrees to begin work within 10 working days after the date of notification to commence with the work, which date is in the notice to proceed, and shall finish the entire project within the time prescribed.

6. The Director of Transportation reserves the right to reject any or all bids and to waive any defects when in the Director's opinion such rejections or waiver will be for the best interest of the public.

The Bidder acknowledges receipt of and certifies that it has completely examined the following listed items: Hawaii Standard Specifications for Road and Bridge Construction, 2005, and/or the General Provisions for Construction Projects for AIR and WATER Transportation Facilities Division dated 2016, as applicable, the Notice to Bidders, Special Provisions, Proposal, Contract, Bond Forms, and Project Plans.

In accordance with Section 103D-323, Hawaii Revised Statutes, this proposal is accompanied with a bid security in the amount of 5% of the total amount bid, in the form checked below. (Check applicable bid security submitted with bid.)

_____ Surety Bid Bond (Use standard form),

_____ Cash,

_____ Cashier's Check,

_____ Certified Check, or

_____ _____.
(Fill in other acceptable security.)

The undersigned Bidder acknowledges receipt of any addendum issued by the Department by recording in the space below the date of receipt.

Addendum No. 1 _____ Addendum No. 3 _____

Addendum No. 2 _____ Addendum No. 4 _____

In accordance with Section 103D-302, Hawaii Revised Statutes, the undersigned as Bidder has listed the name of each person or firm who will be engaged by the Bidder on the project as Subcontractor or Joint Contractor and the nature of work to be done by each on the following page. The Bidder must adequately and unambiguously disclose the unique nature and scope of the work to be performed by each Subcontractor or Joint Contractor. For each listed firm, the Bidder declares the respective firm is a Subcontractor or Joint Contractor and is subject to evaluation as a Subcontractor or Joint Contractor. It is understood that failure to comply with the aforementioned requirements may be cause for rejection of the bid submitted.

The undersigned Bidder asserts that affirmative action has been taken to seek out and consider Disadvantaged Business Enterprises (DBEs) for portions of the work which can be subcontracted, and the affirmative actions of the Bidder are fully documented in its records and are available upon request by the Department. It is also understood that it must meet or exceed the DBE contract goal listed on page P-1 or demonstrate that it made good faith efforts to meet the DBE project goal. The undersigned as Bidder, agrees to utilize each participating DBE that it submitted to meet the contract goal of _____% (percentage to be completed by Bidder) DBE participation if the contract is awarded to it, and shall maintain such DBE participation during the construction of this project.

SUBCONTRACTOR LISTING

(Attach additional sheets if necessary.)

	NAME OF FIRM	NATURE OF WORK
SUBCONTRACTOR:		
1.		
1a[1].		
2.		
2a.		
3.		
3a.		
4.		
4a.		
5.		
5a.		
6.		
6a.		
7.		
7a.		

NOTES:

The Name of Firm and Nature of Work shall be indicated for all listed firms. The Bidder must adequately and unambiguously disclose the unique nature and scope of the work to be performed by each Sub- or Joint Contractor.

For each listed firm, the Bidder declares the respective firm is a Sub- or Joint Contractor and subject to evaluation as a Sub- or Joint Contractor.

[1] Second tier subcontractors

JOINT CONTRACTOR LISTING

(Attach additional sheets if necessary.)

	NAME OF FIRM	NATURE OF WORK
JOINT CONTRACTOR:		
1.	_____	_____
1a[1].	_____	_____
2.	_____	_____
2a.	_____	_____
3.	_____	_____
3a.	_____	_____
4.	_____	_____
4a.	_____	_____
5.	_____	_____
5a.	_____	_____
6.	_____	_____
6a.	_____	_____
7.	_____	_____
7a.	_____	_____

NOTES:

The Name of Firm and Nature of Work shall be indicated for all listed firms. The Bidder must adequately and unambiguously disclose the unique nature and scope of the work to be performed by each Sub- or Joint Contractor.

For each listed firm, the Bidder declares the respective firm is a Sub- or Joint Contractor and subject to evaluation as a Sub- or Joint Contractor.

[1] Second tier joint contractors

The undersigned hereby certifies that the bid prices contained in the attached proposal schedule have been carefully checked and are submitted as correct and final.

This declaration is made with the understanding that the undersigned is subject to the penalty of perjury under the laws of the United States and is in violation of the Hawaii Penal Code, Section 710-1063, unsworn falsification to authorities, of the Hawaii Revised Statutes, for knowingly rendering a false declaration.

_____
Bidder (Company Name)

_____
Authorized Signature

_____
Title

_____
Business Address

_____ _____
Business Telephone Email

_____
Date

_____
Contact Person (If different from above.)

Phone:_____Email: _____

NOTE:

If Bidder is a CORPORATION, the legal name of the corporation shall be set forth above, the corporate seal affixed, together with the signature(s) of the officer(s) authorized to sign contracts for the corporation. Please attach to this page current (not more than six months old) evidence of the authority ofthe officer(s) to sign for the corporation.

If Bidder is a PARTNERSHIP, the true name of the partnership shall be set forth above, with the signature(s) of the general partner(s). Please attach to this page current (not more than six months old) evidence of the authority of the partner authorized to sign for the partnership.

If Bidder is an INDIVIDUAL, the bidder's signature shall be placed above.

If signature is by an agent, other than an officer of a corporation or a partner of a partnership, a POWER OF ATTORNEY must be on file with the Department before opening bids or submitted with the bid. Otherwise, the Department may reject the bid as irregular and unauthorized.

