STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
HONOLULU, HAWAII

SPECIAL PROVISIONS
PROPOSAL
CONTRACT AND BOND

FOR

INTERSTATE ROUTE H-1 RESURFACING

MILLER PEDESTRIAN OVERPASS TO KAPIOLANI INTERCHANGE

FEDERAL-AID PROJECT NO. NH-H1-1(279)R

DISTRICT OF HONOLULU

ISLAND OF OAHU

FY 2024

NOTICE TO BIDDERS

Hawaii Revised Statutes (HRS),
Chapter 103D

The receiving of bids for **INTERSTATE ROUTE H-1 RESURFACING, MILLER PEDESTRIAN OVERPASS TO KAPIOLANI INTERCHANGE, DISTRICT OF HONOLULU, ISLAND OF OAHU, FEDERAL AID PROJECT NO. NH-H1-1(279)R**, 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 plans, specifications, proposal, and additional documents designated or incorporated by reference shall be available in HIePRO.

HIePRO OFFER DUE DATE AND TIME is January 31, 2025, 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 consists of resurfacing, repair and reconstruction of weakened pavement, upgrading of existing guardrails, pavement marking and signage, freeway lighting upgrades, landscaping and other site improvements. The estimated cost of construction is between $30,000,000 and $35,000,000.

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 January 9, 2025, at 9:00 a.m., HST. Interested bidders shall contact Evan Kimoto, Project Manager, directly at evan.kimoto@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 January 17, 2025, 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 Evan Kimoto, Project Manager, at evan.kimoto@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 February 5, 2025, 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 Evan Kimoto, Project Manager, by phone at (808) 692-7551, or by email at evan.kimoto@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: December 26, 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 (CFR), 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 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 (HDOT) and its political subdivisions 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 bidding on HDOT projects are required to submit the Bidder Registration Form and Bidder Registration Forms from all non-DBE subcontractors, consultants, vendors, suppliers, distributors, manufacturers, trucking companies, service providers, etc. bidding on a project with the Prime Contractor. All Bidder Registration

Forms must be completed and received with the proposal by the bid opening day; if not, the bid shall be rejected.

The Bidder Registration Form can be downloaded from HDOT's website at https://hidot.hawaii.gov/administration/ocr/dbe/forms-for-contractors/.

Registered bidders/offerors are posted on the website at https://hidot.hawaii.gov/administration/ocr/dbe/.

Bidders/offerors, subcontractors, consultants, vendors, suppliers, distributors, manufacturers, trucking companies, service providers, etc. 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, supplier, distributor, 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 a DBE promises not to provide subcontracting quotations to other bidders/offerors are strictly prohibited.

D. A DBE shall be certified by HDOT 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). A DBE must perform a CUF. This means that a 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 percent 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 a DBE is performing a CUF, HDOT must evaluate the amount of work subcontracted, industry practices, whether the amount the firm is to be paid under the contract is to commensurate with the work it is actually performing, the DBE credit claimed for performance of the work, and other

[1] The use of joint checks payable to a 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

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.

B. DBE subcontractors, manufacturers, suppliers, distributors, 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 need to be received by HDOT's Project Manager or designee **by the close of business, 4:30 p.m. Hawaii Standard Time, five calendar days after bid opening (be sure to take internet and online traffic into consideration):**[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.**

3. DBE Regular Dealer/Distributor Affirmation Form. This form must be completed and signed by the bidder/offeror and each DBE supplier/regular dealer, and/or distributor used for the project. Information to be provided on the form shall include, among other things, the bidder's name, project name/number, DBE name, total agreement/purchase order amount,

[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.

authorized name of DBE representative, NAICS Code(s) related to items sold/leased.

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 percent of the contract dollar value of DBE suppliers, plus 40 percent of the contract dollar value of DBE distributors, 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. HDOT 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 a 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 HDOT determines the fee to be reasonable and not excessive as compared with fees customarily allowed for similar services.

C. When a 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 a DBE. Work that a DBE subcontracts to a non-DBE firm does not count toward DBE goals.

D. When a 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 a 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 a 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 a 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 owns (or leases) and operates 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 a verified DBE regular dealer, count 60 percent of the cost of the materials or supplies toward DBE goals;
4. If the materials or supplies are purchased from a non-verified regular dealer, count 40 percent of the cost of the materials or supplies towards the DBE goal;
5. For purposes of determining DBE goal credit, a regular dealer is a firm that owns (or leases) and operates, 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 sufficient quantities, and regularly sold or leased to the public in the usual course of business;
6. To be a regular dealer, the firm must be an established business that engages, as its principal business and under its own name, in the purchase and sale or lease of the products in question. A DBE supplier performs a CUF as a regular dealer and receives credit for 60 percent of the cost of materials or supplies (including transportation cost) when all, or at least 51 percent of, the items under a purchase order or subcontract are provided from the DBE's inventory, and when necessary, any minor quantities delivered from and by other sources are of the general character as those provided from the DBE's inventory;
7. A DBE may be a regular dealer in such bulk items as petroleum products, steel, concrete or concrete products, gravel, stone, or asphalt without owning, operating, or maintaining a place of business if the firm both owns and operates distribution equipment used to deliver the products. Any supplementing of regular dealers' distribution equipment must be by a long-term operating lease and not on an ad hoc or contract-by-contract basis;

8. A DBE supplier of items that are not typically stocked due to their unique characteristics (e.g., limited shelf life or items ordered to specification) should be considered in the same manner as a regular dealer of bulk items. If the DBE supplier of these items does not own or lease distribution equipment, as descried above, it is not a regular dealer;
9. Packagers, brokers, manufacturers' representatives, or other persons who arrange, facilitate, or expedite transactions are not regular dealers;
10. With respect to materials or supplies purchased from a DBE that is not a manufacturer, a regular dealer, or a distributor, count the entire amount of fees or commissions charged that you deem to be reasonable, including transportation charges for the delivery of materials or supplies. Do not count any portion of the cost of the materials and supplies themselves toward DBE goals; however,
11. If a firm is not currently certified as a 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 49 CFR § 26.87(i);
12. Do not count the dollar value of work performed under a contract with a firm after it has ceased to be certified toward HDOT's overall goal; and
13. Do not count the participation of a 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 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 a 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 USDOT operating administration.
EXAMPLE: DBE firm X uses two of its own trucks on a contract, leases two trucks from DBE Firm Y and six 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 of the six trucks provided by Firm Z. In all, full credit would be allowed for the participation of eight trucks. With respect to the other two 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 of its own trucks on a contract. It leases two 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 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 a DBE firm and one 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 a DBE. When a DBE's certification is suspended, the DBE may not be considered to meet a contract or participation goal on contracts executed during the suspension period, 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 a DBE. Decertification has the following effects on contract and overall goals and DBE participation:

- When a prime contractor has made a commitment to use a DBE, but a subcontract has not been executed before the certifier issues the Notice of Decision (NOD), the committed firm does not count toward the contract goal. The recipient must direct the prime contractor to meet the contract goal with an eligible DBE or demonstrate to the recipient that it has made good faith efforts to do so.
- When the recipient has made a commitment to using a DBE prime contractor, but a contract has not been executed before the certifier issues the NOD, the decertified firm does not count toward the recipient's overall DBE goal.
- If a prime contractor has executed a subcontract with a DBE before the certifier issues the NOD, the prime contractor may continue to receive credit toward the contract goal for the firm's work. In this case, however, the prime contractor may not extend or add work to the contract without prior written consent from the recipient.
- If a prime contractor has executed a subcontract with a DBE before the certifier issues the NOD, the prime contractor may continue to receive credit toward the contract goal; however, the portion of the decertified firm's continued performance of the contract must not count toward the recipient's overall goal.
- If the recipient executed a prime contract with a DBE that was later decertified, the portion of the decertified firm's performance of the contract remaining after the certifier issued the NOD must not count toward an overall goal, but the DBE's performance of the contract may continue to count toward satisfying any contract goal.
- If a certifier decertifies a firm solely because it exceeds the business size standard during the performance of the contract, the recipient may continue to count the portion of the decertified firm's performance of the contract remaining after the certifier issued the NOD toward the recipient's overall goal as well as toward the contract goal.
- If the certifier decertifies the DBE because it was acquired by or merged with a non-DBE, the recipient may not continue to count the portion of the decertified firm's performance on the contract remaining, after the certifier issued a NOD, toward either the contract goal or the overall goal, even if a prime contractor has executed a subcontract with the firm or the recipient has executed a prime contract with the DBE that was later decertified. In this case, if eliminating the credit of the decertified firm will affect the prime contractor's ability to meet the contract goal, the recipient must direct the prime contractor to subcontract to an eligible DBE to the extent needed to meet the contract goal or demonstrate to the recipient that it has made good faith efforts to do so.

K. Should a 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 a 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. HDOT must approve the use of joint checks prior to use by contractors and/or DBEs. As part of this approval process HDOT 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. HDOT 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 year, or two years) to establish/increase a credit line with the material supplier;
5. No exclusive arrangement between one prime and one 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. HDOT shall allow the use of joint checks if the following general conditions are met:

1. DBE submits request to HDOT 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. HDOT 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. HDOT will determine that the request is not an attempt to artificially inflate DBE participation;
8. Standard industry practice is only one factor;
9. HDOT will monitor and maintain oversight of the arrangement by reviewing cancelled checks and/or certification statement of payment; and
10. HDOT 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, HDOT 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 HDOT that will demonstrate that the bidder/offeror made good faith efforts to meet the DBE goal.

C. In its good faith evaluation, HDOT 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, HDOT 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 calendar 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. HDOT 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. HDOT 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 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 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 a 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 a 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 a 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. HDOT 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 HDOT that the apparent successful bidder/offeror has failed to meet the provisions of 49 CFR § 26.53(a), the bidder/offeror may submit a request for administrative reconsideration. If under the provisions of 49 CFR § 26.53(d), it is determined by HDOT 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 working days of being informed in writing by HDOT 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 documentation and good faith efforts that were received up to five calendar days after bid opening and the documentation shall be limited to information that further supports the bidder's original submittal. Allowing additional documentation to be submitted during an administrative reconsideration is not intended to be a method by which the bidder may circumvent the intent of the regulations and the DBE Requirements by withholding required documentation until the time of a reconsideration proceeding.

E. HDOT shall inform the bidder/offeror of the decision within 30 days of the proceeding. The decision will state HDOT'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, HDOT 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 HDOT.

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

XI. REPLACEMENT OF A 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 HDOT to replace a DBE. If HDOT'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. HDOT reserves the right to request copies of all DBE subcontracts.

HDOT will require a contractor to make good faith efforts to replace a 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.

HDOT 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 HDOT;
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 calendar days to HDOT to explain its position on its performance on the committed work. HDOT 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 a DBE subcontractor at any time without the prior written consent of HDOT. HDOT will provide written consent only if the contractor has good cause, as determined by HDOT, 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. HDOT 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 HDOT written notice of its withdrawal;
8. The listed DBE is ineligible to receive DBE credit for the type of work required; and
9. A 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 HDOT to replace a DBE, the contractor's good faith efforts shall be documented and submitted to HDOT within seven calendar days. This time period may be extended for another seven calendar days upon request by the prime contractor.

If a 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 HDOT may terminate the contract or pursue such remedy as deemed appropriate by HDOT.

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 HDOT 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. HDOT 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. HDOT will not withhold any amount from any payment to the contractor, including retainage.

B. The contractor shall pay all subcontractors within 10 calendar days after receipt of any progress payments from HDOT. 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 HDOT'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 HDOT'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 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 HDOT.

The contractor must obtain the prior written approval from HDOT 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 HDOT to determine compliance with the contractor's DBE obligations. The records shall be available at reasonable times and places for inspection by HDOT 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, suppliers, and distributors 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 HDOT 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.

U.S. Department of Transportation

DBE Regular Dealer/Distributor Affirmation Form

Bidder Name:

Contract Name/Number:

Sections 26.53(c)(1) of Title 49 Code of Federal Regulations requires recipients to make a preliminary counting determination for each DBE listed as a regular dealer or distributor to assess its eligibility for 60 or 40 percent credit, respectively, of the cost of materials and supplies based on its demonstrated capacity and intent to perform as a regular dealer or distributor, as defined in section 26.55(e)(2)(iv)(A),(B),(C), and (3) under the contract at issue. The regulation requires the recipient's preliminary determination to be made based on the DBE's written responses to relevant questions and its affirmation that its subsequent performance of a commercially useful function will be consistent with the preliminary counting of such participation. The U.S. Department of Transportation is providing this form as a tool for recipients, prime contractors, regular dealers, and distributors to use to carry out their respective responsibilities under this regulation. The form may be used by each DBE supplier whose participation is submitted by a bidder for regular dealer or distributor credit on a federally-assisted contract with a DBE participation goal. The form may also be used by prime contractors in connection with DBE regular dealer or distributor participation submitted after a contract has been awarded provided such participation is subject to the recipient's prior evaluation and approval. If this form is used, it should be accompanied by the bidder's commitment, contract, or purchase order showing the materials the DBE regular dealer or distributor is supplying. Use of this tool is not mandatory. If a recipient chooses a different method for complying with Section 26.53(c)(1), it must include that method in its DBE Program Plan.

DBE Name:	Total Subcontract/Purchase Order Amount:
Authorized DBE Representative (Name and Title):	NAICS Code(s) Related to the Items to be Sold/Leased:

1. Will **all** items sold or leased be provided from the on-hand inventory at your establishment? ☐ **YES** ☐ **NO**

   (If "YES," you have indicated that your performance will satisfy the regular dealer requirements and may be counted at 60%. STOP here. Read and sign the affirmation below. If "NO" Continue.)

   a) Are you selling bulk items (e.g., petroleum products, steel, concrete, concrete products, sand, gravel, asphalt, etc.) or items not typically stocked due to their unique characterisics (aka specialty items)?

   ☐ **YES** ☐ **NO** **(If "YES," Go to Question 2. If "NO" Continue.)**

   b) Will at least 51% of the items you are selling be provided from the inventory maintained at your establishment, and will the minor quantities of items delivered from and by other sources be of the general character as those provided from your inventory?

   ☐ **YES** ☐ **NO*** **(If "YES," you have indicated that your performance will satisfy the regular dealer requirements and may be counted at 60%. STOP here. Read and sign the affirmation below.**

   ***If 1.,1.a), and 1. b) above are "NO," your performance on the whole will not satisfy the regular dealer requirements; therefore, only the value of items to be sold or leased from inventory can be counted at 60%. (Go to Question 3. to determine if the items delivered from and by other sources are eligible for Distributor credit.)**

2. Will you deliver all bulk or specialty items using distribution equipment you own (or under a long-term lease) and operate?

   ☐ **YES** ☐ **NO[1]**

   (If "YES," you have indicated that your performance will satisfy the requirements for a regular dealer of bulk items and may be counted at 60%. STOP here. Read and sign the affirmation below.)

   [1] If "NO," your performance will not satisfy the requirements for a regular dealer of bulk items; the value of items to be sold or leased cannot be counted at 60%. (Go to Question 3.)

3. Will the written terms of your purchase order or bill of lading from a third party transfer responsibility, including risk for loss or damage, to your company at the point of origin (e.g. a manufacture's facility) ? ☐ **YES[2]** ☐ **NO[3]**

   a) Will you be using sources **other than** the manufacturer (or other seller) to deliver or arrange delivery of the items sold or leased ? ☐ **YES[2]** ☐ **NO[3]**

[2] If your responses to 3 and 3.a) are "YES," you have indicated that your performance will satisfy the requirements of a distributor; therefore, the value of items sold or leased may be counted at 40%.

[3] If you responded "NO" to either 3 or 3.a), counting of your participation is limited to the reasonable cost of fees or commissions charged, including transportation charges for the delivery of materials or supplies; the cost of materials or supplies may not be counted.

I affirm that the information that I provided above is true and correct and that my company's subsequent performance of a commercially useful function will be consistent with the above responses. I further affirm that my company will independently negotiate price, order specified quantities, and pay for the items listed in the bidder's commitment. This includes my company's responsibility for the quality of such items in terms of necessary repairs, exchanges, or processing of any warranty claims for damaged or defective materials.

Printed Name and Signature of DBE Owner/Authorized Representative:

The bidder acknowledges its responsibility for verifying the information provided by the DBE named above and ensuring that the counting of the DBE's participation is accurate. Any shortfall caused by errors in counting are the responsibility of the bidder.

Printed Name and Signature of Bidder's Authorized Representative:

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, distributors, and trucking companies must be received by HDOT's Project Manager or designee by the close of business, 4:30 p.m. Hawaii Standard Time (HST), five calendar days after bid opening – be sure to take internet and online traffic into consideration. **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 percent of the contract dollar value of DBE suppliers, plus 40 percent of the contract dollar value of DBE distributors, 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, Distributor, Manufacturer, and/or 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/or trucking companies, plus 60 percent of the dollar amount of DBE suppliers and/or 40 percent of the dollar amount of DBE distributors	
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 received by HDOT's Project Manager or designee by the close of business, 4:30 p.m. HST five calendar days after bid opening – be sure to take internet and online traffic into consideration. **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 and documents provided, 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 calendar 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 (for example smaller tasks or quantities) 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/considered; b) a description of the information that was provided to DBEs regarding the plans and specifications selected for subcontracting; and c) detailed explanation for not utilizing individual DBEs on the project.

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

_____ _____

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 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.

** PLEASE NOTE - At a minimum, HDOT will review the performance of other bidders in meeting the contract goal. Meeting or exceeding average DBE participation obtained by other bidders is a factor to be taken into consideration for the apparent lower bidder, despite failing to meet the contract goal.

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, Distributor, Manufacturer, and/or Trucking Company	Company name of subcontractor, supplier, distributor, manufacturer, and/or trucking company
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, distributor, manufacturer, or trucking firm
A. Dollar amount of the work to be performed by DBE subcontractors, manufacturers, and trucking companies, plus 60 percent of the dollar amount of DBE suppliers, plus 40 percent of the dollar amount of DBE distributors	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. This form must be received by HDOT's Project Manager or designee by the close of business, 4:30 p.m. Hawaii Standard Time, five calendar days after bid opening – be sure to take internet and online traffic into consideration. Failure to provide required information sufficient to evaluate the bid/proposal shall be cause for bid/proposal rejection.

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/Distributor

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. This form must be received by HDOT's Project Manager or designee by the close of business, 4:30 p.m. Hawaii Standard Time, five calendar days after bid opening – be sure to take internet and online traffic into consideration. Failure to provide required information sufficient to evaluate the bid/proposal shall be cause for bid/proposal rejection.

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/ DISTRIBUTOR:	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/Distributor
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/Distributor	Name of DBE supplier (aka regular dealer)/distributor
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/distributor/manufacturer
Name/Title	Name and title of the subcontractor's representativethat the listed DBE will work under as a second-tier subcontractor/supplier/distributor/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. "Must" and "shall" when used in a directive to or describing the use of an action needed to be done by the Contractor are considered a mandatory contractual duty of the Contractor.

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
MASH	AASHTO's Manual for Assessing Safety Hardware
MRTB	HDOT's Material and Testing Branch
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, Standard Specifications, 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.

Informational Submittal – A submittal, e.g., additional-advance-direct submittal by e-mail by the contractor to the Material Testing and Research Branch, of such things as but not limited to: a final copy of fully executed contract change order with attachments, contractor QC test results or schedules, or other documents that are designated as an Informational Submittal. It is a process to inform the receiver of a task that has been performed or will soon be performed. Submitted for workload scheduling purposes; it does not require a response or action from the designated receiver, and in general, is not used for payment purposes unless the Engineer or MTRB designated it as such. Nor does it count as one of the other required submittals in number.

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. i.e. State of Hawaii Standard Specifications for Road and Bridge Construction.

(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, or 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 original form and shall be submitted before the bid deadline to the Contract Office, Department of Transportation, Aliiaimoku Hale, 869 Punchbowl Street, Room 105, Honolulu, Hawaii 96813. Original surety bid bonds do not need to be submitted to the Contracts Office. Bidders are reminded that a copy of its surety bid bond shall be included with its bid 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 104.11(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 **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.

A 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."

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
401	All Contract Items under Section 401 – Hot Mix Asphalt Pavement
606	All Contract Items under Section 606 - Guardrail
622	All Contract Items under Section 622 – Roadway and Sign Lighting System
629	All Contract Items under Section 629 - Pavement Markings
645	Contract Item No. 645.0100 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."

(II) Amend **107.03 Working Hours; Night Work** from lines 140 to 142 to read as follows:

"**107.03 Working Hours; Night Work.** Normal working hours shall be from 7:00 a.m. to 3:30 p.m., Monday through Friday, excluding holidays. Work performed between 3:30 p.m. and 7:00 a.m. of the following day is "night work," which requires an approved noise variance."