PROPOSAL SCHEDULE

ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT
201.0100	Clearing and Grubbing	L.S.	L.S.	L.S.	$ _____
202.1000	Removal of Concrete Foundation Pedestals	L.S.	L.S.	L.S.	$ _____
202.2000	Removal of Concrete Seats at Abutments	L.S.	L.S.	L.S.	$ _____
202.3000	Removal of Asphalt Concrete from Bridge Deck	L.S.	L.S.	L.S.	$ _____
202.5000	Removal of Steel Girder Stiffeners, Cross Frames, Struts, Lateral Diagonal Bracing, Tie Plates, Gusset Plates, Underslung Beams, Deck Drain Pipes, Utility Brackets, and Ancillary Steel Items	L.S.	L.S.	L.S.	$ _____
202.6000	Removal of Wood Board Inspection Planks	L.S.	L.S.	L.S.	$ _____
205.1000	Structure Excavation for Foundations	200	C.Y.	$_____	$ _____
205.4000	Structure Backfill for Foundations	170	C.Y.	$_____	$ _____
209.0100	Installation, Maintenance, Monitoring, and Removal of BMP for General Construction Activities	L.S.	L.S.	L.S.	$ _____
209.0200	Additional Water Pollution, Dust, and Erosion Control	F.A.	F.A.	F.A.	$ 100,000.00

PROPOSAL SCHEDULE

ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT
209.0300	Installation, Maintenance, Monitoring, and Removal of Underdeck Platform	L.S.	L.S.	L.S.	$ _____
401.1000	PMA Pavement, Mix IV (w/ PG 64E-22)	16	Ton	$_____	$ _____
415.1000	Cold Planing	140	S.Y.	$_____	$ _____
501.1000	Steel for Trestle No. 1 (Bent No. 1)	L.S.	L.S.	L.S.	$ _____
501.1010	Steel for Trestle No. 2 (Bents Nos. 2 & 3)	L.S.	L.S.	L.S.	$ _____
501.1020	Steel for Trestle No. 3 (Bents Nos. 4 & 5)	L.S.	L.S.	L.S.	$ _____
501.1030	Steel for Trestle No. 4 (Bents Nos. 6 & 7)	L.S.	L.S.	L.S.	$ _____
501.1040	Steel for Trestle No. 5 (Bents Nos. 8 & 9)	L.S.	L.S.	L.S.	$ _____
501.2000	Steel for Girder Bearing Stiffeners	L.S.	L.S.	L.S.	$ _____
501.3000	Steel for Girder Tie Plates	L.S.	L.S.	L.S.	$ _____
501.4000	Steel for Girder Struts	L.S.	L.S.	L.S.	$ _____
501.4010	Steel for Girder Cross Frames	L.S.	L.S.	L.S.	$ _____

PROPOSAL SCHEDULE

ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT
501.4020	Steel for Girder Lateral Diagonal Bracing	L.S.	L.S.	L.S.	$ _____
501.5000	Steel for Deck Drain Pipe Repairs	L.S.	L.S.	L.S.	$ _____
501.6000	Steel for Utility Brackets	L.S.	L.S.	L.S.	$ _____
501.7000	Steel for Added Inspection Walkway Support	L.S.	L.S.	L.S.	$ _____
501.8000	Refurbish Lifeline System	L.S.	L.S.	L.S.	$ _____
501.9000	High Strength Bolt Assembly to Replace Corroded Rivets	F.A.	F.A.	F.A.	$ 300,000.00
501.9010	Additional Steel Repairs	F.A.	F.A.	F.A.	$ 400,000.00
503.1000	Concrete for Foundation Pedestals and Grade Beams	L.S.	L.S.	L.S.	$ _____
503.2000	Concrete for Abutment Cheek Walls	L.S.	L.S.	L.S.	$ _____
506.1000	Fixed Elastomeric Bearing Assembly at Piers	40	EA	$_____	$ _____
506.2000	Expansion Elastomeric Bearing Assembly at Piers	32	EA	$_____	$ _____
506.3000	Fixed Elastomeric Bearing Assembly at Abutment	4	EA	$_____	$ _____

PROPOSAL SCHEDULE

ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT
506.4000	Expansion Elastomeric Bearing Assembly at Abutment	4	EA	$_____	$_____
515.1000	Deck Expansion Joint Seal	240	L.F.	$_____	$_____
602.1000	Reinforcing Steel for Foundation Pedestals, Grade Beams, Abutment Seats, and Cheek Walls	L.S.	L.S.	L.S.	$_____
615.1000	Underwater Concrete for Bent No. 5 Footing	L.S.	L.S.	L.S.	$_____
615.1010	Underwater Concrete for Bent No. 6 Footing	L.S.	L.S.	L.S.	$_____
621.1000	Inventory of Invasive Species before Construction	L.S.	L.S.	L.S.	$_____
621.2000	Invasive Species Removal Plan	F.A.	F.A.	F.A.	$ 10,000.00
621.3000	Removal of Plants and Animals Established before Physical Construction or Site Work, Post-removal Monitoring	F.A.	F.A.	F.A.	$ 100,000.00
621.4000	Monitoring of Invasive Species during and after-Construction	L.S.	L.S.	L.S.	$_____
621.5000	Post-Construction Inventory Prior to Returning the Site to the State	L.S.	L.S.	L.S.	$_____

PROPOSAL SCHEDULE

ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT
627.1000	Management of Contaminated Materials	L.S.	L.S.	L.S.	$
627.2000	Additional Management of Contaminated Materials	F.A.	F.A.	F.A.	$ 250,000.00
628.1000	Shotcrete Cover Around Foundations	1,300	S.F.	$	$
629.1014	4-Inch Double Pavement Striping (Type I Tape or Thermoplastic Extrusion)	590	LF	$	$
629.1024	6-Inch Pavement Striping (Type I Tape or Thermoplastic Extrusion)	1,180	LF	$	$
629.2020	Type C Pavement Marker	114	Each	$	$
629.2030	Type D Pavement Marker	30	Each	$	$
632.2010	Flexible Delineator	28	Each	$	$
636.1100	Additional E-Construction Programs, additional licenses or additional equipment	F.A.	F.A.	F.A.	$ 30,000.00
643.0110	Maintenance of Existing Landscape Areas	FA	FA	FA	$ 40,000.00
645.1000	Traffic Control	L.S.	L.S.	L.S.	$

PROPOSAL SCHEDULE

ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT
645.2000	Additional Police Officers, Additional Traffic Control Devices, and Advertisement	FA	FA	FA	$ 340,000.00
648.1000	Field-Posted Drawings	L.S.	L.S.	L.S.	$
661.1000	Fiberglass Reinforced Plastic Inspection Walkway	7,225	S.F.	$	$
666.1000	Clean and Paint Existing Bridge Steel Superstructure Members	L.S.	L.S.	L.S.	$
666.2000	Radius Edges of Existing Steel Bridge Members to Remain	4,500	L.F.	$	$
666.3000	Caulk Edges of Faying Surfaces	F.A.	F.A.	F.A.	$ 275,000.00
667.1000	Clean and Paint New Bridge Steel Trestles	L.S.	L.S.	L.S.	$
667.2000	Clean and Paint New Bridge Steel Cross Frames, Struts, Tie Plates, and Lateral Diagonal Bracing	L.S.	L.S.	L.S.	$
667.3000	Touch-Up Paint Bolted Connections at Trestles After Erection	L.S.	L.S.	L.S.	$
670.1000	GFRP Reinforcing for Shotcrete	L.S.	L.S.	L.S.	$

PROPOSAL SCHEDULE

ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT
671.1000	Protection of Endangered Species	F.A.	F.A.	F.A.	$ 40,000.00
677.1000	Penetrating Sealer on Bridge Deck	12,800	S.F.	$	$
677.2000	Additional Penetrating Sealer for Filling Top of Deck Cracks	F.A.	F.A.	F.A.	$ 50,000.00
678.1000	Hybrid Polymer Concrete (HPC) Overlay on Bridge Deck	12,800	S.F.	$	$
679.1000	VESLMC at Abutment Seats	L.S.	L.S.	L.S.	$
680.1000	Defective Concrete Repair - Vertical and Overhead	18	S.F.	$	$
680.2000	Defective Concrete Repair - Horizontal	40	S.F.	$	$
694.1000	Crack Repair by Epoxy Injection	4,965	L.F.	$	$
696.1000	Field Office Trailer (Not to Exceed $50,000)	L.S.	L.S.	L.S.	$
696.1100	Maintenance of Trailers	F.A.	F.A.	F.A.	$ 75,000.00

PROPOSAL SCHEDULE

ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT
699.1000	Mobilization (Not to exceed 6 percent of the sum of all items excluding the bid price of this item)	L.S.	L.S.	L.S.	$ _____

TOTAL AMOUNT FOR COMPARISON OF BIDS $ _____

PROPOSAL SCHEDULE NOTES:

1. Bids shall include all Federal, State, County and other applicable taxes and fees.
2. The TOTAL AMOUNT FOR COMPARISON OF BIDS shall be used to determine the lowest responsible bidder.
3. Bidders shall complete all unit prices and amounts. Failure to do so shall be grounds for rejection of bid.
4. If a discrepancy occurs between unit bid price and the bid price, the unit bid price shall govern.
5. **Bidders shall submit and upload the complete proposal to HIePRO prior to the bid opening date and time. Proposals received after said due date and time shall not be considered. Any additional support documents explicitly designated as confidential and/or proprietary shall be uploaded as a separate file to HIePRO. Bidders shall not include confidential and/or proprietary documents with the proposal. The record of each bidder and respective bid shall be open to public inspection.** Original (wet ink, hard copy) proposal documents are not required to be submitted. **Contract award shall be based on evaluation of proposals submitted and uploaded to HIePRO**.

FAILURE TO UPLOAD THE COMPLETE PROPOSAL TO HIePRO SHALL BE GROUNDS FOR REJECTION OF THE BID.

If there is a conflict between the specification document and the HIePRO solicitation, the specifications shall govern and control, unless otherwise specified.

PROPOSAL SCHEDULE

The bidder is directed to Subsection 105.16 – Subcontracts.

The bidder's attention is directed to Sections 696 - Field Office and Project Site Laboratory and 699 - Mobilization for the limitation of the amount bidders are allowed to bid.

If the bid price for any proposal item having a maximum allowable bid indicated therefore in any of the contract documents is in excess of such a maximum amount, the bid price for such proposal item shall be adjusted to reflect the limitation thereon. The comparison of bids to determine the successful bidder and the amount of contract to be awarded shall be determined after such adjustments are made, and such adjustments shall be binding upon the bidder.

The bidder is directed to Section 717 – Cullet and Cullet-Made Materials regarding recycling of waste glass.