(II) Amend **107.06 Contractor Duty Regarding Public Convenience** from lines 195 to 201 to read as follows:

"**107.06 Contractor Duty Regarding Public Convenience**. Plan and provide appropriate methods, devices, work, etc., e.g., detours, signs, flashers, labor, equipment, high load warnings, other types of warnings devices, barricades, barriers, debris catchment systems, that must all comply with the Contract Documents. The aforementioned must ensure the safety of the traveling public at all times. The work must be conducted in a manner and in a sequence that ensures the least possible interference, along with the maximum possible safety to the traveling public, e.g., pedestrians, bicycles motorcycles, mopeds vehicles, and those using them, including the roadway, and roadside."

(III) Amend **107.12 Protection of Persons and Property** from lines 312 to 325 to read as follows:

"**(B) Safety Precautions and Programs**. Notify owners of adjacent properties and all utilities when performing work that may affect the owners. Also, notify the owners when the work may be in or adjacent to the area of the properties including utilities. Provide protection acceptable to the owners and Engineer. Cooperate with the owners and Engineer. Receive their acceptance of the protection, removal, repair, or replacement of their property or utility, before, during, and after the work.

Must not permit any load to be placed on the work, any structure, roadway, or any other location that may endanger at any level the safety of any persons or may cause damage to any property or facility."

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 60 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 has one or more of the following:

(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. Directly submit an informational copy of the three-week schedule to the Material Testing Research Branch (MTRB) on the same day as the weekly meeting is held or was to be held. An information copy is for informational use only and requires no response or further action from the MRTB. 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 working days before each weekly meeting, the Contractor must submit a list of outstanding submittals, RFIs, other documents, or issues that require discussion or needs a response or needs to be expedited.

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 $ 5000 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 $2,500 for every one-to fifteen-minute increment for each roadway lane or portion thereof, for each location, for each roadway lane closed to public use or encroached upon or occupied beyond the time periods authorized in the contract or by the Engineer. 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 a pre-final inspection. The Engineer may, in writing, postpone the pre-final inspection until all the items listed in Subsection 108.13(B) – Pre-Final Inspection, are submitted and accepted or in the sole opinion of the Engineer the work is not substantially complete or a combination of both. The Engineer may give a waiver to the Contract Document requirements for the pre-final, which will be written, only if the waiver can justify that it is in the best interest of the State to do so.

If in the sole opinion of the Engineer, the project's work status is not substantially complete, the Engineer may deny the pre-inspection from being held until it is a qualifying condition. The Engineer may at its sole discretion provide the Contractor a punchlist of specific deficiencies in writing which shall be corrected or finished before the work will be ready for a pre-final inspection. The Engineer needs to do so only if in its sole opinion the project's status of the work is near or at an acceptable condition for a pre-final inspection. The Contractor shall use due diligence to make the project's work status acceptable for a pre-final inspection before requesting one. 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.

If the Engineer finds the work status is substantially complete after a pre-final inspection but finds deficiencies that are required to be corrected before the work is ready for a final inspection, the Engineer will prepare in writing and deliver to the Contractor a punchlist describing such deficiencies.

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.

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 580 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 201 – CLEARING AND GRUBBING

Make the following amendments to said Section:

(I) Amend **201.04 – Measurement** by revising lines 167 to 168 to read as follows:

"**201.04 Measurement.** The Engineer will measure clearing and grubbing per square yard in accordance with the contract documents."

(II) Amend **201.05 – Payment** by revising lines 170 to 179 to read as follows:

"**201.05 Payment.** The Engineer will pay for the accepted clearing and grubbing per square yard. 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**
Clearing and Grubbing	Square Yard"

END OF SECTION 201

SECTION 202 – REMOVAL OF STRUCTURES AND OBSTRUCTIONS

Make the following amendments to said Section:

(I) Amend **202.04 – Measurement** by revising lines 119 to 120 to read as follows:

"**202.04 Measurement.** Removal of structures and obstructions will be measured per linear foot, square yard or each as shown in the contract documents."

(II) 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 pay for specific items stipulated for removal and disposal at the contract price bid per linear foot, square yard or each as specified in the proposal. The price shall be full compensation for removal and disposal of that items, excavation, backfill, 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 Concrete Curb	Linear Foot
Removal of Concrete Curb and Gutter	Linear Foot
Removal of Bridge Railing - Concrete	Linear Foot
Removal of Bridge Railing - Metal	Linear Foot
Removal of Guardrail, End Terminals and Attenuators	Linear Foot
Removal of Signs and Posts	Each
Removal of 6-Foot Chain Link Fence	Linear Foot
Removal of Flexible Delineators	Linear Foot

Removal of Survey Monuments		Each
Removal of Existing Geotextile Fabric		Square Yard”

END OF SECTION 202

SECTION 203 – EXCAVATION AND EMBANKMENT

Make the following amendments to said Section:

(I) Amend **203.03(C)(2)(a) – Maximum Dry Unit Weight** from line 245 to line 255 to read as follows:

> "**(a) Maximum Dry Unit Weight.** Test for maximum dry unit weight according to AASHTO T 180, and apply the correction for fraction larger than 3/4 inch. Use Hawaii Test Method HDOT TM 5 for sample preparation of sensitive soils when so designated by the Engineer."

END OF SECTION 203

SECTION 204 – EXCAVATION AND BACKFILL FOR MISCELLANEOUS FACILITIES

Make the following amendments to said Section:

(I) Amend **204.04 – Measurement** by revising lines 180 to 186 to read as follows:

"**204.04 Measurement.**

The Engineer will measure trench excavation and backfill per cubic yard in accordance with the contract documents."

(II) Amend **204.05 – Payment** by revising lines 196 to 200 to read as follows:

" **Pay Item**	**Pay Unit**
Trench Excavation for Traffic Counting Station Systems	Cubic Yard
Trench Backfill for Traffic Counting Station Systems	Cubic Yard"

END OF SECTION 204

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; 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". 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) 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.

(2) Water Pollution, Dust, and Erosion Control Submittals. Submit a Site-Specific BMP Plan within 21 calendar days of date of award. Submission of complete and acceptable Site-Specific BMP Plan is the sole responsibility of the Contractor and additional contract time will not be issued for delays due to incompleteness. Include the following:

(a) Written description of activities to minimize water pollution and soil erosion into 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 plans 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. 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.

(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 NPDES Permit, information required for compliance with the conditions of the Notice of General Permit Coverage (NGPC)/NPDES Permit.

(h) Site-Specific BMP Review Checklist. The checklist may be downloaded from HDOT's Stormwater Management website at http://stormwaterhawaii.com.

Date and sign Site-Specific BMP Plan. Keep accepted copy 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 shall be included with original Site-Specific BMP Plan. Modify SWPPP if necessary to conform to revisions. Include date of installation and removal of Site-Specific BMP measures. Obtain written acceptance by 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 Site-Specific BMPs for all projects. 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 when applicable.

Follow Honolulu's City and County "Rules for Soil Erosion Standards and Guidelines" for all projects on Oahu. Use respective Soil Erosion Guidelines for Maui, Kauai and Hawaii projects.

(B) Construction Requirements. Do not begin work until submittals detailed in Subsection 209.03(A)(2) - Water Pollution, Dust, and Erosion Control Submittals are completed and accepted in writing by the Engineer.

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 rain water 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.

Address all comments received from the Engineer.

Modify and resubmit plans and construction schedules to correct conditions that develop during construction which were unforeseen during the design and pre-construction stages.

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 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 work day.

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 work day, following the day when the earth-disturbing activities have temporarily or permanently ceased.

For projects with an NPDES Permit for Construction activities:

(1) For construction areas 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, complete initial stabilization within 7 calendar days after the temporary or permanent cessation of earth-disturbing activities.

For projects without an NPDES Permit for Construction activities, complete initial stabilization within 14 calendar days after the temporary or permanent cessation of earth-disturbing activities.

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.

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.

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.

BMP measures shall be in place and operational at the end of work day 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.

Chemicals may be used as soil stabilizers for either or both erosion and dust control if acceptable to the Engineer.

Provide temporary slope drains of rigid or flexible conduits to carry runoff from cuts and embankments. Provide portable flume at the entrance. Shorten or extend temporary slope drains to ensure proper function.

Protect ditches, channels, and other drainageways leading away from cuts and fills at all times by either:

(1) Hydro-mulching the lower region of embankments in the immediate area.

(2) Installing check dams and siltation control devices.

(3) Other methods acceptable to the Engineer.

Provide for controlled discharge of waters impounded, directed, or controlled by project activities or erosion control measures.

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.

Cleanup and remove any pollutant that can be attributed to the Contractor.

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 Site-Specific BMP 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 prior to implementation.

Properly maintain all Site-Specific BMP measures.

For projects with an NPDES Permit for 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.

For projects without an NPDES Permit for Construction activities, 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.

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.

Maintain records of inspections of Site-Specific BMP work. Keep continuous records for duration of the project. Submit copy of Inspection Report to the Engineer within 24 hours after each inspection.

The Contractor's designated representative specified in Subsection 209.03(A)(2)(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 Consent Decree or MS4 NPDES

Permit, whichever is more stringent. The Consent Decree timeframe requirement applies statewide. The MS4 NPDES Permit only applies to Oahu. 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 work day. When installation of a new pollution prevention control or a significant repair is needed, complete installation or repair no later than 7 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 7 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. The Contractor's failure 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 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) 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)(2) – Water Pollution, Dust, and Erosion Control Submittals are completed and accepted in writing by the Engineer.

(D) 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.

(E) 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.

(F) Solid Waste. Submit the Solid Waste Disclosure Form for Construction Sites to the Engineer within 21 calendar days of date of award. Provide a copy of all the disposal receipts from the facility permitted by the Department of Health to receive solid waste to the Engineer monthly. This should also include documentation from any intermediary facility where solid waste is handled or processed, or as directed by the Engineer.

(G) 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.

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) 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	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.

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.

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 work days, 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*

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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*

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

Make the following Section a part of the Standard Specifications:

"SECTION 219 – DETERMINATION AND CHARACTERIZATION OF FILL MATERIAL

219.01 Description. This section describes determination and characterization of fill material for project sites.

Requirements of this section apply to all waste generated from construction and demolition (C&D) activities.

219.02 Definitions.

(A) Inert Fill Material. Inert Fill Material is defined in the Hawaii Revised Statutes (HRS) 342H-1. Materials that do not meet this definition shall be disposed of at the appropriate Hawaii Department of Health (HDOH) Solid and Hazardous Waste Branch permitted solid waste management facility.

The October 2021 State of Hawaii Department of Transportation, Highways Division, Construction Best Management Practices Field Manual, specifies inert fill material shall not be contaminated with asbestos or lead-based paint. In addition, inert fill materials do not decompose or produce leachate or other products harmful to the environment.

Any material that originates from another project intended to be used as lily material is required to be recharacterized as fit material as described in this section.

(B) Lead-Based Paint (LBP). Lead Based Paint (LBP) is defined by Section 403 of the Toxic Substances Control Act (TSCA), as amended by the Environmental Protection Agency (EPA) or as defined in approved subsequent revisions.

Solid Waste. Solid waste is defined as any material generated from the project that cannot be used on the project.

219.03 Construction.

The Contractor shall submit a completed, signed, and dated "Solid Waste Disclosure Form for Construction Sites" to the Engineer at the time of the Pre-Construction Conference and shall be included in the Storm Water Pollution Control Plan. If there are any revisions to the information on the Solid Waste Disclosure Form, the form shall be re-signed, dated, and submitted to the Engineer, prior to taking solid waste to the proposed facility.

For bid purposes, the Contractor shall assume that all waste generated from the project will be taken directly to a DOH permitted solid waste management facility or approved landfill. Submit monthly a copy of all the disposal receipts from the facilities permitted by the Department of Health, Solid Waste Section, (DOH) to receive solid waste to the Engineer. Provide documentation monthly from any DOH permitted intermediary facility where the solid waste is handled or processed, all haul tags, and other documentation as directed by the Engineer.

If the Contractor elects to re-classify solid waste as inert fill material for reuse, the Contractor shall assume all costs and liability with regards to the testing, handling, storage, and end use of the material.

If reclassifying solid waste as inert fill, submit written request to the Engineer to seek approval before following requirements in this Section. No extension of time or costs will be granted due to any issue related to reclassification of material. The Contractor shall not assume material can be reclassified nor is there any guarantee that material can be reclassified. Reclassification of material will be at the sole determination of the Engineer. If the material is to be reclassified as inert fill material, the Contractor shall provide the required documentation indicated in Section 219.03(A) Preconstruction Requirements & Section 219.03(B) Construction Requirements. The Contractor shall also revise the Solid Waste Disclosure Form to indicate the material was re-classified as inert fill and to identify the disposal location and re-submit the Solid Waste Disclosure Form to the Engineer.

(A) Preconstruction Requirements. Retain the services of an Environmental Professional as accepted by the Engineer.Submit documentation the Environmental Professional has a minimum of five (5) years of experience in solid and hazardous waste management and fill material characterization within 30 calendar days of contract certification date.

(B) Construction Requirements.

(1) Reclassification of Solid Waste into Inert Fill Material. If reclassifying solid waste as inert fill, obtain written acceptance from the Engineer before following the requirements of Section 219.03(B)(2) Inert Fill Material.

(2) Inert Fill Material. The State reserves the right to reject imported fill from any location including from sources known to contain hazardous material or if any of the requirements in this specification are not met. The source and/or stockpiled location of the material shall remain accessible at all times to State personnel for sampling, testing, and inspection as determined by the Engineer.

Prior to importing/removal of material, the Contractor shall provide the specific location and quantity of material that is to be transported to/from the project site.

(a) Certificates. Provide a written certificate indicating that the fill material meets the inert fill material definition specified herein. The written certificate shall include a description of the evidence (including but not limited to historical documentation of land use, test results, fill material characterization report, and/or Phase I Environmental Site Assessment) used by the Contractor to determine that the fill material is inert fill material. The written certificate shall be prepared and signed by an Environmental Professional. Submit the written certificate to the Engineer 14 calendar days before the fill material is imported to or removed from the project site. Do not import the fill material to, or export the fill material from the project site until the Engineer has accepted the certificate. Revise the written certificate as requested by the Engineer until the Engineer has accepted the certificate at no additional cost to the State. If the Engineer does not accept the certificate, the fill material shall not be considered inert fill material; and the Contractor shall dispose of the fill material in accordance with all applicable Federal, state, and Local laws and regulations at no additional cost to the State.

(b) Documentation. Provide documentation that all the material is to be taken to a properly permitted site. The documentation shall include the location of the disposal site (name, address, Tax Map Key No., telephone number, and map) with a revised Solid Waste Disclosure Form to indicate the material that was reclassified as inert fill and the location that the inert fill will be taken to. Provide Final Distribution Certification for Soil Memorandum which includes Contractor's certification that the material was tested and determined clean and free of contaminants above HDOH Tier 1 Environmental Action Levels (EALs) for unrestricted use). The Contractor shall assume all liability for the material and comply with all applicable permits and contract requirements including Sections 107 (Legal Relations and Responsibility to the Public), 203 (Excavation and Embankment), and 209 (Temporary Water Pollution, Dust, and Erosion Control).

(c) Laboratory Certification. Samples shall be tested by a laboratory certified to perform the specific analyses.

(d) Hawaii Department of Health Guidance Documents. The HDOH has published guidance documents for the characterization of fill material and construction and demolition (C&D) waste. Comply with all applicable Federal, State, and Local laws and regulations. The procedures of the most recent versions of the following guidance documents or their replacements for the determination and characterization of the fill material or waste may be used as a reference:

1. Guidance for Soil Stockpile Characterization and Evaluation of Imported and Exported Fill Material.

2. Evaluation of Fill Material for Chemical Contaminants (Fact Sheet).

3. Guidance for Construction & Demolition (C&D) Waste Disposal.

4. Technical Guidance Manual for the Implementation of the Hawai‘i State Contingency Plan.

Obtain and follow the latest versions of the applicable HDOH guidance documents.

(e) Lead Based Paint Restriction. Provide test results for lead based paint testing as directed by the Engineer a minimum often (10) working days prior to cold planing existing pavement or other demolition activities. Remove lead based paint from cold planed asphalt prior to use as a fill material. Lead based paint does not have to be removed if recycled for reclaimed asphalt for pavement.

(C) Hazardous Waste. The Contractor shall dispose of all hazardous wastes in accordance with all local, State, and Federal regulations.

219.04 Measurement. The Engineer will not measure for the determination and characterization of fill material. The Engineer will only measure additional hazardous waste remediation required and requested by Engineer on a force account basis in accordance with Subsection 109.06 – Force Account Provisions and Compensation.

219.05 Payment. Determination and Characterization of Fill material shall not be paid for separately but shall be an incidental cost.

The Engineer will pay for the 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 the following pay item when included in proposal schedule:

Pay Item	**Pay Unit**
Hazardous Waste Remediation	Force Account

An estimated amount for force account is allocated in the proposal schedule under “Hazardous Waste Remediation”, but actual amount to be paid will be the sum shown on accepted force account records, whether this sum be more or less than the estimated amount allocated in the proposal schedule.

The Engineer may assess liquidated damages up to $27,500 per day for non-compliance of each requirement and all other requirements in this section.”

END OF SECTION 219

SECTION 301 – HOT MIX ASPHALT BASE COURSE

Make the following amendments to said Sections:

(I) Amend **Section 301.02 Materials** by replacing line 11 to read as follows:

"Asphalt Cement (PG 64-16)	702.01(A)
Asphalt Cement (polymer modified, PG 64E-22)	702.01(B)"

(II) Amend **Section 301.03(B) Compaction** by revising the second paragraph from lines 84 to 87 to read as follows:

"Compact mixture immediately upon completion of spreading operations to density of not less than 92.0 percent of maximum theoretical specific gravity in accordance with AASHTO T 209, modified by deletion of Supplemental Procedure for Mixtures Containing Porous Aggregate."

(III) Amend **Section 301.04 Measurement** from lines 98 to 100 to read as follows:

"**301.04 Measurement.**

The Engineer will measure HMAB course per ton in accordance with contract documents."

(IV) Amend **Section 301.05 Payment,** from lines 102 to 111 to read as follows:

"**301.05 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 the following pay items when included in the proposal schedule:

Pay Item	Pay Unit
Hot Mix Asphalt Base Course	Ton
Hot Mix Asphalt Base Course with Polymer Modified Asphalt (PG 64E-22)	Ton

(1) 80% of the contract 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 by rolling;

(2) 20% of the contract 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 final analysis.

The Engineer may, in lieu of requiring removal and replacement, use the sliding scale factor to accept HMAB compacted below 92.0 percent. The Engineer will make payment for the material in that production day at a reduced price arrived at by multiplying the contract unit price by the pay factor shown in Table 301.05-1.

Table 301.05-1 – Sliding Scale Pay Factor

Percent Compaction	Percent Payment
92.0 or greater	100
90.0 – 91.9	80
<90.0	Removal

"

END OF SECTION 301

SECTION 314 – CONTROLLED LOW STRENGTH MATERIALS (CLSM) FOR UTILITIES AND STRUCTURES

Make the following amendments to said Section:

(I) Amend **314.04 – Measurement** by revising line 83 to read as follows:

"**314.04 Measurement.**

The Engineer will measure CLSM per cubic yard in accordance with the contract documents."

(II) Amend **314.05 – Payment** by revising lines 85 to 90 to read as follows:

"**314.05 Payment.**

The Engineer will pay for the accepted CLSM at the contract unit price 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 the following pay item when included in the proposal schedule:

Pay Item	**Pay Unit**
CLSM	Cubic Yard"

END OF SECTION 314

Amend Section 401- HOT MIX ASPHALT (HMA) PAVEMENT to read as follows:

"SECTION 401 – DENSE GRADED 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 Highways Division, Bridge Design Section (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 notch 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 notch joint is used, the overband width shall be a minimum of 12-inches. For butt 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. Coring of longitudinal joints shall use a modified HDOT Sampling and Testing Guide as required by the Contract Documents.

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. 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 Tables 401.03-4 (Smoothness Pay Disincentives with MRI) and 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 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

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(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 and PMA pavement per ton in accordance with the Contract Documents.

(B) The Engineer will measure Pavement Smoothness Incentive from an allowance.

(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 and PMA 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 – Hot Mix Asphalt (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**
Pavement Smoothness Incentive	Allowance
HMA Pavement, Mix No. IV	Ton
HMA Pavement, Mix No. V	Ton
PMA Pavement, Mix No. IV with PG 64E-22	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
> 98.0	Removal
>97.0 - 98.0	95
93.0- 97.0	100
90.0 - <93.0	80
<90.0	Removal

END OF SECTION 401”

SECTION 406 — STONE MATRIX ASPHALT (SMA) PAVEMENT

Make the following Section a part of the Standard Specifications:

406.01 Description. This Section describes furnishing and placing stone matrix asphalt pavement on a prepared surface. General requirements for all asphalt concrete pavements as specified in Section 401 Hot Mix Asphalt (HMA) Pavement are applicable to this Section, subject to any exceptions contained herein.

406.02 Materials. Materials shall conform to the following:

(A) Asphalt Cement (PG 64E-22) 702.01(B)

(B) Aggregates. Make mineral aggregate by crushing and screening hard, tough, durable stone of uniform quality. Crushed aggregate shall be free from soft or disintegrated pieces, clay, dirt, or other deleterious substances.

Coarse aggregate shall be that portion of the mineral aggregate retained on the No. 4 sieve. Fine aggregate shall be that portion of the mineral aggregate passing the No. 4 sieve.

When tested according to the designated methods, the combined mineral aggregate shall meet the following requirements:

Test	Test Method	Requirement
Soundness	AASHTO T 104 (5 cycles using sodium sulfate)	9% Maximum
Flat and Elongated Particles (Length to thickness ratio of 3:1)	ASTM D 4791 (by Weight)	20% Maximum
Los Angeles Abrasion	AASHTO T 96	30% Maximum
Sand Equivalent	AASHTO T 176	50% Minimum
Fine Aggregate Angularity	AASHTO T 304, Method A	45% Minimum
Absorption	AASHTO T84 & T85	4% Maximum
Gradation	AASHTO T 27 AASHTO T 11	See Table 406-1
Plasticity Index	AASHTO T90	Non-Plastic

100 percent of the material retained on the No. 4 sieve shall consist of crushed particles. A crushed particle is one having at least one mechanically fractured face. A face is considered fractured if it has a projected area that is at least 0.25 of the maximum projected area of the particle.

(C) RAP (Reclaimed Asphalt Pavement). Use of RAP is not allowed in SMA.

(D) Aggregate Blend. Size, uniformly grade, and combine coarse and fine aggregate fractions to produce a job-mix formula that meets the gradation requirements of Table 406-1 Aggregate Gradation Limits 1/2 inch Nominal Maximum Size Mix.

TABLE 406-1 - AGGREGATE GRADATION LIMITS 1/2 INCH NOMINAL MAXIMUM SIZE MIX	
SIEVE SIZE	**PERCENT PASSING**
3/4 inch	100
1/2 inch	90 -100
3/8 inch	40 - 80
No. 4	20 - 35
No. 8	16 - 24
No. 16	-
No. 30	12 - 18
No. 50	-
No. 100	-
No. 200	8.0 – 11.0

(E) Mineral Filler. Mineral filler shall conform to AASHTO M 17 and shall be rock dust or crushed limestone conforming to the following:

Test	Test Method	Requirement
Plasticity Index	AASHTO T 90	4% Maximum

(F) Stabilizer. Dosage rate of cellulose shall be approximately 0.3 percent (by weight of total mix) and sufficient to prevent draindown not to exceed the amount stated in Table 406-2 - Design Criteria as determined by AASHTO T 305 Standard Method of Test for Determination of Draindown Characteristics in Uncompacted Asphalt Mixtures. Increase the amount of fiber at no additional cost to HDOT to meet the allowed draindown requirement. Fibers other than cellulose fiber that are equal or better may be used if requested to and accepted by the Engineer. The Engineer is under no obligation to accept a substitution.

(G) Job-Mix Formula. Design the job-mix formula according to AASHTO R 46.

Table 406-2 - Design Criteria	
$N_{initial}$, N_{design}, N_{max}	8, 100, 160
Air Voids at N_{design}	4%
Voids in Mineral Aggregate (VMA) at N_{design} (for 1/2 inch Nominal Maximum Particle Size)	17.0% Minimum
Voids in Coarse Aggregate (VCA)	Less than VCA_{DRC}
Density at $N_{initial}$ (% of Theoretical Maximum Specific Gravity)	Not more than 89.0 %
Density at N_{design} (% of Theoretical Maximum Specific Gravity)	96.0 %
Density at N_{max} (% of Theoretical Maximum Specific Gravity)	Not more than 98.0 %
Binder Content (by weight of total mix)	6.0 % Minimum
Draindown at Production Temperature	0.3 % Maximum
Stabilizer (by weight of total mix)	0.2 - 0.4 %

Submit the job-mix formula at least 30 working days before production. Production paving shall not start until the job mix formula has been reviewed and found acceptable by the Engineer. The job-mix formula shall include:

(1) Design percent of aggregate passing each required sieve size (aggregate gradation),

(2) Design percent of PG binder material added to the aggregate (expressed as % by weight of total mix),

(3) Temperature at which the mixture is delivered to the point of discharge,

(4) Source of aggregate,

(5) Grade of PG binder,

(6) Type and percentage of stabilizer, and

(7) Test data used to develop job-mix formula.

Mixtures shall meet the requirements of Table 406-1 (Aggregate Gradation Limits 1/2 inch Nominal Maximum Size Mix) and 406-2 (Design Criteria).

(H) Range of Tolerances. Provide SMA within allowable tolerances of accepted job-mix formula as specified in Table 406-3 Production Tolerances.

Table 406-3 — Production Tolerances	
Passing 3/8 inch and larger sieves	± 5%
Passing No. 4 to No. 16 sieves (inclusive)	± 4%
Passing No. 30 to No. 100 sieves (inclusive)	± 3%
Passing No. 200 sieve	± 2.0%
Binder Content (expressed as % by weight of total mix)	± 0.4%
Temperature of Mixture	± 20° F
Voids, total mix	± 1.0%

* 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.

406.03 Construction Requirements. Construction requirements shall be as specified in Subsection 401.03 - Construction, except as follows:

(A) 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.

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. Stabilizer Supply System. Use a separate system for feeding stabilizing additives to proportion the required amount into the mixture and obtain a uniform distribution. Stabilizer supply system shall include low level and no-flow indicators, section of transparent pipe for observing consistency of flow or feed interlock with plant controls, and printout of status of feed rate.

(2) Hauling Equipment. Use trucks that have tight, clean, smooth, metal beds for hauling SMA.

Thinly coat truck beds with a minimum quantity of detergent or lime solution to prevent the mixture from adhering to the beds. A light dusting of No. 10 aggregate coated with one percent asphalt may be used in lieu of liquid release agent. The use of diesel or petroleum-based liquid release agents will not be allowed.

Raise truck beds to drain excess water before loading with SMA mixture.

Equip each truck with 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 the mix.

(B) Plant Operation.

(1) Mixing. Measure aggregate and asphalt into mixer in accordance with job-mix formula. Mix until the components are completely mixed and adequately coated with asphalt in accordance with AASHTO M 156. Percent of coated particles shall be 98% when tested in accordance with AASHTO T 195.

(C) SMA Storage. The time between plant mixing and shipment shall not exceed one hour. Store the SMA mixture only in silos. Do not stockpile the SMA.

Equip the storage silo to prevent segregation of the completed mixture as the mixture is discharged into the silo.

Stored material shall be of no less quality than mixtures discharged directly into hauling vehicles.

(D) Spreading and Finishing. Prior to each day's paving operation, check screed or strike-off assembly surface with straight edge to ensure straight alignment. Provide screed or strike-off assembly that produces finished surface without tearing, shoving, and gouging SMA. Discontinue using spreading equipment that leaves ridges, indentations, or other marks, or combination thereof in surface that cannot be eliminated by rolling or be prevented by adjustment in operation.

The minimum temperature of the bituminous mixture as discharged to the paver shall be established during the mix design procedure. Measure temperature of mix in hauling vehicle just before depositing into spreader.

Deposit SMA in a manner that minimizes segregation. Raise truck beds with tailgates closed before discharging SMA mixture.

Lay, spread, and strike off SMA upon prepared surface. Use asphalt pavers to distribute mixture.

Control horizontal alignment using automatic grade and slope controls from reference line, ski and slope control device, or dual skis.

Obtain sensor grade reference from 30-foot ski for first pass. For subsequent passes, substitution of one ski with joint-matching shoe riding on the recently-placed-finished-adjacent pavement is acceptable. Use of a comparable non-contact mobile reference system and joint matching shoe is acceptable.

Avoid stop-and-go operations. Minimize changing forward speed of paver during paver operation.

Offset longitudinal joint in successive lifts by approximately 6 inches. Position joint in surface course at centerline of pavement when roadway comprises two lanes of width, or at lane lines when roadway is more than two lanes in width. Joints shall be parallel to the centerline of the road or lane and shall have a uniform longitudinal alignment that is not wavy in appearance.

In areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impracticable, spread, rake, and lute the mixture by hand tools. For such areas, dump, spread, and screed the 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 work using the material on site or is in the process of being delivered to the project using manual controls. Additional work may be performed if needed to provide the public with a safe travelway, e.g., no dips or bumps, drop offs. 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.

When production of SMA can be maintained and when practicable, use pavers in echelon to place surface course in adjacent lanes.

At the end of each workday, SMA pavement that is open to traffic shall not extend beyond an adjacent panel of new lane pavement by more than distance normally covered in one workday.

At end of each workweek, complete full width of pavement, including shoulders, to same elevation with no drop-offs. Construct transition taper along lane line at longitudinal pavement drop-off. Maximum drop-off height shall be 2 inches. Remove and dispose of transition taper before placing adjoining panel.

The minimum and maximum allowable compacted lift thicknesses for the SMA mixture shall be 1-1/2 inch minimum thickness and 3 inch maximum thickness.

(E) Compaction. Immediately after spreading and striking off SMA and adjusting surface irregularities, uniformly compact the mixture by rolling.

Initiate compaction within the temperature range determined from the Temperature-Viscosity graph that does not produce excessive horizontal movement.

Use steel-tired tandem rollers for initial or breakdown rolling. Rollers shall follow directly behind the paver.

Finish rolling using tandem roller weighing at least eight tons. Complete compaction before the mix cools below 240°F.

On superelevated curves, begin rolling at lower-longitudinal edge of the placed SMA 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 SMA edges during rolling.

Keep roller wheels properly moistened with water or water mixed with small quantities of detergent. Use of excess liquid, e.g., water, detergent and water mixture, 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 that have been accepted by the Engineer. On depressed areas, trench roller or cleated compression strips under roller may be used to transmit compression.

Remove pavement that is loose, broken, exposed to deleterious material, contaminated, or shows an excess or deficiency in asphalt binder content; or is defective in any way or combination thereof. Replace with fresh SMA 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 but uniform speed with drive wheels nearest the paver. Continue rolling to attain specified density and until roller marks are eliminated.

(1) SMA Pavement Courses One and a Half Inches Thick Or Greater. Where SMA pavement compacted thickness indicated in the contract documents is 1-1/2 inches or greater, compact to not less than 94.0 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.

(F) Demonstration. Before proceeding with the SMA work, demonstrate that a satisfactory mix can be produced and placed and determine the compactive effort required. For the demonstration, place a minimum of 150 tons outside of the project limits. No production pavement shall start until the SMA demonstration is accepted by the Engineer.

(G) Control Strip. Prior to starting paving, construct a full lane width control strip on the finished grade at least 500 ft in length. The control strip will be used to determine the compactive effort. After the control strip is complete, do not deviate from the approved rolling pattern without constructing a new control strip. As determined by the Engineer, remove and dispose of any unacceptable control strip at no additional cost to the State. Submit to the Engineer the means and methods to construct the control strip, e.g., equipment, rolling pattern, compaction of the longitudinal joint, quality control plan including real-time pavement smoothness methods and testing during paving. If acceptable to the Engineer, this document will be considered part of the Contract Documents and the Contractor shall meet the stated means and methods unless another control strip is constructed and accepted by the Engineer. No production pavement shall start until the SMA control strip is accepted by the Engineer.

(H) Pavement Smoothness Rideability Test. The requirements for pavement smoothness rideability in Section 401 – Hot Mix Asphalt Pavement shall apply to this section. This includes applicable Subsections of 401.03 Construction.

406.04 Measurement. The Engineer will measure SMA pavement per ton in accordance with the contract documents.

Engineer will measure 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.

406.05 Payment. The Engineer will pay for the accepted pay items listed below at the contract unit 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
Stone Matrix Asphalt (SMA) Pavement	Ton

(1) 70% of the contract unit price upon the submitting a job-mix formula acceptable to the Engineer; the SMA demonstration and control strip is accepted by the Engineer, completion of preparing the surface, spreading, finishing the mixture; compacting the mixture.

(2) 20% of the contract 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 final analysis.

(3) 10% of the contract unit price upon completion of removal of temporary pavement markings, installation of permanent pavement markings, work zone signage, site cleanup.

(4) The Engineer may, at its sole discretion, in lieu of requiring removal and replacement, use the sliding scale factor in Table 406-4 – Sliding Scale Pay Factor for Compaction to accept SMA pavements compacted below 94.0 percent and above 97.0 percent. The Engineer will make payment for the material in that production day, if he decides to use a sliding scale factor, at a reduced price arrived at 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 at any time choose not to use a sliding scale factor method of payment and instead require removal of the noncompliant pavement greater than 97.0 or less than 94.0.

(5) Removal of noncompliant pavement shall be in accordance with Subsection 105.12 – Removal of Non-Conforming and Unauthorized Work.

Table 406-4 – Sliding Scale Pay Factor for Compaction	
Percent Compaction	Percentage Payment
> 98.0	Removal
97.0 - 98.0	95
94.0 - 97.0	100
92.0 - <94.0	95
90.0 - <92.0	80
< 90.0	Removal

The Engineer may use the sliding scale factor to accept SMA mixtures with air voids at N_{design} less than three percent and greater than five percent. The Engineer will make payment for the material in that production day at a reduced price arrived at by multiplying the contract unit price by the pay factor shown in Table 406-5 – Sliding Scale Pay Factor for Air Voids at N_{design}.

Table 406-5 — Sliding Scale Pay Factor for Air Voids at N_{design}	
Percent Air Voids	Percentage Payment
> 6.0	90
5.1 – 6.0	95
3.0 – 5.0	100
2.0 – 2.9	95
< 2.0	90

To apply multiple price-quantity adjustments for a production day, calculate a composite pay factor using the algebraic sum of the individual price adjustments.

Example: Compaction Pay Factor = 95% 100-95=5%=0.05
Design Air Voids Pay Factor = 90% 100-90=10%=0.10

Composite Pay Factor = [(- 0.05) + (- 0.10) + 1.00] x 100 = 85%

Demonstration paving (406.03(F)) shall be incidental to SMA pavement.

The Engineer will pay for only one accepted control strip. Control strips not accepted by the Engineer shall be considered as work noncompliant to the Contract Document requirements and will not be paid for. Additional control strips after the initial acceptance of the control strip will not be paid for unless it is incorporated into the accepted SMA paving work. It then will be paid at the contract unit price or shall be part of the lump sum price. Paving for the first accepted control strip will be paid for at the contract unit price or shall be part of the lump sum price.

The Engineer will pay for cold planing in accordance with and under Section 415 — Cold Planing of Existing Pavement.

The Engineer will pay for adjusting existing frames, covers, and valve boxes in accordance with and under Section 604 — Manholes, Inlets and Catch Basins and Section 626 – Manholes and Valve Boxes for Water and Sewer Systems.

END OF SECTION 406

Add Section 408 – Low Tracking Bond Coat (LTBC) Emulsified Asphalt to read as follows:

"**SECTION 408 – LOW TRACKING BOND COAT (LTBC) EMULSIFIED ASPHALT**

408.01 Description. This section describes furnishing and applying Low Tracking Bond Coat (LTBC) Emulsified Asphalt on an existing asphalt or concrete surface, or both.

408.02 Material. The LTBC Emulsified Asphalt shall meet the following requirements.

Parameter	Test Method	Minimum	Maximum
Saybolt Furol Viscosity, SFS @ 25 degrees Celcius	AASHTO T59	15	100
Storage Stability, 24 Hours, %	AASHTO T59	-	1
Storage Stability, 5 days, %	AASHTO T59	-	5
Residue by Distillation, %	AASHTO T59	50	-
Oil Distillate, %	AASHTO T59	-	1
Sieve Test, %	AASHTO T59	-	0.30
Tests on Residue:			
Penetration, @ 25 degrees Celcius	AASHTO T49	-	20
Softening Point Range, degrees Celcius	AASHTO T53	60	-
Solubility, %	AASHTO T44	97.5	-

The material shall not be diluted. The material shall be mixed at least every five days.

Submit certificate of compliance for LTBC Emulsified Asphalt, accompanied by certified test data in accordance with the above requirements.

408.03 Construction.

(A) Weather Limitations. Application of LTBC Emulsified Asphalt will not be allowed under the following conditions:

(1) On wet surfaces as determined by the Engineer.

(2) When air temperature is below 50 degrees F. Air temperature will be measured in shade and away from artificial heat.

(3) When weather conditions prevent proper method of construction.

(B) Equipment. Provide equipment, including distributor and heater capable of applying asphaltic material as follows:

(1) At constant heat on variable surface widths of up to 15 feet.

(2) At readily determined and controlled rates from 0.04 to 0.12 gallons per square yard.

(3) With uniform pressure.

(4) With allowable variation from specified rate, not to exceed 0.02 gallon per square yard.

(5) With recirculation or agitator ability.

(6) Double or triple-lap coverage.

(7) Spray nozzle height at 12 inches from ground surface.

(8) Nozzle orientation angle between 15 and 30 degrees.

Equip distributor with tachometer, pressure gages, accurate volume measuring devices or calibrated tank, thermometer for measuring temperature of tank contents, power unit for pump, and full circulation spray bars adjustable laterally and vertically, with covers to prevent overspraying. Provide hose and nozzle attachment for spotting skipped areas and areas inaccessible to distributor.

(C) Preparation of Surface. If surface conditions described in Subsection 310.03 – Construction are applicable, clean surface in accordance with Section 310.- Brooming Off immediately before applying LTBC Emulsified Asphalt.

(D) Application of LTBC Emulsified Asphalt. Protect structures including guardrails, guardrail posts, and other appurtenances from LTBC Emulsified Asphalt splatter.

Apply undiluted LTBC Emulsified Asphalt on existing asphalt or concrete surface, or both, to be overlayed by HMA course. Once water has evaporated from asphalt emulsion, LTBC Emulsified Asphalt is said to have set. Place HMA overlay after LTBC Emulsified Asphalt has set and within four hours of application. For multiple lift construction, LTBC Emulsified Asphalt application may be waived when upper lift is placed within 12 hours of placing lower lift.

Before placing HMA course, apply LTBC Emulsified Asphalt to contact surfaces of curbs, gutters, manholes, other structures, vertical faces of existing pavements, and exposed transverse and longitudinal edges of each course.

Apply LTBC Emulsified Asphalt uniformly at rate shown in the table below, at a temperature of between 65 to 185 degrees F. At transverse and longitudinal application joints, ensure that specified LTBC Emulsified Asphalt application rate is not exceeded. Squeegee excess LTBC Emulsified Asphalt from surface. Use hand sprays to cover areas inaccessible to distributor and to correct deficient areas.

Surface Type	**Approximate Bar Rate Undiluted (gallons per square yard)**
New Asphalt	0.04 to 0.07
Existing Asphalt	0.06 to 0.11
Milled Surface	0.06 to 0.12
Portland Cement Concrete	0.05 to 0.08

(E) Protection of LTBC Emulsified Asphalt. Except for construction equipment directly connected with paving operations, keep traffic off LTBC Emulsified Asphalt.

Protect LTBC Emulsified Asphalt from damage until HMA layer is placed. Repair LTBC Emulsified Asphalt damage at no increase in contract price or contract time.

408.04 Method of Measurement. The Engineer will not measure LTBC Emulsified Asphalt for payment.

408.05 Payment. The Engineer will not pay for LTBC Emulsified Asphalt separately and will consider the cost for LTBC Emulsified Asphalt as included in the contract prices for the various HMA and Portland cement concrete pavement contract pay items. The cost is for the work prescribed in this section and the contract documents.

END OF SECTION 408”

SECTION 411 - PORTLAND CEMENT CONCRETE PAVEMENT

Make the following amendments to said Section:

(I) Amend **Subsection 411.03(I)(1) — General** by revising the first paragraph from line 205 to 210 to read:

> **"(1)** General. Make advance arrangements for preventing delay in concrete delivery and placement. An interval of more than 30 minutes between placement of two consecutive batches or loads shall constitute cause for stopping paving operations and requiring construction joint to be placed, at no increase in contract price or contract time, at location and of the type ordered by the Engineer."

(II) Amend **411.04 — Measurement** by revising lines 955 to 961 to read as follows:

"411.04 Measurement.

The Engineer will measure concrete pavement per cubic yard in accordance with the contract documents."

(III) Amend **411.05 — Payment** by revising lines 971 to 983 to read as follows:

"**Pay Item**	**Pay Unit**
11-Inch Concrete Pavement	Cubic Yard

The Engineer will not pay for longitudinal joints, transverse expansion joints, transverse contraction joints, or construction joints separately and will consider the cost for those items as included in the contract price for the concrete pavement pay item. The cost is for the work prescribed in this section, Section 411 — Portland Cement Concrete Pavement, and the contract documents."