SURETY BID BOND

Bond No. _____

KNOW ALL BY THESE PRESENTS:

That we, _____
(Full name or legal title of offeror)

as Offeror, hereinafter called the Principal, and

_____
(Name of bonding company)

as Surety, hereinafter called Surety, a corporation authorized to transact business as a Surety in the State of Hawaii, are held and firmly bound unto

_____
(State/county entity)

as Owner, hereinafter called Owner, in the penal sum of

_____
(Required amount of bid security)

Dollars ($_____), lawful money of the United States of America, for the payment of which sum well and truly to be made, the said Principal and the said Surety bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS:

The Principal has submitted an offer for _____

_____
(Project by number and brief description)

NOW, THEREFORE:

The condition of this obligation is such that if the Owner shall reject said offer, or in the alternate, accept the offer of the Principal and the Principal shall enter into a contract with the Owner in accordance with the terms of such offer, and give such bond or bonds as may be specified in the solicitation or Contract Documents with good and sufficient surety for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof as specified in the solicitation then this obligation shall be null and void, otherwise to remain in full force and effect.

Signed this _____ day of _____, _____

(Seal) _____
Name of Principal (Offeror)

_____
Signature

_____
Title

(Seal) _____
Name of Surety

_____
Signature

_____
Title

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HONOLULU, HAWAII

SAMPLE FORMS

Contract

Performance Bond (Surety)

Performance Bond

Labor and Material Payment Bond (Surety)

Labor and Material Payment Bond

Disclosure of Lobbying Activities (Standard Form - LLL and LLL-A)

Statement of Compliance (Form WH-348)

Chapter 104, HRS Compliance Certificate

C O N T R A C T

THIS AGREEMENT, made this day _____, by and between the STATE OF HAWAII, by its Director of Transportation, hereinafter referred to as "STATE", and «CONTRACTOR», «STATE_OF_INCORPORATON», whose business/post office address is «ADDRESS» hereinafter referred to as "CONTRACTOR",

WITNESSETH: That for and in consideration of the payments hereinafter mentioned, the CONTRACTOR hereby covenants and agrees with the STATE to complete in place, furnish and pay for all labor and materials necessary for

"«PROJECT_NAME_AND_NO»",

or such a part thereof as shall be required by the STATE, the total amount of which labor, materials and construction shall be computed at the unit and/or lump sum prices set forth in the attached proposal schedule and shall be the sum of «BASIC»----- DOLLARS ($«BASIC_NUMERIC») as follows:

TOTAL AMOUNT FOR COMPARISON OF BIDS…….…...……$«BASIC_NUMERIC»

which shall be provided from the following funds:

Federal Funds.....……..……..…...
State Funds.....……..……...
TOTAL AMOUNT.....……..….

all in accordance with the specifications, the special provisions, if any, the notice to bidders, the instructions to bidders, the proposal and plans for «PROJECT_NO_ONLY», and any supplements thereto, on file in the office of the Director of Transportation. These documents, together with all alterations, amendments, and additions thereto and deductions therefrom, are attached hereto or incorporated herein by reference and made a part of this contract.

The CONTRACTOR hereby covenants and agrees to complete such construction within «WORKING_DAYS» , from the date indicated in the notice to proceed from the STATE, subject, however, to such extensions as may be provided for under the specifications.

For and in consideration of the covenants, undertakings and agreements of the CONTRACTOR herein set forth and upon the full and faithful performance thereof by the CONTRACTOR, the STATE hereby agrees to pay the CONTRACTOR the sum of «BASIC»-----DOLLARS ($«BASIC_NUMERIC») in lawful money, but not more than such part of the same as is actually earned according to the STATE's determination of the actual quantities of work performed and materials furnished by the CONTRACTOR at the unit or lump sum prices set forth in the attached proposal schedule. Such payment, including any extras, shall be made, subject to such additions or deductions hereto or hereafter made in the manner and at the time prescribed in the specifications and this contract.

An additional sum of «EXTRAS»-----DOLLARS ($«EXTRA_NUMERIC») is hereby provided for extra work and shall be provided from the following funds:

Federal Funds…….....……
State Funds……
Total……..…….…...

Where Federal funds are involved, it is covenanted and agreed by and between the parties hereto that the sum of ----«FEDERAL_BASIC»----DOLLARS ($«FEDERAL_BASIC_NUMERIC») and ----«FEDERAL_EXTRAS»----DOLLARS ($«FEDERAL_EXTRAS_NUMERIC»), a portion of the contract price and extras, respectively, shall be paid out of the applicable Federal funds, and that this contract shall be construed to be an agreement to pay said sums to the Contractor only out of the aforesaid Federal funds if and when such Federal funds shall be received from the Federal Government, and that this contract shall not be construed to be a general agreement to pay said portions at all events out of any funds other than those which may be so received from the Federal Government; provided, that if the Federal share of the cost of the project is not immediately forthcoming from the Federal Government, the STATE may advance the CONTRACTOR the anticipated Federal reimbursement of the cost of the completed portions of the work from funds which have been appropriated by the STATE for its pro rata share.

All words used herein in the singular shall extend to and include the plural. All words used in the plural shall extend to and include the singular. The use of any gender shall extend to and include all genders.

IN WITNESS WHEREOF, the parties hereto have caused this instrument to be duly executed the day and year first above written.