END OF SECTION 411

SECTION 414 – RECONSTRUCTION OF WEAKENED PAVEMENT AREAS

Make the following amendments to said Section:

(I) Amend **414.03 – Construction** by revising lines 20 to 24 to read as follows:

"If unsuitable material is encountered at bottom of the specified excavation, or unsuitable material is encountered, remove unsuitable material. Install a triaxial geogrid following the manufacturer's recommendations at the limits of the excavation, i.e., subgrade after the subgrade is compacted. Backfill, and compact in accordance with Section 304 - Aggregate Base Course or Section 305 - Aggregate Subbase Course. Dispose of excavated material in accordance with Subsection 201.03(F) - Removal and Disposal of Material."

(II) Amend **414.04 – Measurement** by revising lines 28 to 29 to read as follows:

"The Engineer will measure furnishing and installing geogrid per square yard in accordance with the contract documents."

(II) Amend **414.05 - Payment** by adding the following after lines 59:

"Furnishing and Installing Geogrid (GlassGrid 8511TF) Square Yard

Furnishing and Installing Geogrid (PG100) Square Yard"

END OF SECTION 414

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

SECTION 503 - CONCRETE STRUCTURES

Amend Section 503 – Concrete Structures to read as follows:

"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
Macro-Synthetic Fibers for Concrete Reinforcement	719

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 foundations in accordance with Section 205 - Excavation and Backfill for Bridge and Retaining Structures, Section 206 – Excavation and Backfill for Drainage Facilities, 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, formwork, 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.

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 for results obtained by using such drawings and calculations.

Use AASHTO LRFD Bridge Specifications 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. When the aforementioned is within the clear zone install a barrier system 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, material to fall on the traveling public, pedestrians, roadway, roadside, etc.

Maintain falsework, scaffolding, or work until its removal. 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 deflections of the 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 resulting from concrete placement. Discontinue concrete placement when settlements deviate more than ± 3/8 inch from those indicated on falsework drawings. In such affected areas, provide corrective measures before the 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 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 the 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 conforming 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 conforming 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 mortar tight and sufficiently rigid to prevent distortion due to the pressure of concrete and other loads, including vibration, incidental to construction. Construct and maintain forms to prevent joints from opening.

Unless otherwise indicated in the Contract Documents, place a minimum ¾-inch by ¾-inch chamfer at sharp corners. Give girder

and coping forms a bevel or draft 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 the forms watertight below high-water level.

Cover knotholes and damaged areas in wood forms with metal patches.

Control the rate of depositing concrete in forms to prevent form deflection or form panels that exceed permitted deflections. When the 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.

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 a 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.

Use plywood conforming 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 the 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 the 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 permits the ready release of forms and does 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 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 the 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 a Maximum Thickness of (Inches)	9		12		more than 12	
Removal Time (Days)	7		10		14	
Walls, Columns, and Vertical Sides of Beams With a 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 a 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 the reshoring system immediately after each form panel is removed and before the release of supports for adjacent form panels.

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 the concrete top slab of the 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 the inside of the 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.

Falsework for concrete box culverts and other concrete structures with top slabs or decks lower than roadway pavement and with spans of 14 feet or less, may be released when concrete strength reaches 1,500 psi, provided the top slab is reshored and the curing of the concrete is not interrupted. Do not impose loads (including backfill) on the structure until the concrete attains the required 28-day compressive strength.

(E) Loading. Inducing loading, outside its own weight, onto any part of a structure, except abutment walls and wing walls, 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 the structure, within 15 days of concrete placement, will not be allowed. After a minimum of 15 days have 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 produce more than the 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 must 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 that 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 must 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 the method and the 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 a 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 the 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 materials, and dust from falling onto the wet concrete surface. If the concrete has set, clean reinforcing steel in a manner that must not be detrimental to concrete to reinforcing steel bond.

(2) Box Culverts. Place and allow the base slab or footings of box culverts to set for at least 12 hours before constructing the remainder of the culvert. Monolithically construct sidewalls and a top slab of box culverts 4 feet or less, in height.

When constructing box culverts that are more than 4 feet in height, 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 the bottom slab of the 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 for 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 a suspended span until adjacent continuous spans are completely 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 the 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 of 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 at its desired location and vibrating it. Vibrate sufficiently to compact but avoid prolonging vibration to the point where segregation occurs.

(6) Depositing Concrete Underwater. Do not deposit concrete underwater except cofferdam seals, tremie concrete, and drilled shaft concrete. Use seal concrete complying with Section 601 – Structural Concrete unless specified otherwise, for cofferdam seal concrete deposited underwater. Deposit drilled shaft concrete underwater in accordance with Section 511 – Drilled Shafts.

Place concrete underwater in a compact mass in its final position by tremie or closed-bottom-dump bucket. Do not disturb deposited concrete after placement. Maintain still water at the point of deposit.

Tremie consists of a tube having an inside diameter at least 6 times the maximum size of aggregate used in concrete mix and not less than 10 inches, constructed in sections having flanged couplings, fitted with gaskets. Tremie must not contain aluminum parts that may come in contact with concrete, including pump and discharge lines. Equip the tube with receiving hopper at the top and a device that closes the discharge end to prevent water from entering the tube, while the tube is being charged with concrete. Support tremie to permit free movement of discharge end over the entire top surface of work and rapid lowering, when necessary, to retard or stop the flow of concrete.

Close and seal discharge end entirely at the start of work to prevent water from entering the tube. Keep the tremie tube full to the bottom of the hopper. When a batch is dumped into the hopper, induce concrete flow by slightly raising the discharge end, always keeping the discharge end in the deposited concrete. Maintain continuous flow until work is completed.

Use an underwater bucket with open top and bottom doors that open freely outward, when tripped. Completely fill and slowly lower the bucket, to avoid backwash. Discharge bucket only when bucket rests on the surface upon which concrete is to be deposited. After discharge, raise the bucket slowly until well above the concrete. The use of bottom dump buckets for the bottom seal around foundation piling will not be allowed.

Submit concrete seal design calculations and working drawings, prepared, stamped, and signed by Hawaii Licensed

Structural Engineer. The exact thickness of the concrete seal must depend upon the hydrostatic head, bond, pile spacing, and cofferdam size. Construct a concrete seal after the Engineer accepts the design. Allow the seal to remain in place for not less than 7 days before dewatering. After sufficient time has elapsed, dewater the cofferdam, and remove scum, laitance, and sediment from the concrete. Before depositing fresh footing concrete, remove local high spots, as necessary, to ensure proper clearance for footing reinforcing steel.

(7) Hot Weather Concreting. When the ambient temperature is expected to meet or exceed 75 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, 6and 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 may occur during the 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 the 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 methods 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 the 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 reinforcement, embedments, or forms is greater than 120°F, use a fine mist of water, e.g., fogger to moisten and cool hot surfaces to below 120°F. 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.

(8) 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 an evaporation retarder and a 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 may 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.

(9) Certified Concrete Flatwork Finisher Requirement. Perform the placement and finishing operations of concrete flatwork with a minimum ratio of one certified Advanced Concrete Flatwork Finisher (formerly Concrete Flatwork Finisher and Technician) who has a minimum of 4,500 hours of on-the-job finishing experience (Advanced Concrete Flatwork Finisher) per three concrete finishers (concrete finishers without Advanced Concrete Flatwork Finisher certificate and work experience) at each location on the project site having flatwork done. The concrete flatwork must be under the direct supervision of a certified Advanced Concrete Flatwork Finisher. Designate the certified c Advanced Concrete Flatwork Finisher who is to 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 Advanced Concrete Flatwork Finishers present.

i. 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.

ii. Areas that are not considered flatwork concrete are the top of foundations or structures that are to have backfill material placed directly on the concrete surface.

iii. Submit copies of the Advanced Concrete Flatwork Finisher'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 Advanced Concrete Flatwork Finisher 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 Advanced Concrete Flatwork Finisher Certification Program and to meet the finishing standards required by the Contract Documents.

iv. 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, Standard Plan B-01 unless otherwise stated in the Contract Documents

(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 all material delirious to bond strength, e.g., laitance, loose particles, dust, dirt, impervious membrane curing compound, or 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 existing surface with water to a saturated surface-dry condition remove ponding water immediately before placing new concrete. Place concrete in substructures so that horizontal construction joints are truly horizontal. Where possible, place joints such that they are 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 conforming to ASTM D 4586. Do not nail the premolded expansion joint filler to the concrete or use a fastening method that cannot compress more than the thickness of the premolded expansion joint filler. When necessary, use more than one piece to cover the surface, and fasten and hold abutting ends in shape by stapling. Cover the joint between separate pieces with a layer of two-ply roofing felt and cover one side with cold asphalt roofing cement conforming to ASTM D 4586, Standard Specification for Asphalt Roof Cement, Asbestos-Free. Fill 1/4-inch space along edges at exposed faces with wooden strips of the same thickness as joint material. Saturate wooden strips with form oil and provide sufficient draft to make wooden strips readily removable after the concrete has cured. 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 the 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, use hot-dipped zinc-coating 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, i.e., movement.

(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 the 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 conforming to ASTM D 1668, Standard Specification for Glass Fabrics (Woven and Treated) for Roofing and Waterproofing, 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 the joint and remove the non-compliant joint sealer then place a 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 a seal so that it cannot be abraded or pulled out by traffic, and it must effectively keep foreign material from entering the joint. Correct spalls and protrusions in the joint before installation of the seal.

Install the preformed seal in one continuous piece without field splices.

Place the 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 the 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 must not be allowed.

Protect the 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 the seal after increasing the joint width to a 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.

Apply flashing compound as recommended by the manufacturer.

(J) Concrete Exposed to Sea Water. In concrete structures exposed to seawater, construction joints must 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 or temporarily in freshwater, must be cured for a period sufficient to prevent washing out of cement, but not less than 5 days, and then it must be submerged immediately.

(3) Cast-in-place parts of a structure to be submerged in or exposed to brackish or seawater must have its forms left in place for a minimum of 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 the 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.

(1) The Adequacy of a Curing Method. The procedures for protecting and curing concrete will be considered adequate if all of the following conditions are met or exceeded:

(a) The average strength of field-cured cylinders at the test age designated for determination of **f'c** is equal to or at least 85 percent of that of companion standard-cured cylinders

(b) The 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.

(2) Water Curing. Water cure by keeping the concrete surface 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.

Before the moisture sheen disappears from the concrete surface, apply moisture to the entire exposed concrete surface using a fog spray with an atomizing nozzle. Continue applying moisture to the surface until regular curing begins if another curing method is to be used. Use an adequate water supply and sufficient moisture to fog and water-cure concrete without damaging the surface or texture of the 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. Do not allow water to cause rilling concrete surface.

(3) Impervious Membrane Curing. Seal the concrete surface thoroughly with a liquid membrane-forming compound. Apply the

compound uniformly in two or more applications. Use for each coat a ratio of at least 1 gallon for every 100 square feet of concrete surface.

The impervious membrane **c**uring 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)(7) ”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, instead 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 cannot 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 may 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 a new curing treatment to the affected area, duplicating the first application.

(4) 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.

(5) 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 but not a lithium sealer 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 that have been accepted by the Engineer. A lithium curing compound must not be used as a white-pigmented curing compound unless it is sufficiently white-pigmented.

(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 poured. 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, wet and fill pockets with mortar that has exposed reinforcing steel. Scattered pockets or pinholes less than 1/2 inch long or wide and less than 3/8-inch deep do not have to be cleaned and filled unless they 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 elevation.

(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 the 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 the rate along the centerline of the roadway. Employ experienced operators and concrete flatwork 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 and completed before the initial concrete set, or the duration of the stoppage of the placement of the concrete has reached 30 minutes whichever occurs first install the bulkhead at a location designated by the Engineer. Remove concrete placed beyond the bulkhead and remove concrete from reinforcing steel or other embedded objects.

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. The strike-off height of the concrete must not exceed 3 inches.

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 the 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 for the hardened concrete surface.

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 the concrete of the 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 12-foot straight edge.

Grind high areas in the hardened surface, leaving a finished texture that is not smooth or polished. Produce diamond grind the 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 a method of correcting low areas. Begin remediation of low spots only after the Engineer accepts the 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 unless otherwise directed.

When the deck width is 4 feet or less, finishing methods other than those specified herein may be used, provided the completed deck surface conforms 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 conforming 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 (loaded the same amount it can be during the concrete pour) 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 it is anticipated to be used during the production concrete placement, i.e., carrying production loads. Make necessary corrections at this time. Machines must be setup so that minimal hand finishing is required.

After placing and consolidating the concrete, strike off the surface of the 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 the concrete by the following means: a hand-operated longitudinal float board, or finishing machine equipped with longitudinal float, or a

rotating element followed by a drag float pan.

Use a longitudinal float on the 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 may 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 the 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 the manufacturer's operators and parts manual for dual-purpose alternative machines 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 inches 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 the texturing operation and must not be attached to other paving-train equipment. Artificial turf must be the full pavement width of the pavement being paved and of sufficient size that during finishing operation, approximately 2 feet of turf, parallel to the 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 the grooving device to produce a uniform pattern of grooves parallel to the 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, tines must be lowered down again into the same grooves it previously made. 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 unless it is to have a Next Generation Concrete Surface (NGCS) texture, 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 they must not be used as a substitute for the mechanical device.

Ramps, tapers, and miscellaneous areas may be textured manually when requested from the Engineer and accepted. Indicate in the paving plan the areas that must 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 a 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 a template or strike board made 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 with a float tool 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 the 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. Wet down the base or ground onto which the concrete is to be placed just before

concrete placement to a near-saturated surface dry (SSD) condition. Remove any ponds or puddles or standing water before placing concrete.

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 the sidewalk as a plane surface with a 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.

For the top surfaces of decks, ramps, and approach ramps for pedestrian structures and the top surfaces of sidewalks provide an abrasive coating to the surface unless otherwise required in the Contract Documents.

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 are not acceptable methods of support and all concrete placed in such a manner must be removed and replaced at the Contractor's cost with no increase in contract time.

(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 the bridge site and adjacent highway in neat, restored, and presentable condition. Remove excavated material or falsework placed in the stream channel during construction before the pre-final inspection.

(0) 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

(P) Quality Control Using New Technology. The Engineer and MTRB reserves the right to utilize new technology and methods to improve the detection of non-compliant 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, out-of-positioned reinforcing steel, dowels, thin sections, voids, non-compliant compaction, or other non-destructive testing or other methods 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 or unacceptable on its results by the Engineer and no further testing will be required. These new technologies and methods may be used for the selection of sampling locations.

503.04 Measurement. The Engineer will measure concrete off the contract plans in Linear Foot and Each, or with measurements taken in the field.

The Engineer will not make deductions for the volume occupied by reinforcing steel, piles, floor drains, weepholes, timber bumpers, pipes less than eight inches, conduits, or expansion joint materials.

503.05 Payment. The Engineer will pay for the accepted quantities of concrete complete in place at the unit price for the pay items listed below and contained in the proposal.

The unit price paid will be full compensation for the concrete; for placing, curing, and finishing; for furnishing materials including admixtures, cement (including extra cement added to concrete deposited under water); SCMs, carbon-footprint reduction methods, and material, e.g., micro and macro fibers, admixtures. Also, must be included are the furnishing and installation of drains, scuppers, premolded joint fillers, joint seals, waterproofing at construction joints, waterstops, pipes, and conduits. Included in the lump sum or unit price are the furnishing, installation, removal, and disposal of anchor bolts, structural shapes for expansion joints, and other similar items; also, timber bumpers, forms, form linings, falsework, or centering, bearing pads, structural steel bearing plates. Also included must be equipment, tools, labor, materials, and incidentals necessary to complete the work as 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
Retaining Wall (Traffic Counting Station Cabinet), Max Height 5.0’	Linear Foot
34” Type KAT Transition	Each
Modified 34” Type KAT Concrete Transition	Linear Foot
Concrete Patch on Existing Guardrail End Posts	Each
MGS Connection to Abutment and Walls (Caltrans A77U3)	Each
34” Tall Aesthetic Concrete Bridge Rail	Linear Foot
Type D2 End Post	Each

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 and Section 206 – Excavation and Backfill for Drainage Facilities

END OF SECTION 503”

SECTION 507 – RAILING

Make the following amendments to said Section:

(I) Amend **507.02 – Materials** by adding the following after line 24:

"All concrete must comply with the CO2 footprint reduction requirements of Section 601 – Structural Concrete."

(II) Amend **507.04 – Measurement** by revising lines 171 to 172 to read as follows:

"**507.04 Measurement.** The Engineer will measure railings of the various types by the linear foot. The Engineer will make the measurement along the centerline and from end to end of the railing."

(III) Amend **507.05 – Payment** by revising lines 174 to 186 to read as follows:

"**507.05 Payment.** The Engineer will pay for the accepted quantities of railings per linear foot as shown in the proposal.

Payment will be full compensation for work prescribed in this section and the contract documents. Reinforcing steel and dowels for concrete railings shall be considered incidental to the various pay items.

The Engineer will pay for the following pay item when included in the proposal schedule:

Pay Item	**Pay Unit**
Metal Bridge Railing	Linear Foot
Concrete Bridge Railing	Linear Foot"

END OF SECTION 507

Make the following Section a part of the Standard Specifications:

"SECTION 512 - CONCRETE REHABILITATION

512.01 Description. This specification governs the rehabilitation of damaged or deteriorated structural concrete for the surfaces of bridge railings, sidewalks, and surfaces indicated.

The work shall comply with and conform to the standard practices and codes as set forth by the American Concrete Institute, the Concrete Reinforcing Steel Institute, the "Uniform Building Code", "International Building Code 2018 ", and "AASHTO LRFD Bridge Design Specifications", Eighth Edition, 2017.

512.02 Materials and Equipment.

(A) Materials for Shoring and Bracing. Use commercially manufactured and engineered shoring and bracing systems and components to the extent practical. Timber members of non-manufactured shoring systems, must be designed in accordance with the provisions of the AASHTO LRFD Bridge Specifications. Members of manufactured shoring systems, consisting of pre-engineered components designed and produced specifically for structural shoring, must be used in accordance with the manufacturer's recommendations.

(B) Materials and Equipment for Concrete Preparation. Materials, equipment means and methods used for concrete removal and surface preparation must be selected and used such as to minimize damage to the structure and to the concrete substrate that remains.

(C) Materials and Equipment for Concrete Removal. Removal materials, equipment, and techniques must be suitable to produce required concrete surface profiles and level of cleanliness in designated areas.

Concrete Breakers to have sharp tips to minimize microcracking damage in partial depth removal. Use hand-held breakers to accomplish the work.

(D) Other Materials and Equipment for Cleaning. Use equipment that delivers oil-free air capable of cleaning loose material and debris from repair areas at recommended pressures and volumes by repair material manufacturer. If necessary to dry the concrete surface, clean, dry, compressed air may be used. Also, use vacuums capable of removing loose material and debris.

(E) Formwork and Embedded Items. Formwork and embedded items must meet the requirements specified in Section 503 – Concrete Structures. Install and remove formwork without damaging or staining the existing structure or repair material.

Forms used for polymer concrete/mortars must be tight enough to hold the material that is used without leaking. All surfaces where bond is not desired, but which are exposed to the monomer or resin, must be treated with a form release agent.

(F) Packaged and proprietary materials.

(1) Packaged, Rapid Hardening Concrete Repair Materials. Packaged, rapid hardening concrete repair materials shall conform to ASTM C928/C928M.

(2) Packaged, Mortar and Concrete. Packaged, mortar and concrete must conform ASTM C387/C387M.

(3) Rapid Hardening Cement. Rapid hardening cement shall conform to ASTM C1600/C1600M.

(4) Water. Water used with packaged and proprietary materials must meet ASTM C1602/C1602M requirements.

(5) Aggregates. Aggregates must meet the repair material manufacturer's requirements if available and ASTM C33/C33M if such requirements are not specified.

(6) Epoxies.

(a) Epoxy mortars and epoxy compounds must conform to ASTM C881/C881M, Type IV, Class C, Grade 1 or 3.

(b) Epoxy mortars used for repairing defects in hardened Portland cement concrete must meet the requirements of ACI 503.2-503.4.

(c) Epoxy used for crack repair must meet the requirements of ACI 503.7.

(G) Mixture Proportioning. Proportioning and mixing materials must follow the requirements provided by the repair material manufacturer.

(H) Miscellaneous Equipment. Equipment designed specifically for the application of repair materials must be used as required by the repair

material manufacturer and the referenced specification. Equipment used for repairs must be clean and in good operating condition. All supplies and equipment must be available in sufficient quantities to allow continuity in the installation project and quality assurance.

512.03 Construction.

(A) Shop Drawings. Submit 6 sets of detailed shop drawings required for the repairs that indicate sequence and procedures for the work, locations and sizes of reinforcing.

(B) Reports. Submit the following:

(1) Prepare a work plan describing the methods of concrete removal and repair, including methods, equipment and materials to be used for each feature. Submit the work plan for approval at least 30 days prior to the start of the work. The plan must include, but not be limited to, repair materials to be used with specific information on products and/or constituents, and requirements for handling, storage, etc., equipment to be used, surface preparation, and requirements for placement, finishing, curing and protection specific to the materials used. Include a description of field demonstrations in the work plan. Include protection measures for pedestrians, motorized traffic, mechanical, electrical, and plumbing equipment, surrounding construction, project site, landscaping, and surrounding structures. Do not commence work until the work plan and field demonstration representative of the type of work are approved.

(2) Miscellaneous materials and equipment.

(3) Formwork and Shoring. The Contractor shall retain a Hawaii Licensed Structural Engineer to review and stamp the design and plan of formwork and shoring.

(4) Submit the repair procedures for executing the work as well as the test data and documentation on materials used for repair. Submittal must include component materials, mixture proportions, and supplier's quality control program.

(5) Mixture Proportioning.

(6) Quality Control.

(7) Equipment for Concrete Preparation.

(8) Miscellaneous Materials and Equipment.

(9) Contractor Qualifications. Submit documentation that the contractor performing the repair work must have been involved in a minimum of 3 concrete repair projects similar in size and scope to this project for at least 5 years. Submit information, including name, dollar value, date, and point-of-contact for similar projects which demonstrates the required experience and/or training.

(10) Worker Qualifications. Each worker engaged in the use of specialized removal or application equipment must have satisfactorily completed an instruction program and three years of experience in the operation of the equipment. Workers installing adhesive anchors must be ACI Post Installed Concrete Anchor Installer certified or equivalent.

(11) Manufacturer's Safety Date Sheet. Submit manufacturer's Safety Data Sheets for all polymers as well as other potentially hazardous materials to protect personnel from overexposure to toxic materials, conform to the applicable manufacturer's safety data sheets or local regulations.

(C) Examination. Verify location of unsound concrete or delamination as noted on the drawings using hammer sounding or chain drag sound methods in accordance to ASTM D4580/D4580M. Denote and mark perimeter boundaries and notify the Engineer to approve the unsound concrete layout boundaries.

(D) Protection. Protect pedestrians, motorized traffic, mechanical, electrical, and plumbing equipment, surrounding construction, project site, landscaping, and surrounding buildings from damage or injury resulting from concrete rehabilitation work. Construct dust and debris barriers surrounding repair work perimeter to control dust and to protect and control construction traffic. Dispose of runoff from wet demolition or surface preparation operations in accordance with all local ordinances. Disposal methods must avoid soil erosion, avoid undermining pavements and foundations, damage to landscaping and vegetation, and minimize water penetration through other parts of buildings. Collect and neutralize alkaline wastes and acid wastes and dispose in accordance with local, state, and Federal regulations. Comply with local noise ordinances during demolition operations. Perform demolition work and surface preparation work in a manner that minimizes disturbances of operations. Coordinate work with the Engineer.

(E) Appearance. The repaired concrete surfaces shall match the texture of the adjacent concrete surfaces. Surfaces not meeting the

requirements of the Contract Documents must be brought into compliance using means accepted by the Engineer.

(F) Formwork and Shoring. Construct forms to sizes, shapes, lines, and dimensions to match existing adjacent surfaces and textures. Provide forms that match openings, offsets, chamfers, anchorages, inserts and other features. Provide forms for easy removal to minimize damage to concrete surfaces and adjacent surfaces. Apply form release coating over formwork surfaces prior to each concrete placement. Form release agents must not be applied to or come in contact with the repair area concrete substrate or reinforcement.

Do not damage repair material during removal of formwork for columns, walls, sides of beams, and other parts not supporting weight of concrete or repair material. Perform needed repair and treatment required on vertical surfaces at once and follow immediately with specified curing. Remove all formwork anchors embedded in existing concrete. Fill anchor holes and repair all damage to existing concrete at anchor holes.

Provide shoring in accordance with the shoring drawings prior to performing work to brace the substrate structure temporarily while repair work is proceeding. Shoring designs must be submitted to and approved by the Engineer prior to work commencing. Leave formwork and shoring in place to support existing loads, construction loads and weight of repair material in beams, slabs, and other structural members until in-place strength of repair material has attained adequate strength and curing.

(G) Concrete Preparation. Remove concrete as needed per the removal requirements of this section. Limits on removal equipment are specified in the above paragraphs. Remove foreign material, such as dirt, oil, grease, or other chemicals, from the cracks before injection using compressed air, low-pressure water, or vacuuming as recommended by material manufacturer. Allow wet surfaces to dry at least 24 hours.

Immediately before placing the repair material or installing formwork, make the repair area available for inspection by the Engineer. Obtain acceptance by the Engineer of surface preparation before proceeding with Work. If the Work is rejected, perform additional operations to the satisfaction of Engineer.

(H) Concrete Removal.

(1) Remove concrete from repair areas to indicated depth and profile. Notify the Engineer if additional delaminated, fractured, or unsound concrete is present.

(2) Do not damage embedded reinforcing and adjacent concrete. The removal methods must produce minimal microcracking (bruising) of the prepared substrate surfaces. Avoid directly striking reinforcing steel with impact tools used for concrete removal.

(3) Provide perpendicular edges at perimeter of repair area. The perimeter of the repair areas must be having a depth which shall match repair material minimum thickness recommendation. For vertical or overhead surfaces, provide 45-degree slope at repair boundaries to facilitate air and rebound escape. Do not cut or damage embedded reinforcement or other embedded items. If embedded reinforcing steel or other embedded items are too close to the surface to provide the perpendicular edge cut, notify the Engineer for direction before proceeding.

(4) Extend concrete removal along the corroded reinforcing steel to a point where there is no further delamination, concrete cracking, or reinforcing steel corrosion, and where the reinforcement is bonded to the surrounding concrete.

(5) Remove concrete around the exposed layer of reinforcement to a uniform depth beyond within the repair areas to provide a minimum clearance between exposed reinforcing steel and surrounding concrete of 0.75 in.

(6) Observe manufacturer's recommended maximum lift thickness and procedures for lift placements for area that exceed recommended maximum material thickness.

(I) Preparation of Concrete Substrate Surface. Remove loosely bonded concrete, bruised or fractured concrete, and bond-inhibiting materials such as dirt, concrete slurry, or any other detrimental materials from the concrete substrate using approved methods. Where concrete has been removed by impact methods, abrasive blasting must be used to prepare the surface and remove bruised concrete. Prepare substrate surface profiles as required by manufacture of repair material. Visually inspect and sound substrate surface to confirm that no further delaminations or otherwise unsound concrete remains. If encountered, notify the Engineer.

(J) Concrete Patching. Configure geometry of removal area to maximize the use of right-angle geometry, avoiding reentrant corners, and to obtain uniformity of depth. Determine the depth, location, and size of reinforcing bars prior to removal of concrete. Inspect the marked boundaries with the Engineer prior to commencing with the concrete removal. Revise the repair area boundaries as instructed by the Engineer.

(K) Existing Reinforcement Preparation. Clean existing reinforcement that will remain. Remove corrosion and/or other laitance and notify the Engineer if section loss is greater than 20 percent.

(L) Placement of Repair Materials.

(1) Follow repair material manufacturer's requirements for substrate and material temperature, cleanliness, and moisture.

(2) Comply with the repair material manufacturer's requirements for batching, mixing, placing and curing repair materials.

(3) Review consistency of the mixed repair material(s) relative to the parameters documented in the repair material manufacturer product data sheet. If non-conforming, adjust consistency in compliance with the repair material manufacturer's requirements.

(4) Follow repair material manufacturer's requirements for the procedures of applying or installing repair material(s). Apply or install repair material(s) within the application time frame (pot life) requirements of the repair material manufacturer's requirements, and place and consolidate to provide well-compacted repair.

(5) Finish and tool repair materials, finished in accordance with the repair material manufacturer's written instructions and as indicated in Contract Documents.

(6) Protect installed repair material(s) from damage, exposure to environmental conditions that are detrimental to the uncured or cured properties of the material. Cure in accordance with the requirements of the repair material manufacturer's requirements.

(M) Curing. For packaged materials follow manufacturer's requirements for curing and need to open highway back up to motorist by 4:30am.

(N) Clean up. Clean and remove all spills and leaks and stains caused by the repair materials. Dispose wastewater used for cutting and cleaning without staining or damaging the existing surfaces of the structure or the environment of the project area.

(O) Protection of Completed Rehabilitation Work. Do not allow construction loads to exceed the loads that a structural member or structure is safely capable of supporting without damage. Provide supplemental support if construction loads are expected to exceed safe

load capacity. Protect repaired and adjacent areas from damage by construction traffic, equipment, and materials. During the curing period, protect repair materials from damage by mechanical disturbances, including load-induced stresses, shock, and vibration. Protect repair materials from environmental damage by weather events during the length of the curing period.

(P) Crack Repair.

(1) Preparation.

(a) Clean all cracks in concrete of debris, defective concrete and items that could reduce bond strength using manufacturer's recommendations.

(b) Inspect surfaces adjacent to crack to receive repair material. If deteriorated, route a V-groove section at the crack face until sound concrete is reached.

(c) For epoxy injection (cracks are 1/32 to 1/8inch wide), apply a surface seal over all exterior faces of the crack that can be reached to contain the injection adhesive in the crack.

(d) For gravity fill repairs (cracks are equal or greater than 1/8inch), apply a surface seal along the bottom surface of the element that can be reached to contain the repair material in the crack.

(2) Epoxy Injection.

(a) Install the injection entry and venting ports using flush mounted or drilled fittings per proprietary manufacturer's instructions.

(b) Space the ports at 8 in.

(c) Inject the epoxy using material manufacturer's recommended equipment.

(d) Apply at recommended manufacturer's injection pressure.

(e) For vertical or inclined cracks, apply injection by pumping epoxy into entry ports at the lowest elevation, cap, and move upward.

(f) For horizontal cracks, apply injection by proceeding from one end of the crack to the other until the crack is fully sealed.

(g) After 10 minutes, repeat injection procedure until all ports refuse injection.

(h) Remove ports and remove the surface seal by chipping, or grinding or other acceptable means after the injected epoxy has cured.

(3) Gravity Fill.

(a) Mix resin per material manufacturer's instructions.

(b) Pre-fill cracks equal or greater than 1/8 in. wide with #20 silica sand.

(c) Pour resin or monomer onto the surface, over the cracks and spread with brooms, rollers, or squeegees.

(d) Work material back and forth over the cracks to maximize fill in crack.

(e) Allow at least 20 minutes for material to penetrate cracks.

(f) Remove excess material once cracks have been filled to refusal.

(g) Allow material to cure per material manufacturer's recommendations.

512.04 Measurement.

(A) The Engineer will measure concrete rehabilitation of cracks per linear foot in accordance with the contract documents.

(B) The Engineer will measure concrete rehabilitation of spalls per square feet in accordance with the contract documents.

512.05 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**
Concrete Rehabilitation of Cracks	Linear Foot

Concrete Rehabilitation of Spalls Square Feet”

END OF SECTION 512

Make the following Section a part of the Standard Specifications:

"SECTION 520 – BRIDGE JOINT REPAIR AND REPLACEMENT

520.01 Description. This work includes removal and disposal of existing bridge joints, cleaning the concrete surface, installing new bridge joint systems, and sealing raised curbs and parapets.

520.02 Materials. For bridge joints repairs, Contractor shall install Expansion Joint System (XJS) manufactured by Silicone Specialties, Inc. (SSI) or equivalent. Contractor shall submit six copies of the manufacturer's specifications, recommendations and details to the Engineer three weeks before its use.

(A) Bridge Joint Header Material. The polymer mortar material shall be Silspec 900 or equivalent with Silspec 900 Blended Aggregate or equivalent. The polymer binder is a two-component, rapid curing liquid that cures to a dense, semi-flexible, weather, abrasion and impact resistant polymer mortar. The aggregate shall be furnished by the manufacturer. A polyurethane based header material will not be accepted. The material shall have the following properties:

(1) Mixed Cured Polymer Without Aggregate:

Tensile Strength, 900 PSI min. (ASTM D 638)
Elongation, 45-55% (ASTM D 638)
Shore D Hardness @ 77° F., 45-75 (ASTM D 2240)
Gel Time, 20-50 minutes (AASHTO M200)

(2) Mixed Cured Polymer With Aggregate:

Compressive Strength at 24 hours, 2500 PSI min. (ASTM C 579, Method B)
Shear Strength, 700 PSI min. (ASTM C 882)
Abrasion Resistance, 1.0 max (ASTM C 501, Taber H-22)
Resilience, 70% min. (OK/OHD L-6)

(B) Bridge Joint Sealant Material. The joint sealant material shall be DOWSIL 902 RCS (Rapid Cure Silicone) or equivalent, a self-leveling, cold-applied and rapid-curing material. It is a two-part, easy-to-install, ultra- low-modulus, 100 percent silicone rubber sealant designed to seal expansion joints. The Joint Sealant shall meet the following physical requirements.

Skin overtime at 77° F, 20 minutes max.
Joint Elongation, 1200% min. (ASTM D 412, Die C)
Modulus @ 100%, 3-12 PSI (ASTM D 412, Die C)

(C) Bridge Joint Backer Rod Material. Provide a backer rod material that is extruded, soft type, low-density polyethylene, with a skin-like outer texture that will not bond to the silicone sealant.

(D) Raised Curb and Bridge Parapet Joint Material. The sealant shall conform to the following:

(1)	Poured Joint Sealer	705.04(A)
(2)	Backer Rod	AASHTO M 153, Type 1

520.03 Construction Requirements. Completely remove existing joint system. Cut off fastening bolts flush with the concrete surface. Completely remove all traces of adhesives or bituminous substances. Additional cleaning and abrasive blasting shall be per the manufacturer's recommendations. Compressed air shall be free of moisture, oil and contaminants.

Repair all spalled concrete under the joints as recommended by the manufacturer and as ordered by the Engineer. Unnecessary damage caused to the concrete by the Contractor in the removal of the existing joint system shall be repaired at no cost to the State.

The cleaned concrete channels shall be inspected and accepted by the Engineer before the installation of the header material. The Engineer shall inspect for proper depth, width, alignment and preparation as detailed in the plans and manufacturer's literature.

Mixing, placing and curing of the header material shall be in accordance with the manufacturer's recommendations. The surrounding materials shall be completely dry prior to placement of the header and joint materials. The Contractor shall be prepared to keep all materials completely dry if it rains during the installation and curing. The Contractor shall remove and reinstall joints that are installed or cured in moist conditions at no cost to the State.

Remove the temporary joint form when the header has cured. Abrasive blast the joint faces to remove all residues from the form material and other contaminants.

The Engineer shall inspect the header before the installation of the joint material.

Apply primer to the joint faces in accordance with the manufacturer. Install backer rod and sealant in accordance with the manufacturer.

A qualified representative of the manufacturer shall be present at the start of work to ensure proper installation.

520.04 Measurement. The Engineer will measure bridge joint repair per linear foot.

520.05 Payment. The Engineer will pay for the accepted pay item 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 contract documents.

The Engineer will pay for the following pay item when included in the proposal schedule:

Pay Item	**Pay Unit**
Bridge Joint Repair	Linear Foot

The Engineer will pay for repairing of concrete spalling, if ordered by the Engineer, in accordance with Section 512 – Concrete Rehabilitation and under pay item 512.0200 Concrete Rehabilitation of Spalls.

END OF SECTION 520”

DIVISION 600 - MISCELLANEOUS CONSTRUCTION

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 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
Macro-Synthetic Fibers for Concrete Reinforcement	719

Use coarse aggregate for lightweight concrete conforming to ASTM C330 except for Sections 5, 7, and 9.

601.03 Construction.

(A) Quality Control. Portland Cement concrete production requires the Contractor's responsibility for quality control of materials during handling, blending, mixing, placement, and curing operations.

Sample, test, and inspect concrete to ensure the quality of the components, materials, and concrete using quality control methods and testing. Sampling and testing for quality control must be performed by certified ACI Concrete Field Technician Grade I who must follow the requirements of the standard test methods. Perform quality control tests for the slump, air content, temperature, unit weight, a Box Test for slip form concrete, or other required properties during the production of structural concrete other than concrete for incidental construction. Submit quality control test results.

Quality Control Using New Technology.

The Engineer and MTRB reserves the right to utilize new technology and methods to improve the detection of non-compliant 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, out of positioned reinforcing steel, dowels, thin sections, voids, non-compliant compaction, or other non-destructive testing or other methods 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 or unacceptable on its results by the Engineer and no further testing will be required. These new technologies and methods may be used for the selection of sampling locations.

(B) Design and Designation of Concrete. Design concrete mixture for concrete work specified. Submit mix design using the State Highways Division form DOT 4-151 or an equivalent form accepted by the Engineer. Do not start work until the Engineer accepts the mix design. The Engineer will accept a concrete mix design complying with the information given in Table 601.03-1 - Design of Concrete, and other pertinent requirements.

Whenever the concrete's 28-day compressive strength, f'_c, is 4,000 psi or greater, designate concrete by the required minimum 28-day compressive strength.

When the concrete's 28-day compressive strength, f'_c, is less than 4,000 psi listed in Table 601.03-1 – Design of Concrete, the properties listed are for design information, designation of a class, and minimum requirements.

Proportion concrete that is designated by a compressive strength so that the concrete conforms to the required strength.

Design concrete placed in bridge decks and pavements exposed to traffic wear, with an air content of 3 percent, unless otherwise specified, including entrapped and entrained air. Maintain air content for plastic concrete within a tolerance of 1 percent, plus or minus, during the work.

Use Class BD concrete in the bridge deck unless the concrete is designated by compressive strength. Incorporate into the bridge deck concrete: water-reducing, shrinkage-reducing, and migrating corrosion-inhibiting admixtures. Allow also, set-retarding admixtures in the concrete with the capability to vary the degree of retardation without adversely affecting other characteristics of concrete. Submit all the design admixture dosages.

Class A concrete must be used when the 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.

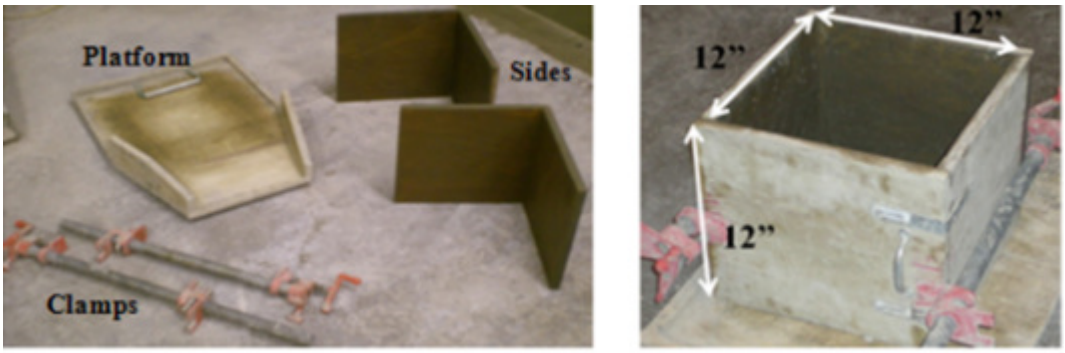
The reduced carbon footprint concrete mix design for all islands must have a reduction of Portland Cement content and still comply with the concrete design strength and other durability requirements as specified. See Table 601.03-1 Design of Concrete's specified limits for cement content, water cement 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 the mix 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.

Slipform Concrete Design – The Box Test method measures the response of a slip form concrete mixture to vibration and the ability of the concrete to hold a vertical edge, thus determining the workability and suitability of the concrete mixture for slip-formed paving applications

Dimensions of the Box Test



The Figure above shows the components and the constructed inside dimensions. The Box Test used:

4 pcs - ½" nominal thickness or greater HDO Plyform with a hard, semi-opaque surface of thermosetting phenolic resin-impregnated material for the Test Box form, with a length, width, and height such that when the Test Box is constructed must have internal dimensions of 12" X12" X 12".

1 pc - ½" nominal thickness or greater HDO Plyform with a hard, semi-opaque surface of thermosetting phenolic resin-impregnated material approximately 24" X 24" or greater for the platform. It is optional that the platform is constructed as shown in the photos.

4 pcs- 2" X 2" L-brackets to be attached at two opposite external corners to hold the two Plyform pieces in an L-shape. (More brackets may be used if determined it is needed to keep the Test Box forms square, ridged, and in an L-shape.) Screws, glue, etc. if used must not cause bulges or protrude into the interior of the form.

Two each - 1.5ft pipe clamps

I each - hand scoop

1 each - 1" square head pencil vibrator that must be able to vibrate at a minimum of 12,500 vibrations per minute. Provide a power source for the vibrator. Round-headed or larger vibrators must not be used.