STATE OF HAWAII

_____
Director of Transportation

«CONTRACTOR»

_____
Signature

_____
Print name

_____
Print Title

_____
Date

PERFORMANCE BOND (SURETY)
(6/21/07)

KNOW TO ALL BY THESE PRESENTS:

That _____,
(Full Legal Name and Street Address of Contractor)

as Contractor, hereinafter called Principal, and _____

_____
(Name and Street Address of Bonding Company)

as Surety, hereinafter called Surety, a corporation(s) authorized to transact business as a surety in the State of Hawaii, are held and firmly bound unto the _____,
(State/County Entity)

its successors and assigns, hereinafter called Obligee, in the amount of _____

_____
DOLLARS ($_____), to which payment Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the above-bound Principal has signed a Contract with Obligee on _____, for the following project:_____
_____
_____
_____
_____
_____
hereinafter called Contract, which Contract is incorporated herein by reference and made a part hereof.

NOW THEREFORE, the condition of this obligation is such that:

If the Principal shall promptly and faithfully perform, and fully complete the Contract in strict accordance with the terms of the Contract as said Contract may be modified or amended from time to time; then this obligation shall be void; otherwise to remain in full force and effect.

Surety to this Bond hereby stipulates and agrees that no changes, extensions of time, alterations, or additions to the terms of the Contract, including the work to be performed thereunder, and the specifications or drawings accompanying same, shall in any way affect its obligation on this bond, and it does hereby waive notice of any such changes, extensions of time, alterations, or additions, and agrees that they shall become part of the Contract.

In the event of Default by the Principal, of the obligations under the Contract, then after written Notice of Default from the Obligee to the Surety and the Principal and subject to the limitation of the penal sum of this bond, Surety shall remedy the Default, or take over the work to be performed under the Contract and complete such work, or pay moneys to the Obligee in satisfaction of the surety's performance obligation on this bond.

Signed this _____ day of _____, _____.

(Seal) _____
Name of Principal (Contractor)

* _____
Signature

_____
Title

(Seal) _____
Name of Surety

* _____
Signature

_____
Title

*ALL SIGNATURES MUST BE ACKNOWLEDGED
BY A NOTARY PUBLIC

PERFORMANCE BOND

KNOW TO ALL BY THESE PRESENTS:

That we, _____
(full legal name and street address of Contractor)

as Contractor, hereinafter called Contractor, is held and firmly bound unto the

_____
(State/County entity)

its successors and assigns, as Obligee, hereinafter called Obligee, in the amount

_____DOLLARS $_____),
(Dollar amount of Contract)

lawful money of the United States of America, for the payment of which to the said Obligee, well and truly to be made, Contractor binds itself, its heir, executors, administrators, successors and assigns, firmly by these presents. Said amount is evidenced by:

☐ **Legal Tender;**

☐ **Share Certificate** unconditionally assigned to or made payable at sight to _____
Description:_____;

☐ **Certificate of Deposit**, No. _____, dated _____ issued by _____ drawn on _____ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;

☐ **Cashier's Check** No. _____, dated _____ drawn on _____ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;

☐ **Teller's Check** No. _____, dated _____ drawn on _____ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;

☐ **Treasurer's Check** No. _____, dated _____ drawn on _____ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;

☐ **Official Check** No. _____, dated _____ drawn on _____ a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;

☐ **Certified Check** No. _____, dated _____ accepted by a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;

WHEREAS:

The Contractor has by written agreement dated _____ entered into a contract with Obligee for the following Project:_____

_____

hereinafter called Contract, which Contract is incorporated herein by reference and made a part hereof.

NOW THEREFORE,

The Condition of this obligation is such that, if Contractor shall promptly and faithfully perform the Contract in accordance with, in all respects, the stipulations, agreements, covenants and conditions of the Contract as it now exists or may be modified according to its terms, and shall deliver the Project to the Obligee, or to its successors or assigns, fully completed as in the Contract specified and free from all liens and claims and without further cost, expense or charge to the Obligee, its officers, agents, successors or assigns, free and harmless from all suits or actions of every nature and kind which may be brought for or on account of any injury or damage, direct or indirect, arising or growing out of the doing of said work or the repair or maintenance thereof or the manner of doing the same or the neglect of the Contractor or its agents or servants or the improper performance of the Contract by the Contractor or its agents or servants or from any other cause, then this obligation shall be void; otherwise it shall be and remain in full force and effect.

AND IT IS HEREBY STIPULATED AND AGREED that suit on this bond may be brought before a court of competent jurisdiction without a jury, and that the sum or sums specified in the said Contract as liquidated damages, if any, shall be forfeited to the Obligee, its successors or assigns, in the event of a breach of any, or all, or any part of, covenants, agreements, conditions, or stipulations contained in the Contract or in this bond in accordance with the terms thereof.

The amount of this bond may be reduced by and to the extent of any payment or payments made in good faith hereunder.

Signed and sealed this _____ day of _____, _____.

(Seal)_____
Name of Contractor

_____
Signature*

_____
Title

*ALL SIGNATURES MUST BE ACKNOWLEDGED
BY A NOTARY PUBLIC

LABOR AND MATERIAL PAYMENT BOND (SURETY)
(6/21/07)

KNOW TO ALL BY THESE PRESENTS:

That _____,
(Full Legal Name and Street Address of Contractor)

as Contractor, hereinafter called Principal, and _____

_____,
(Name and Street Address of Bonding Company)
as Surety, hereinafter called Surety, a corporation(s) authorized to transact business as a surety in the State of Hawaii, are held and firmly bound unto the _____,
(State/County Entity)

its successors and assigns, hereinafter called Obligee, in the amount of _____

_____
_____ Dollars ($_____), to which payment Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the above-bound Principal has signed Contract with the Obligee on _____ for the following project:_____
_____
_____
_____
_____
hereinafter called Contract, which Contract is incorporated herein by reference and made a part hereof.

NOW THEREFORE, the condition of this obligation is such that if the Principal shall promptly make payment to any Claimant, as hereinafter defined, for all labor and materials supplied to the Principal for use in the performance of the Contract, then this obligation shall be void; otherwise to remain in full force and effect.

1. Surety to this Bond hereby stipulates and agrees that no changes, extensions of time, alterations, or additions to the terms of the Contract, including the work to be performed thereunder, and the specifications or drawings accompanying same, shall in any way affect its obligation on this bond, and it does hereby waive notice of any such changes, extensions of time, alterations, or additions, and agrees that they shall become part of the Contract.

2. A "Claimant" shall be defined herein as any person who has furnished labor or materials to the Principal for the work provided in the Contract.

Every Claimant who has not been paid amounts due for labor and materials furnished for work provided in the Contract may institute an action against the Principal and its Surety on this bond at the time and in the manner prescribed in Section 103D-324, Hawaii Revised Statutes, and have the rights and claims adjudicated in the action, and judgment rendered thereon; subject to the Obligee's priority on this bond. If the full amount of the liability of the Surety on this bond is insufficient to pay the full amount of the claims, then after paying the full amount due the Obligee, the remainder shall be distributed pro rata among the claimants.

Signed this _____ day of _____, _____.

(Seal) _____
Name of Principal (Contractor)

* _____
Signature

_____
Title

(Seal) _____
Name of Surety

* _____
Signature

_____
Title

*ALL SIGNATURES MUST BE ACKNOWLEDGED
BY A NOTARY PUBLIC

LABOR AND MATERIAL PAYMENT BOND

KNOW ALL BY THESE PRESENTS:

That we, _____
(full legal name and street address of Contractor)

as Contractor, hereinafter called Contractor, is held and firmly bound unto _____
(State/County entity)

its successors and assigns, as Obligee, hereinafter called Obligee, in the amount

_____ DOLLARS ($_____),
(Dollar amount of Contract)

lawful money of the United States of America, for the payment of which to the said Obligee, well and truly to be made, Contractor binds itself, its heir, executors, administrators, successors and assigns, firmly by these presents. Said amount is evidenced by:

❒ **Legal Tender**;

❒ **Share Certificate** unconditionally assigned to or made payable at sight to_____
_____
Description:_____
_____

❒ **Certificate of Deposit, No.** _____, dated _____
issued by _____
drawn on _____
a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;

❒ **Cashier's Check No.** _____, dated _____
drawn on _____
a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;

❒ **Teller's Check No.** _____, dated _____
drawn on _____
a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;

❒ **Treasurer's Check No.** _____, dated _____
drawn on _____
a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;

❒ **Official Check No.** _____, dated _____
drawn on _____
a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;

❒ **Certified Check No.** _____, dated _____
accepted by a bank, savings institution or credit union insured by the Federal Deposit Insurance Corporation or the National Credit Union Administration, payable at sight or unconditionally assigned to _____;

WHEREAS:

The Contractor has by written agreement dated _____ entered into a contract with Obligee for the following Project:_____

_____

hereinafter called Contract, which Contract is incorporated herein by reference and made a part hereof.

NOW THEREFORE,

The condition of this obligation is such that, if Contractor shall promptly and faithfully perform the Contract in accordance with, in all respects, the stipulations, agreements, covenants and conditions of the Contract as it now exists or may be modified according to its terms, free from all liens and claims and without further cost, expense or charge to the Obligee, its officers, agents, successors or assigns, free and harmless from all suits or actions of every nature and kind which may be brought for or on account of any injury or damage, direct or indirect, arising or growing out of the doing of said work or the repair or maintenance thereof or the manner of doing the same or the neglect of the Contractor or its agents or servants or the improper performance of the Contract by the Contractor or its agents or servants or from any other cause, then this obligation shall be void; otherwise it shall be and remain in full force and effect.

AND IT IS HEREBY STIPULATED AND AGREED that suit on this bond may be brought before a court of competent jurisdiction without a jury, and that the sum or sums specified in the said Contract as liquidated damages, if any, shall be forfeited to the Obligee, its successors or assigns, in the event of a breach of any, or all, or any part of, covenants, agreements, conditions, or stipulations contained in the Contract or in this bond in accordance with the terms thereof.

AND IT IS HEREBY STIPULATED AND AGREED that this bond shall inure to the benefit of any and all persons entitled to file claims for labor performed or materials furnished in said work so as to give any and all such persons a right of action as contemplated by Sections 103D-324(d) and 103D-324(e), Hawaii Revised Statutes.

The amount of this bond may be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payments of mechanics' liens which may be filed of record against the Project, whether or not claim for the amount of such lien be presented under and against this bond.

Signed this _____ day of _____, _____.

(Seal) _____
Name of Contractor

* _____
Signature

_____
Title

*ALL SIGNATURES MUST BE
ACKNOWLEDGED BY A NOTARY PUBLIC

DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See reverse for public burden disclosure.)