1 each - ruler

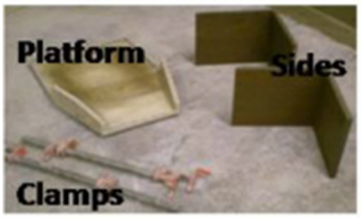
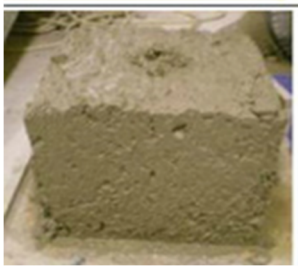
1 each – 16-inch by 24-inch L-shaped steel framing square.

1 each – 18 or 24-inch I-Beam Level Spirit Level Tool

The Box Test Steps

Sample concrete according to AASHTO R 60 Standard Practice for Sampling Freshly Mixed Concrete.

Dampen the forms and platform with form oil and assemble the Box Test components (forms, platform, and clamps) on a flat and level surface. The assembled 1 ft³ Test Box is held together by the pipe clamps and L-brackets on the platform. Scoop into the box the fresh concrete, each scoop must be uniformly distributed in the box, so each layer is approximately uniformly level. Stop the concrete placement when it reaches a height of approximately 9.5". Do not do any compaction during the placement of the concrete except for the dropping of concrete in the Test Box. With the vibrator at 12,500 vibrations per minute and keeping the head of the vibrator perpendicular to the platform and centered in the box, consolidate the concrete by inserting the 1" square head pencil vibrator. Take three seconds to lower the vibrator into the concrete until it almost reaches the bottom of the box. Do not touch the platform with the vibrator. Upon reaching the proximity of the bottom of the box immediately start raising the vibrator upward taking three seconds to remove the vibrator from the concrete. Do not do any further compaction or finishing of the concrete. Immediately, and carefully remove the pipe clamps from the side of the box, and then carefully with minimal disturbance of the concrete, remove the Box Test forms in an ascending vertical direction. Care must be taken to ensure the concrete will not stick to the L-shaped side wall forms. Immediately do a surface void evaluation and edge slump measurement of the concrete sample.

	**Step 1**	Gather the different components of the Box Test.
	**Step 2**	Construct box and place clamps tightly around box. Hand scoop mixture into box until the concrete height is 9.5" (241.3 mm).
	**Step 3**	Insert vibrator downward for 3 seconds and upward for 3 seconds. Remove vibrator.
	**Step 4**	After removing clamps and the forms, inspect the sides for surface voids and edge slumping.

Surface Void Evaluations

The grading of the response of a mixture to vibration must be assessed by comparing the surface voids observed on the sides of the box using Figure 3.

The void area for any of the four sides must not exceed what is shown in photo 2 of Figure 3, i.e., the void area must not be similar to the void areas shown in photos 3 and 4 or exceed them, to be considered an acceptable mix design for slip form pavement concrete.

If a mixture responded well to vibration, the overall surface voids should be minimal because the mortar was able to flow and fill these voids, hence the surface would have a small total void area. However, if the sides of the concrete formed by the box test had large amounts of surface voids, the mixture did not acceptably respond to the vibration. If the concrete did not respond acceptably to the vibration the mix design must be adjusted until the voids do not exceed the voids shown in photo 2 of Figure 3.

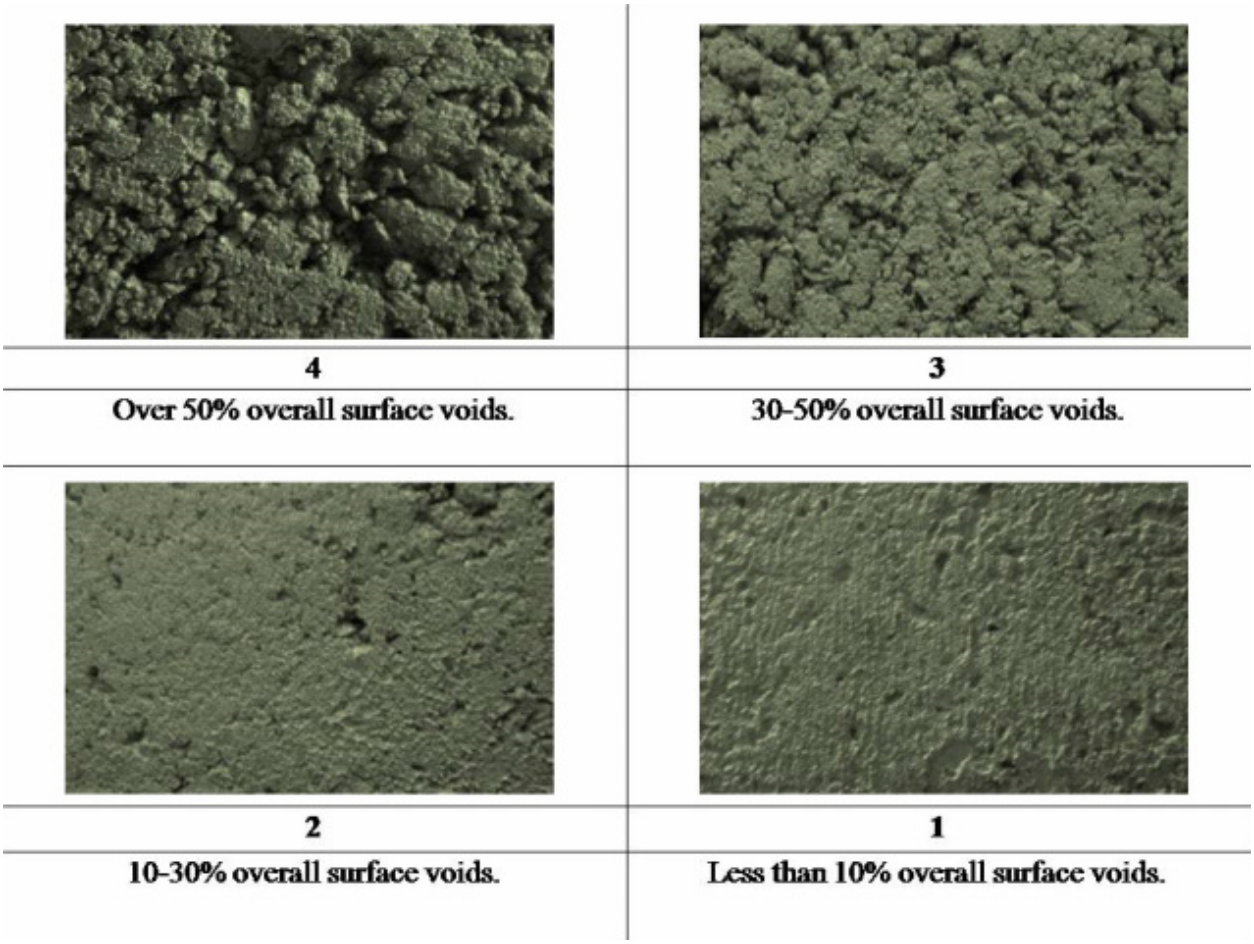


Figure 3 shows the estimated surface voids.

Top or Bottom Edge Slumping

The top or bottom edge slumping must be measured by placing an L-shaped steel framing square straightedge at the point the concrete sample protrudes at each face the most. Use the I-Beam Spirit Level and a tape measure or ruler with the L-shaped steel framing square to measure the distance between the I-Beam Level Spirit Level and the upper surface of the concrete sample along its edge. that is not protruding and is vertical to find the length of the longest extruding point for each face. Do a measurement on each of the four sides, measuring the top and bottom slump of the test sample.

If no vertical face can be found on a side the concrete mix design is not suitable for use in slip forming. If the top or bottom edge slumping exceeds ¼“ for any side, the concrete mix design is not suitable for use in slip forming.

Videos of Box Test

https://youtu.be/XnKbxs3bAoQ

https://youtu.be/P6MKXItCiU8

Verify that the concrete is an acceptable concrete mix design by performing a

minimum of two more acceptable consecutive Box Tests that did not exceed the maximum void area and edge slump requirements. If the two acceptable consecutive Box Tests cannot be accomplished, then adjust the concrete mix design and start the testing process over again.

In addition to the Box Test performed during the testing of the mix design in the Contractor's material testing laboratory perform additional Box Tests on production concrete in the field during the test strip or first production pour whichever is earliest. Adjust the mix if the results indicate the concrete does not meet the above requirements. Perform Box Test in the field once a month if pouring is continuous or when the Engineer requests it to be performed.

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 must 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
Standard Method of Test for Characterization of the Air-Void System of Freshly Mixed Concrete by the Sequential Pressure Method	AASHTO TP 118*
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 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

*****Recommended to be used when air-entrained admixtures are used to ensure that the correct amount of air produced by the admixture is in the mix.

When concrete is designated by compressive strength, f'_c, or flexural strength, f'_r, or includes CO_2 Mineralization technology, CSH-SEA, or SCMs, prequalification of materials and mix proportions proposed for use before placing such concrete is mandatory. The Engineer will prequalify concrete when data is available 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 the minimum average strength on the probability of not more than one in 20 tests falling below the 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 the 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 the proposed use.

The Engineer will analyze performance records to establish the standard deviation.

(2) When sufficient past performance records are not provided, the Engineer will assume the 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.

Include the following information in test data and trial batch test reports: date of mixing; mixing equipment and procedures used; the size of batch in cubic yards and weight, type, and source of ingredients used; slump of concrete; air content of concrete when using an air-entraining agent; the age of the sample at the time of testing; and strength of concrete cylinders or beams tested.

Show that concrete strength tests equal or exceed minimum average strength in trial test reports. The test is an average of 28-day test results of five consecutive concrete cylinders or concrete beams taken from a single batch. No cylinder or beam must have a strength of less than 85 percent of the minimum average strength and be acceptable.

Submit test data and trial test reports signed by an official of an accredited laboratory 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 the cause is established and the Engineer is informed of and accepts, the 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 a fraction of the sack of cement in the concrete batch unless the cement is weighed.

Weigh bulk cement on a weighing device accepted by the Engineer. Seal and vent bulk cement-weighing hopper properly to preclude dusting during operation. Do not suspend the discharge chute from the weighing hopper. Arrange the discharge chute so that cement will not lodge in the hopper or leak from the hopper.

Batching accuracy must be within 1 percent, plus or minus, of the required weight.

(2) Water. Measure water by volume or by weight. Use a readily adjustable device for measurement of water, with accuracy within 1 percent, plus or minus, of the quantity of water required for a batch. Arrange the device so that variable pressure in the 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 the 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 may order storage or stockpiling for more than 12 hours or remixing of the stockpile, or other remedial methods. Keep using remedial methods until moisture content problems are resolved. When there is clay or dirt on the aggregate wash the aggregate until they are in a quantity that no longer affects the concrete mix and is accepted by the Engineer.

Proportion aggregates by weight, with an exception being 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 the quantity of each aggregate size.

It is recommended that the Tarantula Curve be used to obtain the optimal aggregate gradation and the possible reduction of cement used in the mix design. See http://www.tarantulacurve.com/ for more information.

Use batch weight based on dry materials plus the total weight of moisture (both absorbed and surface) contained in aggregate. Measure individual aggregates to within 2 percent, plus or minus, of the required weight, and the total weight of aggregates to within 1 percent, plus or minus, of the required weight.

(4) Admixtures. Ensure that all admixtures used are compatible with all the other admixtures used in the concrete mix. Store, proportion, and dispense admixtures in accordance with the following provisions:

(a) Liquid Admixtures. Dispense chemical admixtures, in liquid form, e.g., air-entraining admixtures, and corrosion inhibiting admixtures. Use mechanical dispensers for liquid admixtures with sufficient capacity to measure the prescribed quantity for each batch of concrete. Include a graduated measuring unit in each dispenser to measure liquid admixtures to within 5 percent, plus or minus, of the prescribed quantity for each batch. Read graduations accurately from point of measuring unit, and control proportioning operations to

permit a visual check of batch accuracy before discharging. Mark each measuring unit clearly for the type and quantity of admixture.

Arrange with the supplier to provide a sampling device consisting of a valve located in a safe and accessible location for sampling admixtures. Sampling is not required if not otherwise provided.

When using more than one liquid admixture for concrete mix, use a 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 are completely mixed in paving or continuous mixers, operate dispensers automatically with batching control equipment. Equip such dispensers with an automatic warning system that will provide visible or audible signals at the point where proportioning operations are controlled, when the following occurs: quantity of admixture measured for each batch of concrete varies from pre-selected dosage by more than 5 percent, or the entire contents of measuring unit from the dispenser are not emptied into each batch of concrete.

Unless liquid admixtures are added to the batch with pre-measured water, discharge liquid admixtures into the stream of water that disperses admixtures uniformly throughout the 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 the admixture manufacturer, and as accepted by the Engineer. Special admixtures include high-range water reducers requiring dosages greater than the capacity of conventional dispensing equipment. For site-added, high-range water reducers, use calibrated, portable dispenser supplied by the manufacturer.

(b) Mineral Admixtures. Protect mineral admixtures from exposure to moisture or other deleterious conditions 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 can enter the work's concrete mix. Provide safe and suitable facilities for sampling

mineral admixtures at weigh hopper or in the feed line immediately in advance of the hopper.

Incorporate mineral admixtures into the concrete using equipment complying with the 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 a separate weigh hopper. Introduce mineral admixture and cement simultaneously into the 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 the introduction of mineral admixture until the mass of cement in the weighing hopper is within tolerances specified in Subsection 601.03(C)(1) - Portland Cement.

In determining the maximum quantity of free water that may be used in concrete, consider mineral admixture to be cement.

(5) Bins and Scales. At the batching plant, use individual bins, hoppers, and scales for each aggregate size. Include a separate bin, hopper, and scale for bulk cement and fly ash.

Except when proportioning bulk cement for pavement or structures, the cement weigh hopper may be attached to a separate scale for individual weighing or to an 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 a springless-dial or beam-type batching scales. When using beam-type scales, make provisions to show the operator that the required load in the weighing hopper is approaching. Use devices that show conditions within the last 200 pounds of load and within 50 pounds of overload.

Maintain scale accuracy to 0.5 percent throughout the range of use. Design poises to lock to prevent an 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 the work site, transport aggregates from batching plant to the 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 the mixer in tight compartments carrying the full quantity of cement required for the batch. Once the cement is placed in contact with aggregates, batches must 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 the number of sacks required by the job mix.

Deliver batches to mixer intact. Charge each batch into the mixer without loss of cement. When carrying more than one batch on a truck, charge the batch into the 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 the mixer. If the inspection reveals that blades are worn more than one inch below the original height of the manufacturer's design, or are damaged; repair or replace blades. Upon request, make a copy of the manufacturer's design, showing the dimensions and arrangement of the blades.

Charge batches into central or truck mixers so that portion of mixing water enters ahead of cement and aggregates. Deliver a uniform flow of water. Place the entire amount of batch water in the mixer by end of the first quarter of the mixing period. When mixers with multiple compartment drums are used, the time required to transfer material between compartments will be included as mixing time. Use drum rotation speed as designated by the manufacturer. If mixing does not produce concrete of uniform and smooth texture, provide additional revolutions at the same speed until thorough mixing of each concrete batch is attained. Begin measuring mixing time from the time cement, aggregates, and 60 percent of water are in the drum. Do not exceed the manufacturer's rated capacity for the volume of concrete mixed in each batch.

Equip central or truck mixers with an attachment for automatically timing the mixing of each concrete batch. The timing device must include an automatic

feature for locking the discharge chute and a device for warning the operator when the required mixing duration has been met. If the timing or locking device fails to operate, immediately furnish a clock, or watch that indicates seconds, to the mixer operator. If the timing device is not repaired within three days after becoming inoperative, shut down batching operation until the 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 the mixing time for which uniformity tests are to be performed, provided the 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 must furnish labor, sampling equipment, and materials required for conducting uniformity tests, including the Box Test, and the Contractor's quality control for the concrete mixture. The Engineer will not furnish for the Contractor's quality control, testing equipment, e.g., scales, cubic measure, and air meter; and will not perform the Contractor's quality control tests. The Engineer will not pay separately for the Contractor's quality control, e.g., 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 the appearance of concrete or coarse aggregate content of samples is not complying with the requirements of ASTM C94. For truck mixers, add four seconds to the specified mixing time if timing starts as soon as the skip reaches its maximum raised position.

Unless otherwise indicated in the Contract Documents or accepted by the Engineer, concrete must 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 the point of delivery. Begin mixing truck-mixed concrete immediately after the introduction of mixing water to cement and aggregates, or the introduction of cement to aggregates.

Inclined-axis, revolving drum truck mixers must comply with Truck Mixer, Agitator and Front Discharge Concrete Carrier Standards TMMB 100-01, 15th Revision, or later published by Truck Mixer Manufacturers Bureau. Truck mixers must produce a thoroughly mixed and uniform mass of concrete and must discharge concrete without segregation.

The manufacturer's standard metal rating plate must be attached to each truck mixer, stating the 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 the maximum capacity shown on the metal rating plate for the volume of concrete in each batch.

Operate truck mixers at the mixing speed designated by the 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 the mixer. Water may be added to the mixture not more than two times after the initial mixing is completed. The addition of water at the project site must comply with the requirements of Subsection 503.03. Each time that water is added, turn the drum an additional 30 revolutions or more at mixing speed until the concrete is mixed uniformly.

When furnishing shrink-mixed concrete, transfer partially mixed concrete at the central plant to a truck mixer. Apply requirements for truck-mixed concrete. The Engineer will not credit the number of revolutions at mixing speed for partial mixing in the central plant.

When accepted by the Engineer, concrete batches not exceeding 1/3 cubic yard may be hand-mixed on a watertight, level platform. Measure the proper amount of coarse aggregate in measuring boxes and spread it on the platform. Spread fine aggregate on that coarse aggregate layer. Limit coarse and fine aggregate layers to a total depth of one foot. Spread dry cement on this mixture. Turn the whole mass not less than two times in the dry condition. Add sufficient clean water, and distributed it evenly over the whole mass. Turn the whole mass again, not less than three times, not including when placing it in carriers or forms. Mortar mixers of appropriate size may be used when accepted by the Engineer.

(E) Transporting Mixed Concrete. Transport central-mixed concrete to the delivery point in truck agitators or truck mixers operating at speed designated by the equipment manufacturer as agitating speed; or in non-agitating hauling equipment, provided consistency and workability of mixed concrete upon discharge at the delivery point suitable for placement and consolidation in place. The mixed concrete after hauling to the delivery point must comply with the uniformity criteria when tested as specified in Section 12.5 of ASTM C94.

For revolving drum truck mixers transporting central-mixed concrete, limit concrete volume to the manufacturer's rated capacity for agitator operation. Maintain agitating speed for both revolving drum mixers and revolving blade type agitators as designated on the manufacturer's metal data plate. Equip truck mixers or truck agitators with electrically or mechanically actuated counters. Activate counters after introducing cement to aggregates.

Bodies of non-agitating hauling equipment must be smooth, watertight, metal containers equipped with gates to permit control of concrete discharge. Protect open-topped haul vehicle against the weather and wind 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 a truck mixer or agitator is used for transporting central-mixed concrete to the delivery point, complete discharge within 1-1/2 hours, after the introduction of mixing water to cement and aggregates, or cement to aggregates. For truck-mixed concrete, complete concrete discharge within 1-1/2 hours. This time limitation is permitted to be waived by the Engineer, if after the 1-1/2-hour time limit has been reached, the concrete has a slump that complies with the Contract Document's requirements, without the addition of water to the batch and hydration of the concrete has not started, i.e., the temperature of the concrete is less than 90 degrees F or the required maximum temperature of the concrete. Also, increased time will be allowed when the set time is increased using an admixture retarder in the mix design and the acceptance of the mix design and the mix design's increased set time is obtained from the Engineer before use.

Submit delivery tickets from manufacturers of truck-mixed concrete and central-mixed concrete with each truckload of concrete before unloading at the job site. Printed, stamped, or written delivery tickets must include the following information:

(1) Name of concrete plants.

(2) Serial number of the ticket.

(3) Date and truck number.

(4) Name of Contractor.

(5) Specific project, route, or designation of job (name and location).

(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 the receiver of concrete and the receiver's initials.

(10) Information that is necessary to calculate the total mixing water added by the producer. Total mixing water includes free water on aggregates, water, and water added by the truck operator from the mixer tank at the project site.

(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 the 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 the quantity of water and admixtures used in concrete mixes so that concrete consistency, as determined by the AASHTO T 119 test method, is within the nominal slump range specified in Table 601.03-3 - Slump for Concrete. If the concrete slump exceeds the nominal slump, adjust subsequent batches of the mixture. If the slump exceeds the maximum slump, the Engineer will reject the concrete unless it is solely deemed by the Engineer as satisfactory for use.

The Engineer will also reject harsh or unworkable concrete that cannot be properly placed. Remove rejected concrete at no increase in the contract price or contract time.

Slump for concrete must 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	3-1/2

*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 or exceed the other requirements of the Contract Documents.

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.

(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 **602.04 – Measurement** by revising lines 803 to 808 to read as follows:

"**602.04 Measurement.** Reinforcing steel replacing existing corroded and damaged reinforcing steel, if ordered by the Engineer, will be measured on a force account basis, in accordance with Subsection 109.06 – Force Account Provisions and Compensation.