Approved by
0348-0046

1. Type of Federal Action:	2. Status of Federal Action:	3. Report Type:
❒ a. contract b. grant c. cooperative agreement d. loan e. loan guarantee f. loan insurance	❒ a. bid/offer/application b. initial award c. post-award	❒ a. initial filing b. material change For Material Change Only: year _____ quarter _____ date of last report _____

4. Name and Address of Reporting Entity: ❒ Prime ❒ Subawardee Tier _____, ***if known***: Congressional District, ***if known***:	5. If Reporting Entity in No. 4 is Subawardee, Enter Name and Address of Prime Congressional District, ***if known***:
6. Federal Department/Agency:	7. Federal Program Name/Destination: CFDA Number, ***if applicable***:
8. Federal Action Number, ***if known***:	9. Award Amount, ***if known:*** $
10. a. Name and address of Lobbying Entity ***(if individual, last name, first name, MI):***	b. Individuals Performing Services ***(including address if different from No. 10a)*** ***(last name, first name, MI):***

(attach Continuation Sheet(s) SF-LLL-A, if necessary)

11. Amount of Payment (***check all that apply***): $ _____ ❒ actual ❒ planned	13. Type of Payment (***check all that apply***): ❒ a. retainer ❒ b. one-time fee ❒ c. commission ❒ d. contingent fee ❒ e. deferred ❒ f. other; specify: _____
12. Form of Payment (***check all that apply***): ❒ a. cash ❒ b. in-kind; specify: nature _____ value _____	

14. Brief Description of Services Performed or to be Performed and Date(s) of Service, including officer(s), employees(s) or Member(s) contacted, for Payment Indicated in Item 11:

(attach Continuation Sheet(s) SF-LLL-A, if necessary)

15. Continuation Sheet(s) SF-LLL-A attached: ❒ Yes ❒ No

16. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.	Signature: _____ Print Name: _____ Title: _____ Telephone No.: _____ Date: _____

Federal Use Only:	Authorized for Local Reproduction Standard Form - LLL

INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of a covered Federal action, or a material change to a previous filing, pursuant to title 31 U.S.C. section 1352. The filing of a form is required for each payment or agreement to make payment to any lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a covered Federal action. Use the SF-LLL-A Continuation Sheet for additional information if the space on the form is inadequate. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence the outcome of a covered Federal action.

2. Identify the status of the covered Federal action.

3. Identify the appropriate classification of this report. If this is a followup report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last previously submitted report by this reporting entity for this covered Federal action.

4. Enter the full name, address, city, state and zip code of the reporting entity. Include Congressional District, if known. Check the appropriate classification of the reporting entity that designates if it is, or expects to be, a prime or subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the 1st tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.

5. If the organization filing the report in item 4 checks "Subawardee", then enter the full name, address, city, state and zip code of the prime Federal recipient. Include Congressional District, if known.

6. Enter the name of the Federal agency making the award or loan commitment. Include at least one organizational level below agency name, if known. For example, Department of Transportation, United States Coast Guard.

7. Enter the Federal program name or description for the covered Federal action (item 1). If known, enter the full Catalog of Domestic Assistance (CFDA) number for grants, cooperative agreements, loans, and loan commitments.

8. Enter the most appropriate Federal identifying number available for the Federal action identified in item 1 (e.g., Request for Proposal (RFP) number; Invitation for Bid (IFB) number; grant announcement number; the contract, grant, or loan award number; the application/proposal control number assigned by the Federal Agency). Include prefixes, e.g., "RFP-DE-90-001."

9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitment for the prime entity identified in item 4 or 5.

10. (a) Enter the full name, address, city, state and zip code of the lobbying entity engaged by the reporting entity identified in item 4 to influence the covered Federal action.

    (b) Enter the full names of the individual(s) performing services, and include full address if different from 10(a). Enter Last Name, First Name, and Middle Initial (MI).

11. Enter the amount of compensation paid or reasonably expected to be paid by the reporting entity (item 4) to the lobbying entity (item 10). Indicate whether the payment has been made (actual) or will be made (planned). Check all boxes that apply. If this is a material change report, enter the cumulative amount of payment made or planned to be made.

12. Check the appropriate box(es). Check all boxes that apply. If payment is made through an in-kind contribution, specify the nature and value of the in-kind payment.

13. Check the appropriate box(es). Check all boxes that apply. If other, specify nature.

14. Provide a specific and detailed description of the services that the lobbyist has performed, or will be expected to perform, and the date(s) of any services rendered. Include all preparatory and related activity, not just time spent in actual contact with Federal officials. Identify the federal official(s) or employee(s) contacted or the officer(s), employee(s), or Member(s) or Congress that were contacted.

15. Check whether or not a SF-LLL-A Continuation Sheet(s) is attached.

16. The certifying official shall sign and date the form, print his/her name, title, and telephone number.

DISCLOSURE OF LOBBYING ACTIVITIES
CONTINUATION SHEET

Approved by
0348-0046

Reporting Entity:_____ Page _____ of _____

Authorized for Local Reproduction
Standard Form - LLL-A

U.S. DEPARTMENT OF LABOR
WAGE AND HOUR AND PUBLIC CONTRACTS DIVISION

STATEMENT OF COMPLIANCE

Form Approved
Budget Bureau No. 44 R1093

Date _____

I, _____ do hereby state:
(Name of signatory party) (Title)

(1) That I pay or supervise the payment of the persons employed by _____ on
(Contractor or subcontractor)
the _____; that during the payroll period commencing on the _____ day of _____,
(Building or work)
_____ and ending the _____ day of _____, _____ all persons employed on said project have been paid the full weekly wages earned, that no rebates have been or will be made either directly or indirectly to or on behalf of said _____ from the full weekly wages earned by any person and that no deductions have
(Contractor or subcontractor)
been made either directly or indirectly from the full wages earned by any person, other than permissible deductions as defined in Regulations, Part 3 (29 CFR Subtitle A), issued by the Secretary of Labor under the Copeland Act, as amended (48 Stat. 948.63 Stat. 108, 72 Stat. 967; 76 Stat. 357; 40 U.S.C. 276c), and described below:

_____

_____

_____

(2) That any payrolls otherwise under this contract required to be submitted for the above period are correct and complete; that the wage rates for laborers or mechanics contained therein are not less than the applicable wage rates contained in any wage determination incorporated into the contract; that the classifications set forth therein for each laborers or mechanic conform with the work he performed.