The Engineer will not measure reinforcing steel required for various members when shown on the plans.

The Engineer will not make allowance for clips, wire or other material used for fastening reinforcement in place. The cost is for the work prescribed in this section and the contract documents.

The Engineer will not measure mesh reinforcement."

(II) Amend **602.05 – Payment** by revising lines 810 to 830 to read as follows:

"**602.05 Payment.** The Engineer will pay for the accepted reinforcing steel replacing existing corroded and damaged reinforcing steel on a force account basis for the contract items specified in the proposal.

The Engineer will not pay for new reinforcing steel indicated in the various members and will consider the reinforcing steel incidental to the various concrete members in which they occur.

The Engineer will pay for the following pay item when included in the proposal schedule:

Pay Item	**Pay Unit**
Replace Reinforcing Steel	Force Account

An estimated amount for the force account may be allocated in the proposal schedule under "Replace Reinforcing Steel", 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 602

SECTION 603 – CULVERTS AND STORM DRAINS

Make the following amendments to said Section:

(I) Amend **603.03(C)(1) - Culverts** by revising lines 106 to 108 to read as follows:

"Spacing between multi-barrel culverts shall be a minimum of 18 inches or 0.5 the culvert width, whichever is greater. The minimum spacing shall be 1 foot when placing controlled low strength material (CLSM) as backfill. Anchor the culverts in such a manner that the horizontal and vertical alignment of the culverts does not change."

(II) Amend **603.04 – Measurement** by revising lines 282 to 292 to read as follows:

"**603.04 Measurement.**

(A) The Engineer will measure adjustment of storm drain manhole frame and covers per each in accordance with contract documents.

(B) The Engineer will measure cleaning of existing culverts on a force account basis in accordance with Subsection 109.06 - Force Account Provisions and Compensation and as ordered by the Engineer."

(III) Amend **603.05 – Payment** by revising lines 294 to 358 to read as follows:

"**603.05 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 contract documents.

The Engineer will pay for each of the following pay items when included in the proposal schedule:

Pay Item	**Pay Unit**
Adjusting Storm Drain Manhole Frame and Cover	Each
Clean Existing Culverts	Force Account"

END OF SECTION 603

SECTION 604 – MANHOLES, INLETS AND CATCH BASINS

Make the following amendments to said Section:

(I) Amend **604.04 – Measurement** by revising lines 118 to 124 to read as follows:

"The Engineer will measure cast iron grates per each in accordance with the contract documents."

(II) Amend **604.05 - Payment** by revising lines 133 to 237 to read as follows:

" **Pay Item**	**Pay Unit**
Cast Iron Grate 8 ¼"x1'-11 ¾"x1" (Viaduct Deck Scuppers)	Each

Engineer will pay for:

(1) 100 percent of contract bid price upon completion of furnishing and installing cast iron grate"

END OF SECTION 604

SECTION 606 – GUARDRAIL

Make the following amendment to said Section:

(I) Amend **606.04 - Measurement** by replacing lines 116 to 118 to read:

"**606.04 Measurement.** The Engineer will measure guardrail per linear foot in accordance with the contract documents.

The Engineer will measure from center to center of end posts. If the Contractor makes end connections to masonry or steel structures, the Engineer will measure to the face of such structures.

The Engineer will measure rigid barrier type guardrail per linear foot from end to end of the type specified.

The Engineer may measure end anchorage, terminal section and transition section as units of each kind when specified in the proposal.

The Engineer will measure MGS long span, CRT Timber Posts, 12.5 LF Thrie Beam Guardrail, 12.5 LF Nested Thrie Beam Guardrail and MGS Transition Railing per each."

(II) Amend **606.05 – Payment** by revising lines 120 to 138 to read as follows:

"**606.05 Payment.** The Engineer will pay for the accepted pay items 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 items when included in the proposal schedule:

Pay Item	Pay Unit
Midwest Guardrail System, MGS	Linear Foot
Midwest Guardrail System on 2:1 Fill Slope (9ft Posts)	Linear Foot
Thrie Beam Connection with Transition to Midwest Guardrail (25 LF Railing Replacement Only)	Each
Transition Section, Thrie Beam to Strong Post	Each
MGS Transition to Strong Post Guardrail	Each

W-Beam Guardrail (Railing only, existing posts to remain, Omitted post, nested)	Linear Foot
Thrie Beam Guardrail, Type 3 (Railing only, existing posts to remain)	Linear Foot
Thrie Beam with 18-3/4” Post Spacing	Linear Foot
Thrie Beam Terminal Connector	Each
Thrie Beam Rounded End Section	Each
W-Beam Rounded End Section	Each
MSKT – SP – MGS (TL-3) End Treatment	Each
RubRail	Linear Foot
MGS with 18-3/4” Post Spacing	Linear Foot
HSS 8x8x3/16 Block Replacement	Linear Foot
Trailing-End Anchorage System	Each
MAX-Tension TL-2	Each
Asymmetrical Transition Section (Left) (37 1/2" Post Spacing)	Each
Asymmetrical Transition Section (Right) (37 1/2" Post Spacing)	Each
MGS Long Span LSC-2	Each
Guardrail Type 3 MASH Transition	Each
Retro-Rail System	Linear Foot
Modified Hawaii Thrie Beam Approach Guardrail Transition	Each
12.5 LF Thrie Beam Guardrail	Each
12.5 LF Nested Thrie Beam Guardrail	Each
6.25 LF Transition Section Thrie Beam to Strong Post (Railing only, existing posts to remain)	Each”

END OF SECTION 606

SECTION 607 – CHAIN LINK FENCES AND GATES

Make the following amendment to said Section:

(I) Amend **607.04 - Measurement** by replacing lines 105 to 106 to read:

"**607.04 Measurement.** The Engineer will measure fence by the linear foot. Measurement will be along the top of the fence from outside to outside of end post for each continuous run of fence."

(II) Amend **607.05 – Payment** by revising lines 108 to 115 to read as follows:

"**607.05 Payment.** The Engineer will pay for the accepted quantities of fence at the contract unit price per linear foot of the types and sizes specified in the proposal, complete in place.

The Engineer will pay for following pay items when included in proposal schedule:

Pay Item	**Pay Unit**
6-Foot Chain Link Fence, without Toprail	Linear Foot"

END OF SECTION 607

SECTION 612 – GROUTED RUBBLE PAVING

Make the following amendments to said Section:

(I) Amend **612.04 – Measurement** by revising lines 46 to 47 to read as follows:

"**612.04 Measurement.** The Engineer will measure grouted rubble paving and 4-inch layer 2.5-inch dia. recycled crushed concrete or basalt gravel per square foot in accordance with contract documents."

(II) Amend **612.05 – Payment** by revising lines 49 to 60 to read as follows:

"**612.05 Payment.** The Engineer will pay for the accepted grouted rubble paving and 4-inch layer 2.5-inch dia. recycled crushed concrete or basalt gravel per square foot. Payment will be full compensation for the work prescribed in this section and contract documents.

The Engineer will pay for the following pay items when included in the proposal schedule:

Pay Item	**Pay Unit**
Grouted Rubble Paving Type 1 (GRP1)	Square Foot
Grouted Rubble Paving Type 2 (GRP2)	Square Foot
4-inch Layer 2.5-inch Dia. Recycled Crushed Concrete or Basalt Gravel	Square Foot

Excavation for GRP will be incidental to the work prescribed in this section."

END OF SECTION 612

SECTION 613 – CENTERLINE AND REFERENCE SURVEY MONUMENTS

Make the following amendments to said Section:

(I) Amend **Subsection 613.03(A) – Initial Installation** from lines 22 to 26 to read:

"**(A) Initial Installation.** Cut holes, in completed medians and shoulders, to required depth or to solid rock, whichever is less. Fill hole with concrete. Burr or feather plug for anchorage in concrete. Place the 4 #4 x 20-inch bars as shown on the plans when curing the concrete. Install brass plug in required position after concrete has sufficiently set. After curing concrete at least 7 days, restore edge of pavement surrounding monument to original condition."

(II) Amend **613.04 – Measurement** by revising lines 48 to 60 to read as follows:

"**613.04 Measurement.**

(A) The Engineer will measure reconstructing centerline and reference survey monuments per each in accordance with the contract documents.

(B) The Engineer will measure adjusting centerline and reference survey monuments per each in accordance with the contract documents."

(III) Amend **613.05 – Payment** by revising lines 62 to 79 to read as follows:

"**613.05 Payment.**

The Engineer will pay for the accepted reconstructing centerline and reference survey monuments and adjusting centerline and reference survey monuments at the contract unit price per each. Payment will be full compensation for 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
Reconstructing Centerline and Reference Survey Monuments	Each
Adjusting Centerline and Reference Survey Monuments	Each"

END OF SECTION 613

SECTION 616 – IRRIGATION SYSTEM

Make the following amendments to said Section:

(I) Amend **616.04 – Measurement** by adding the following after line 942:

"The Engineer will measure relocation of sprinkler system, if ordered by the Engineer, on a force account basis in accordance with Subsection 109.06 – Force Account Provisions and Compensation."

(II) Amend **616.05 – Payment** by adding the following after line 957:

"Pay Item	**Pay Unit**
Relocation of sprinkler system	Force Account

An estimated amount for the force account may be allocated in the proposal schedule under "relocation of sprinkler system", but the actual amount to be paid will be the lump 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 616

SECTION 617 – PLANTING SOIL

Make the following amendments to said Section:

(I) Amend **617.03(B)(2) – IMPORTED PLANTING SOIL** by revising lines 83 TO 87 to read as follows:

"(2) Imported Soil Conditioner. Notify the Engineer of proposed soil conditioner provider prior to sourcing. Provider is to meet US Composting Council Seal of Testing Assurance for all imported soil conditioner product to be used. If the Engineer accepts material and provider, make all arrangements for importing soil conditioner and pay all associated costs. Transport imported planting soil directly to final location for spreading."

END OF SECTION 617

SECTION 619 – PLANTING

Make the following amendments to said Section:

(I) Amend **Subsection 619.02(H)(3) – Application Records** from lines 207 to 210 to read:

"**(3) Application Records.** Records shall be kept by Contractor of dates of application, type of fertilizer or manure used, quantities, and areas that were covered and shall be submitted to Engineer within 24 hours of application. Document if rates and amounts of fertilizer deviate from manufacturer's specifications."

(II) Amend **Subsection 619.02(J) – STAKES** from lines 231 to 232 to read:

"(1) Wood Stakes. Wood stakes shall be rough construction-grade redwood 2x2's, 8 feet long, unpainted and unstained."

(III) Amend **Subsection 619.03(A) – Codes and Standards** from lines 262 to 264 to read:

"**(A) Quality Assurance.**

(1) Codes and Standards. Perform work in accordance with applicable laws, codes, and regulations. Provide inspections and permits required by Federal, State, and local governmental authorities.

(2) Qualifications. To become qualified in the work class of Landscaping, the applicant shall provide a letter containing the following:

(a) A statement declaring at least five continuous years of experience of a scope similar to that required for the work, including installing temporary irrigation (where applicable), hydro-mulch application, soil preparation, and plant installation and establishment.

(b) The letter must be signed and dated by the Owner of the Company or Company Officer.

(c) Produce a list of completed projects similar to the scope and size of the required work to substantiate the experience. The list shall contain a minimum of five different landscape projects, excluding single-family residential landscape. A minimum of five different landscape projects shall be rated positive on a performance evaluation by the

references in the list below. Names and references must be current and verifiable. Use separate sheets of paper that contain all of the following information:

1. Project name

2. Location of project (city, state)

3. Owner

4. Owner Contact (name and current phone number)

5. Architect or Engineer Company Name

6. Architect or Engineer Contact (name and current phone number)

7. Construction Manager (name and current phone number)

8. Description of Project, Scope of Work Performed

9. Total Value of Construction (including change orders)

10. Original Scheduled Completion Date

11. Actual Date of Completion

(d) Approval. The Contractor shall submit the items under this section to the Engineer for approval prior to construction. If the applicant does not have proof of five continuous years of experience with a minimum of five completed projects similar in scope and size, the Contractor shall remove the applicant from the project upon receipt of a written notice from the Engineer. Requests to substitute an applicant will be allowed under Subsection 105.16 Subcontracts."

(IV) Amend **Subsection 619.03(l) – Adding Fertilizer and Amendments** by revising the section from lines 310 to 314 to read:

"(**1)** Uniformly distribute organic soil conditioner over existing grass areas as indicated in the plans. Prep soil by lightly scarifying surface to 2" depth prior to incorporating organic soil conditioner."

(V) Amend **Subsection 619.03(M)(2) – Plant Holes.** by revising the section from lines 341 to 343 to read:

"**(2) Plant Holes.** Place trees and shrubs in plant pits as indicated in the contract documents. Break coral, rock, and hardpan to depth not less than 12 inches below normal bottom of pit. Planting holes should be free of rocks larger than 1" and any other debris deleterious to healthy plant growth."

(VI) Amend **Subsection 619.03(P) – Placing Mulch** by revising the section from lines 426 to 428 to read:

"**(P) Placing Mulch.** Apply 3 inches of mulch to tree basins and to shrub beds at planting. Protect and cover wood chip mulch in windy areas.

(VII) Amend **Subsection 619.03(T)(3) – Fertilizing** by adding the following paragraph after line 478:

> "Submit recommendations from a licensed Landscape Architect when deviating from the application rates and amounts above and/or in plans for backfill planting media mix Sheet L-2.0. Document if the rates and amounts of fertilizer deviate from manufacturer's specifications."

(VIII) Amend **619.04 - Measurement** by revising lines 538 to 539 to read as follows:

"**619.04 Measurement**

Trees and shrubs will be paid at the contract price of per each basis according to the contract, and grass and mulch will be paid at the contract price per square foot according to the contract."

(IX) Amend **619.05 - Payment** by revising lines 548 to 556 to read as follows:

" **Pay Item**	**Pay Unit**
Wilhelmina Tenney Rainbow Shower Trees	Each
Beach Naupaka Shrubs	Each
Pohinahina Shrubs	Each
Yellow Allamanda Shrubs	Each
Hydroseed Buffel Grass	Square Foot
Wood Chip Mulch	Square Foot"

END OF SECTION 619

Amend **Section 622 - Roadway and Sign Lighting System** to read as follows:

"**SECTION 622 - ROADWAY AND SIGN LIGHTING SYSTEM**

622.01 Description. This work includes furnishing and installing a roadway lighting system, including materials necessary for operating and controlling roadway lighting system.

Electrical equipment shall conform to the NEMA Standards. Material and workmanship shall conform to the latest requirements of the "National Electrical Code," herein referred as the Code; General Order Nos. 6 and 10, of the Hawaii Public Utilities Commission; the standards of the ASTM; the ANSI; Local Joint Pole Agreement; local power company rules; and local ordinances that may apply.

622.02 Materials. Materials shall conform to the following:

Conduits	712.27
Luminaires for Roadway Lighting	761.03
Cables and Wires for Roadway Lighting System	761.04
Disconnect and Protective Devices	761.05
Waterproof Connectors for Roadway Lighting	761.06

Concrete shall conform to Section 601 - Structural Concrete and shall be Class A.

Stainless steel anchor bolts, nuts, and steel plate covers shall be structural steel conforming to ASTM F593, F594 and A 36 respectively.

Materials will be subject to inspection. Failure of the Engineer to note faulty material or workmanship during construction will not relieve the responsibility of the Contractor for removing or replacing such materials and redoing the work at no cost to the State.

622.03 Construction Requirements.

(A) Equipment List and Drawings. Within 10 days following the award of the contract, the Contractor shall submit to the Engineer for acceptance 6 copies of a list of materials and equipment that the Contractor will incorporate in the work. The list shall include the name of the manufacturer, size and catalog number of the unit, detailed scale drawings and wiring diagrams of special equipment, and proposed deviations from the contract. If required, submit for acceptance samples of the material that the Contractor will use at no cost to the State.

Upon completion of the work, submit an 'As Built' plan showing in detail construction changes.

(B) Excavation and Backfill. Excavation and backfill shall conform to Section 204 - Excavation and Backfill for Miscellaneous Facilities.

Excavate carefully to prevent damage to pavements, sidewalks, and other improvements.

(C) Installation.

(1) Luminaires. Install the roadway lighting luminaires on mast arms with the vertical axis perpendicular to the roadway and longitudinal axis parallel to the roadway centerline.

Install luminaires at pedestrian bridges and overpasses, as indicated in the contract documents.

(2) Circuits. Encase the cables installed underground in conduits or other accepted encasement.

Before installing the wires and cables in conduits, pull a wire brush, swab and mandrel through each conduit for the removal of extraneous matter and verification of the absence of obstructions and debris from the conduit system.

Pull the cables directly from their cores or reels into the conduits. Do not pull off and lay the cable on the ground before installation. Make the pulls in one direction only. Lubricants used shall be as recommended by the cable manufacturer or accepted by the Engineer.

Do not leave wires or cables under tension nor tight against bushings or fittings. Remove damaged ends resulting from the use of pulling grips soon after pulling the cable. Maintain the cable end seals. Do not pull open-ended cables through the conduits. Cables shall be continuous from pulling point to pulling point. The Engineer will not permit splices from pulling point to pulling point. Make splices, taps and terminations with pressure-indented connectors or lugs as appropriate or specified in the contract.

When requiring splicing, join the conductors by a 'western union' type splice or by using an accepted connector. Use the connectors for splicing conductors, No. 8 AWG or larger. Solder the "western union" type splice by the pouring or dipping method. Cable splices and termination shall be according to the cable

manufacturer's recommendation. Submit the cable manufacturer's splicing instruction sheets for acceptance.

Trim the conductor insulation to a conical shape. Roughen the conductor insulation before applying splice insulation. Splice insulation includes layers of thermoplastic electrical insulating tape not over 0.007 inches thick conforming to Federal Specification MIL-7798. Apply the splice insulation a thickness equal to and well lapped over the original insulation. Leave at least 2 feet of slack for each conductor at each splice.

(3) Bonding and Grounding. Secure the metallic cable sheaths, conduits and lamp posts mechanically and electrically to form a continuous system. Ground them effectively as specified in the Code and in the contract.

(4) Conduits. Lay the polyvinyl chloride (PVC) conduits carefully in trenches prepared to receive the conduits. Use PVC Schedule 80 conduits, direct buried, in area not exposed to traffic.

Embed 1/2 inch PVC 40 conduit in pedestrian bridge concrete curb. Use 316 stainless steel where indicated.

Install the PVC coated galvanized rigid steel conduit according to Article 344 of the Code. Use white and tinted ready-mixed paint on the threads of joints. Repair zinc-coated surfaces according to Subsection 501.03(G)(2) - Repairing Damaged Zinc-Coated Surfaces.

Install rigid PVC conduit according to Article 354 of the Code PVC conduit connections shall be of the solvent-weld type. Make solvent-weld joints according to the conduit manufacturer's recommendations and as accepted by the Engineer. The Engineer will permit pre-assembling sections of conduit.

Make directional changes in non-metallic conduit runs such as bends and changes to clear obstructions with curved segments using accepted deflection couplings or with short lengths of straight ducts and couplings. The deflection angle between two adjacent lengths of duct shall not exceed 6° and the bends shall not have a radius of less than 12 times the nominal size of the conduit unless using factory-made ells.

Thread the fittings for connecting non-metallic conduits to rigid metal conduits on the side that will be connected to the metal conduit. Metal conduits entering pullboxes shall end in insulating grounding bushings. Non-metallic conduits shall end in end bells.

Keep the interior of conduits clean during the construction. Plug the ends of conduits to keep the ends clear during and after construction. Install the conduits to drain toward a pullbox. The Contractor may consider a single run to drain toward both ends.

(E) Photometric Data. Contractor shall submit photometric curve data for each luminaire type. Luminaire performance shall meet the photometric curves shown in the drawings, using the criteria indicated.

(F) Electric Service. During relocation, reconstruction or other improvements of existing roadway lighting facilities, keep the existing roadway lighting system operational in its entirety during hours of darkness. Schedule the work accordingly and provide a temporary lighting system if necessary, to keep the project area illuminated during the hours of darkness.

(G) Field Test. Before acceptance of the work, make the following tests on lighting circuits, in the presence of the Engineer.

(1) Test for continuity of each circuit.

(2) Test for grounds in each circuit.

(3) A megger test on each circuit between the circuit and ground. The insulation resistance shall not be less than the values specified in Table 622-I Insulation Resistance when measured with an instrument having a voltage rating of 500 volts.

TABLE 622-I - INSULATION RESISTANCE

Cable or Circuit	Minimum Resistance (ohms)
No.14 - No.12 wire	1,000,000
25 to 50 amperes	250,000
51 to 100 amperes	100,000
101 to 200 amperes	50,000
201 to 400 amperes	25,000
401 to 800 amperes	12,000
over 800 amperes	5,000

(4) A functional test to show that each part of the system functions according to the contract.