(3) That any apprentices employed in the above period are duly registered in a bona fide apprenticeship program registered with a State apprenticeship agency recognized by the Bureau of Apprenticeship and Training, United States Department of Labor, or if no such recognized agency exists in a State, are registered with the Bureau of Apprenticeship and Training, United States Department of Labor.

(4) That:

(a) WHERE FRINGE BENEFITS ARE PAID TO APPROVED PLANS, FUNDS, OR PROGRAMS

☐ In addition to the basic hourly wage rates paid to each laborer or mechanic listed in the above-Referenced payroll, payments of fringe benefits as listed in the contract have been or will be made to appropriate program for the benefit of such employees, except as noted in Section 4(c) below.

(b) WHERE FRINGE BENEFITS ARE PAID IN CASH

☐ Each Laborer or mechanic listed in the above referenced payroll has been paid as indicated on the payroll, an amount not less than the sum of the applicable basic hourly wage rate plus the amount of the required fringe benefits as listed in the contract, except as noted in Section 4(c) below.

(c) EXCEPTIONS

EXCEPTION (CRAFT)	EXPLANATION

REMARK

NAME AND TITLE	SIGNATURE

THE WILFUL FALSIFICATION OF ANY OF THE ABOVE STATEMENTS MAY SUBJECT THE CONTRACTOR OR SUBCONTRACTOR TO CIVIL OR CRIMINAL PROSECUTION. SEE SECTION 1001 OF TITLE 18 AND SECTION 231 OF TITLE 31 OF THE UNITED STATES CODE.

INSTRUCTIONS FOR PREPARATION OF STATEMENT OF COMPLIANCE

This statement of compliance meets needs resulting form the amendment of the Davis-Bacon Act to include fringe benefits provisions. Under this amended law, the contractor is required to pay fringe benefits as predetermined by the Department of Labor, in addition to payment of the minimum rates. The contractor's obligation to pay fringe benefits may be met by payment of the fringes to the various plans, funds, or programs or by making these payments to the employees as cash in lieu of fringes.

The contractor should show on the face of his payroll all monies paid to the employees whether as basic or as cash in lieu of fringes. The contractor shall represent in the statement of compliance that he is paying to others fringes required by the contract and not paid as cash in lieu of fringes. Detailed instructions follow:

Contractors who pay all required fringe benefits:

A contractor who pays fringe benefits to approved plans, funds, or programs in amounts not less than were determined in the applicable wage decision of the Secretary of Labor shall continue to show on the face of his payroll the basic cash hourly rate and overtime rate paid to his employees, just as he has always done. Such a contractor shall check paragraph 4(a) of the statement to indicate that he is also paying to approved plans, funds, or programs not less than the amount predetermined as fringe benefits for each craft. Any exception shall be noted in Section 4(c).

Contractors who pay no fringe benefits:

A contractor who pays no fringe benefits shall pay to the employee and insert in the straight time hourly rate column of his payroll an amount not less than the predetermined rate for each classification plus the amount of fringe benefits determined for each classification in the applicable wage decision. Inasmuch as it is not necessary to pay time and a half on cash paid in lieu of fringes, the overtime rate shall be not less than the sum of the basic predetermined rate, plus the half time premium on the basic or regular rate plus the required cash in lieu of fringes at the straight time rate. To simplify computation of overtime, it is suggested that the straight time basic rate and cash in lieu of fringes be separately stated in the hourly rate column, thus $3.25/.40. In addition, the contractor shall check paragraph 4(b) of the statement to indicate that he is paying fringe benefits in cash directly to his employees. Any exceptions shall be noted in Section 4(c).

Use of Section 4(c), Exceptions

Any contractor who is making payment to approved plans, funds, or programs in amounts less than the wage determination requires is obliged to pay the deficiency directly to the employees as cash in lieu of fringes. Any exceptions to Section 4(a) or 4(b), whichever the contractor may check, shall be entered in Section 4(c). Enter in the Exception column the craft, and enter in the Explanation column the hourly amount paid the employees as cash in lieu of fringes, and the hourly amount paid to plans, funds, or programs as fringes.

CHAPTER 104, HRS COMPLIANCE CERTIFICATE

The undersigned bidder does hereby certify to the following:

1. Individuals engaged in the performance of the contract on the job site shall be paid:

   A. Not less than the wages that the director of labor and industrial relations shall have determined to be prevailing for corresponding classes of laborers and mechanics employed on public works projects; and

   B. Overtime compensation at one and one-half times the basic hourly rate plus fringe benefits for hours worked on Saturday, Sunday, or a legal holiday of the State or in excess of eight hours on any other day.

2. All applicable laws of the federal and state governments relating to workers' compensation, unemployment compensation, payment of wages, and safety shall be fully complied with.

DATED at Honolulu, Hawaii, this _____ day of _____, 20___.

«CONTRACTOR»
Name of Corporation, Partnership, or Individual

_____
Signature and Title of Signer

Notary Seal
NOTARY ACKNOWLEDGEMENT

Subscribed and sworn before me this
_____day of_____
Notary signature_____
Notary public, State of _____
My Commission Expires:_____

Notary Seal
NOTARY CERTIFICATION

Doc. Date: _____ #Pages: ____
Notary Name: _____ _____Circuit
Doc. Description: _____
_____
Notary signature_____
Date _____