Correct the faults in the material or the installation revealed by these tests at no cost to the State. Repeat the tests until no fault appears.

(H) Salvaging Electrical Equipment. The contract directs the Contractor to Section 202 - Removal of Structures and Obstructions,

regarding existing highway facilities. When shown in the contract or specified by the Engineer, remove and salvage the existing electrical equipment including luminaires, standards, mast arms, ballasts, transformers, service equipment, and pullboxes, otherwise the existing electrical equipment shall become the property of the Contractor and the Contractor shall remove and dispose of the existing electrical equipment at no cost to the State.

622.04 Measurement. The Engineer will not measure roadway lighting systems, lighting systems on structures, modifying systems, temporary systems, or removing systems when contracted on a lump sum basis.

The Engineer will measure relocation of highway lighting, if ordered by the Engineer, on a force account basis in accordance with Subsection 109.06 – Force Account Provisions and Compensation.

The Engineer will measure adjustment of electrical and Hawaiian Telcom manholes on a per each basis.

622.05 Payment. The Engineer will pay for the accepted roadway lighting standard and power system at the contract unit price per lump sum and on a force account basis complete in place. The price includes full compensation for submitting the equipment list and drawings; furnishing and installing the roadway lighting standards and power system to include lighting control equipment, electrical apparatus, pullboxes, conduit, and conductors; submitting warranty; and furnishing equipment, tools, labor, materials and other 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**
Roadway Lighting System	Lump Sum
Relocation of Highway Lighting	Force Account
Adjust Electrical Manhole	Each
Adjust Hawaiian Telcom Manhole	Each

An estimated amount for the force account may be allocated in the proposal schedule under “relocation of highway lighting”, but the actual amount to be paid will be the lump sum shown on the accepted force account records, whether this sum be more or less than the estimated amount allocated in the proposal schedule.

Hauling and stockpiling of salvaged materials and equipment off the right-of-way to the locations specified by the Engineer shall be incidental to the contract work."

END OF SECTION 622

SECTION 626 – MANHOLES AND VALVE BOXES FOR WATER AND SEWER SYSTEMS

Make the following amendment to said Section:

(I) Amend **626.04 - Measurement** by replacing lines 172 to 173 to read:

"**626.04 Measurement.** The Engineer will measure adjusting manholes and valve boxes per each for water and sewer systems."

(II) Amend **626.05 – Payment** by revising lines 174 to 192 to read as follows:

"**626.05 Payment.** The Engineer will pay for the accepted pay items listed below on a per each basis, as shown in proposal schedule. Payment will be full compensation for work prescribed in this section and in contract documents.

The Engineer will pay for each of the following pay items when included in proposal schedule:

Pay Item	Pay Unit
Adjusting Water Manhole Frame and Cover	Each
Adjusting Water Standard Valve Box	Each
Adjusting Sewer Manhole Frame and Cover	Each

The Engineer will pay for excavation and backfill in accordance with and under Section 204 -- Excavation and Backfill for Miscellaneous Facilities."

END OF SECTION 626

Make the following section a part of the Standard Specifications:

"SECTION 627 – ENHANCED VEHICLE CLASSIFICATION TRAFFIC COUNTING SYSTEM

627.01 Description. This work includes furnishing labor, materials, tools, machinery, and equipment necessary to install an enhanced vehicle classification traffic counting system (EVC System) complete in place according to the Contract. The Contractor shall make improvements as shown in the Contract including the following:

(A) Provide necessary provisions for traffic counting operations by installing classifications sensors (piezoelectric sensors), vehicle detector inductance loops (sensor loops), conduit, cable wiring, EVC controller cabinet (EVC cabinet) and electrical and communications service.

(B) Provide underground conduit systems including trench, structural excavations, furnish and install pull boxes, backfilling, and restoration work.

(C) Coordinate work and arrange for inspection of work with the Engineer. Arrange for a representative from piezoelectric sensor's manufacturer to supervise installation of piezoelectric sensors.

(D) Conduct required testing of the sensor loops and piezoelectric sensors. Submit acceptance test procedures and criteria for acceptance test results to the Engineer. Notify the Engineer a minimum of one (1) week before the date scheduled for testing.

(E) Turn over to the Engineer one complete and operating EVC System according to the Contract.

Furnish and install incidental parts necessary to complete the enhanced vehicular classification traffic counting system as though such parts were in the Contract.

627.02 Materials.

Electrical equipment shall conform to the NEMA Standards and this Contract. Materials and workmanship shall conform to "National Electric Code", (the Code); General Order Nos. 6, and 10 of the Hawaii Public Utilities Commission; ASTM standards; the ANSI and applicable revisions for all the above codes and standards and local ordinances that may apply.

(A) Piezoelectric Sensors (Piezo Sensors).

(1) Piezo sensors shall meet the following conditions:

(a) Be Class 1 BL Weigh-in-Motion unencapsulated piezoelectric sensors.

(b) A minimum operating life of one (1) year from the date of acceptance.

(c) Meet the requirements as outlined in *A Summary of Vehicle Detection and Surveillance Technologies Used in Intelligent Transportation Systems*.

(d) Be 11-feet in length (or as determined by the Engineer).

(e) Be manufactured complete with home-run cable (non-spliced).

(f) Have 16 gauge flat braided silver plated copper wire center core that is spiral-wrapped by PVDF piezoelectric film.

(g) Have an outer sheath of 0.16" thick brass meeting (CDA-260) as required by ASTM B587-88, *Standard Specification for Welded Brass Tube*.

(h) Be approximately 0.26" wide with a maximum thickness of 0.063" (plus/minus 0.005").

(i) Have insulation resistance between core and shield greater than 500M ohms.

(j) Shall have a piezoelectric coefficient greater or equal to 20pc/N nominal.

(k) Have designs and installation techniques proven reliable in conditions (soil and environmental) similar to those in Hawaii.

(l) Be able to withstand at least one million cycles.

(m) Interface with the counting equipment to perform the applications required for the EVC System.

(n) Include all mounting hardware and PU200 piezo installation resin (or equivalent), used for installation.

(2) The lead cable from the piezo sensor stubs to the EVC cabinet shall meet the following conditions:

(a) Be manufactured complete with the piezo sensor.

(b) RG58 rated for underground direct burial.

(c) Have an outer jacket of 0.187” outside diameter.

(d) Possess nominal capacitance of at least 27 pF/Ft.

(e) Have pre-made (factory-made) termination connections.

(f) Be field measured so that the length suits the installation conditions.

(g) Have sufficient length to reach the EVC cabinet. Splicing of the piezo sensor lead cable will not be allowed under any condition.

(3) The supplied PU200 piezo installation resin (or equivalent) shall meet the following conditions:

(a) Be suitable for installation in both asphalt and Portland cement pavements.

(b) Must require no special equipment to facilitate installation.

(c) Must have a short curing time (less than 75 minutes) to minimize lane closure time.

(d) Should be of sufficient consistency to prevent “running” when being applied on road surfaces.

(e) Particulate matter within the sealer must not separate or settle.

(f) Must be approved by the piezo sensor manufacturer and the Engineer.

(4) An appropriate in-road temperature sensor shall be supplied to provide temperature correction data for the piezo sensors. The temperature sensor shall be an in-road sensor, as approved by the Engineer.

(B) Sensor Loops.

(1) Sensor loops shall meet the following conditions:

(a) 14 AWG Stranded THHN

(b) 600 Volts

(c) IMSA Spec 51-3 Certified.

(d) Be manufactured complete with lead-in and home-run cables (non-spliced).

(e) Include installation materials and epoxy loop sealant for installation.

(2) The lead cable shall meet the following conditions:

(a) Polyethylene insulated

(b) Stranded-Tinned-Copper 14 AWG

(c) 2 Conductor Cable

(d) Stranded Tinned-Copper Drain Wire

(e) Aluminum – Polyester Shielded

(f) Polyethylene Jacketed

(g) 600 Volts Rated

(h) IMSA Spec. 50-2 Certified.

(i) Have sufficient length so that the lead cable is complete. In the event that the cable is too short, splicing of the lead cable shall only be allowed from the final pull box to the EVC cabinet. Splicing of the sensor loop lead cable will only be allowed under this condition. Splicing must be done by use of a splice kit.

(3) The supplied epoxy loop sealant shall meet the following conditions:

(a) Shall be compatible with IMSA #51-3 loop detector wire.

(b) Be manufactured as ready to install and not require any mixing.

(c) Be manufactured as packaged in a tube so it can be applied by applicator gun.

(d) Be suitable for installation in both asphalt and Portland cement pavements.

(e) Must have a short curing time (less than 75 minutes) to minimize lane short lane closure time.

(f) Particulate matter within the sealer must not separate or settle.

(g) Must be approved by the Engineer.

(C) Backer Rod. The Contractor shall use 1/4” and 3/8” diameter backer rod to secure sensor loop and lead-in wires within saw cuts.

(D) Conduits. The Contractor shall use PVC coated galvanized rigid steel conduit for all exposed construction. PVC Conduits shall be used for all underground construction.

(1) PVC Coated Galvanized Rigid Steel Conduits. Steel conduits shall meet the following conditions:

(a) Be manufactured of rigid metal conforming to ANSI Standard C80.1 and Article 344 of National Electrical Code.

(b) Each length shall bear UL label.

(2) Plastic Conduits. Each length shall bear UL label.

(3) Duct Sealing Compound. Duct sealing compound shall conform to the following:

(a) Waterproof, rodent proof, nonoxidizing; noncorrosive to metals, rubber, plastic, lacquer, and paints; and non-hardening when subject to temperatures ranging from -30 degrees F to 150 degrees F. Foam sealant will not be allowed.

(b) Readily workable for thumbing into openings and forming into seals around wires inside conduits and openings around conduits.

(c) Clean, nonpoisonous and non-injurious to human skin.

(d) Seal against water, dust and air.

(e) Adhere to wood, glass, plastics, metal, rubber and painted surfaces.

(E) EVC Cabinet. The new EVC cabinet shall consist of a ground-mounted cabinet similar to an M NEMA TS1 Controller Cabinet capable of housing all

required communications and control equipment necessary for the EVC System. Each cabinet shall meet the following additional requirements:

(1) Fabricated from 0.125” thick anodized Aluminum.

(2) Be provided a single pole main breaker rated as 50 amps, 120V and two single pole branch circuit breakers rated as 15A, 120V.

(3) Entire output file copper hard-wire shall be of sufficient gage to withstand current surges before circuit breakers or surge protectors trip.

(4) LED lights shall be activated upon opening door in 120VAC powered cabinets.

(5) Two convenience ground-fault circuit interrupter (GFCI) duplex receptacles shall be provided in 120VAC powered cabinets.

(6) Cabinet door locks shall be of solid brass rim Best Lock Series 516RL3XA7559-606 including two (2) keys.

(7) Label shall be by Silk-Screening only.

(8) One 24" x 36" cabinet print in a weatherproof plastic jacket, shall be attached to the front and back cabinet doors.

(9) The EVC cabinet, if not anodized, shall be painted with one coat of accepted metal primer and two coats of aluminum paint conforming to AASHTO M69 and Section 708 of the Standard Specifications.

(10) Possess internal wiring modified to meet the functional needs of the EVC System.

(11) Possess C2 terminal blocks that shall be protected from current surges by EDCO PC642 or equal.

(12) Power supply surge protector shall be furnished.

(F) Solar Power. Power shall be sourced from a solar panel assembly. Provide connection according to the construction plans. Solar power shall meet the following conditions:

(1) Solar panel shall be rated 12VDC with a minimum of 200W output. Solar panel shall be pole-mounted as shown on plans.

(2) Power to the cabinet shall be provided via (2) parallel 12-volt batteries connected from solar panel. Batteries shall be rated a minimum of

105Ah each. Charge controller shall be sized to be compatible with the solar panel output.

(3) Provide disconnect circuit breakers to isolate power between the solar panel, charge controller, batteries, and load as shown on drawings. Mount on DIN rail within EVC cabinet.

(4) Provide DC surge protector for solar power supply. Surge protector shall be rated for minimum of 60,000A and 2,000J per pole. Surge protector shall have an integral weatherproof enclosure.

(5) The Contractor shall provide a complete solar panel assembly which consists of a minimum of one (1) pole-mounted solar panel, associated supports, charge controller, batteries, circuit breakers and wiring to the EVC cabinet as shown on the plans or described in these specifications. Charge controller, batteries and circuit breakers shall be housed within the EVC cabinet.

(6) The Contractor shall submit shop drawings of complete solar panel assembly prior to ordering materials. Shop drawings shall include information on wiring, solar panel, solar power components, and associated supports.

(G) Excavation Warning Signs. The Contractor shall furnish and install two warning signs and appropriate mounting on each side of the roadway adjacent to the sensor lead-in cable runs or as close as possible to the cables. Signs and mountings shall conform to the requirements of Section 750.02 (Sign Posts) of the Standard Specifications and Standard Plan TE-01. Signs shall be a minimum of 12 inches by 18 inches. Sign text shall read as follows:

WARNING
BURIED TRAFFIC SIGNAL LINES
NOTIFY HWY-PLANNING BRANCH AT
(808) 587-6352 BEFORE DIGGING/EXCAVATION

The first line shall be a minimum of two inches in height. Subsequent lines of text shall be one inch in height. No border is necessary, but a margin of one-quarter (1/4) inch shall be maintained. For the letters and background, use black and yellow paints, respectively. The first line of text shall be centered. Subsequent lines shall also be centered, however, the Contractor shall have the option to move the wording within these lines to allow for best fit. Furnishing warning signs, mounting, and installation shall be incidental to the Contract.

(H) Other Materials.

Other materials shall meet the requirements specified in the following:

Structural Concrete	Section 601
Reinforcing Steel	Section 602
Trench Backfill Material	Subsection 703.21
Concrete Pull Box	Subsection 712.06(B)
Conductors and Cables	Subsection 770.06

627.03 Construction Requirements.

(A) Equipment List and Drawings. Submit within seven days following contract award two copies of materials and equipment purchase requisition, including copies of the equipment list, manufacturer's brochures, catalog cuts, and shop drawings to the Engineer for acceptance. Meeting shall be scheduled 14 days before the start of construction.

Order materials and equipment immediately upon acceptance by the Engineer. If the Contract award is rescinded by the Department after ordering of materials and equipment, the Department will purchase ordered materials and equipment at cost based on invoices. Purchase price will include transportation cost and applicable State excise taxes. Purchase price will not include profit.

Upon completion and acceptance of work, submit an 'As Built' or corrected plan showing in detail the construction changes per Section 648 – Field Posted Drawings.

(B) Excavation and Backfill. Excavate and backfill in accordance with Section 204 – Excavation and Backfill for Miscellaneous Facilities. Place the material from the excavation to prevent damage and obstruction to vehicular and pedestrian traffic and interference with surface drainage.

(C) Installation. The Contractor shall notify the State at least two weeks prior to installation. The State shall install new traffic counting equipment and electronics after the installation of the EVC cabinet and sensors. Installation of sensors shall occur after any and all grinding and or milling of the finished pavement surface.

(1) Piezo Sensors. Piezo sensor installation shall meet the following conditions:

(a) Be supervised by the manufacturer's representative for the piezo sensors.

(b) Construction shall reflect the number and configuration for the piezo sensors as shown in the construction plans.

(c) Piezo sensors and leads shall be installed at least 18” away from cracks, potholes or joints within the pavement. If the finished pavement at the installation site has cracks, potholes or joints, the number and configuration of piezo sensors shall be modified.

(d) If the number and configuration need to be modified, the Contractor shall inform the State 14 days before the start of construction and submit Shop Drawings of the revised configuration for approval.

(e) Installed within the roadway, two each per lane, in both traffic directions. Refer to the configuration shown in the construction plans.

(f) Saw cuts shall be constructed in strict accordance with specifications of the manufacturer.

(g) Use ¾” thick blade to make a ¾” wide x 2” deep slots for the piezo sensor. The slots should be as shown in the construction plans, or as approved by the Engineer.

(h) Use ¼” thick blade to make a ¼” wide slot for the piezo sensor lead cable. The depth of the slot shall be as shown on the plans.

(i) Saw cuts shall be made by wet cutting. Dry cutting shall not be allowed.

(j) Clean away collected dust, dirt and refuse promptly after saw cutting is done. The saw cuts shall be cleared by water applied by pressure washer. Residual water within the saw cuts shall be vacuumed by use of a wet/dry vacuum. The saw cuts shall then be dried by air compressor. After the slots are dried, any remaining debris stuck within the slot must be removed. The saw cuts must be completely clean and dry before inserting the piezo sensors and lead-in cables.

(k) Inspect saw cuts before inserting the piezo sensors. If any additional debris or moisture is observed use compressed air to dry the slots and remove any additional debris before proceeding with installation.

(l) Embed piezo sensors in resin with clips for mounting at 6" intervals. Install piezo sensors in saw cuts in the road surface, approximately 3/4" wide x 2" deep.

(m) Lay piezo sensor in saw cut at 1-1/4” below the surface of the roadway or as recommended by the manufacturer. Install piezo sensor straight and flat in saw cut. Secure sensor in place along the entire length of the sensor in the slot by quick setting epoxy sealant clips.

(n) Fill voids of the piezo sensor saw cuts with PU200 piezo installation resin (or equivalent). The PU200 piezo installation resin (or equivalent) shall be prepared in accordance with the manufacturer's instructions, and shall result in a finish approximately 1/16” above the surface of pavement or as shown on the plans. The resin curing requirements of the manufacturer shall be complied with and traffic loading shall not be permitted until the sealant is fully cured.

(o) Hot tar shall not be used.

(p) Do not allow traffic on the completed system until the manufacturer’s representative approves all conditions of the installation with the acceptance by the Engineer. Thereafter, testing in accordance with the manufacturer's requirements shall be completed before public traffic is allowed.

(q) Overall length of the piezo sensor lead cable shall be 300-feet maximum. Provide loop of 5-feet in handhole for each cable. In the event that the cables provided have insufficient length to reach the equipment harness inside the EVC cabinet, the cables shall be rejected. Splicing to lengthen the cable will not be allowed, under any condition.

(r) In the event that heating of the encapsulating material is allowed by the Engineer, the temperature of the material shall not be allowed to exceed 170 degrees F. In the event that the temperature exceeds the maximum allowed, the entire piezo sensor system installed shall be replaced.

(s) Provide adequate power for all test equipment to meet the detailed and specific requirements of the manufacturer for all tests required for certification and acceptance. Provide all necessary equipment to perform the required tests.

(t) The in-road temperature sensor shall be installed according to the manufacturer’s installation instructions, as approved by the Engineer.

(2) Sensor Loops. Sensor loop installation shall meet the following conditions:

(a) Construction shall reflect the number and configuration of the sensor loops as shown in the construction plans.

(b) Sensor loops and leads shall be installed at least 18” away from cracks, potholes or joints within the pavement. If the finished pavement at the installation site has cracks, potholes or joints, the number and configuration of the sensor loops shall be modified.

(c) If the number and configuration of the sensor loops need to be modified, the Contractor shall inform the State 14 days before construction and submit Shop Drawings of the revised configuration for approval.

(d) Installed within the roadway, two each per traffic lane, to measure speed and length of the vehicles and also to classify vehicles in conjunction with the axle detectors (piezo sensors). Refer to the configuration in the construction plans.

(e) New sensor loops shall be tested prior to shipment, with no splices, and ready to install.

(f) Use ¼” thick blade to make ¼” wide by 4” deep slots for the loop saw cuts.

(g) Saw cuts shall be made by wet cutting. Dry cutting shall not be allowed.

(h) Clean away dust, dirt and refuse promptly after saw cutting is done. The saw cuts shall be cleared by water applied by the pressure washer. Residual water within the saw cuts shall then be vacuumed by the use of a wet/dry vacuum. The saw cuts shall then be dried by air compressor. After the slots are dried, any debris stuck within the slot must be removed.

(i) Embed sensor loop and lead-in-wires in a ¼” minimum width saw cut in the pavement. Sensor loop shall be placed at the bottom of 4” deep saw cut.

(j) Install sensor loops such that they are centered in the lane relative to the final lane striping. Replacement of sensor loops not centered in each lane relative to the final lane striping will be done at no additional cost to the State.

(k) The sensor loop cable shall be continuous within the roadway. The sensor loop itself includes four (4) turns of wire of a size, as specified in the construction plans.

(l) Embedded lead-in cables shall be twisted five twists per foot.

(m) Do not twist lead-in-wires from one sensor loop pair with another sensor loop pair.

(n) After laying sensor loop in four (4) turns within the 4" deep saw cut, press 1" long pieces of backer rod in each foot of the loop and loop lead saw cut, to anchor the wire in the slot before applying the epoxy loop sealant. Backer rod shall be embedded at least 2" below the top of pavement. The backer rod should be placed into saw cut with a blunt object, such as a wooden stir stick. No sharp objects such as a screwdriver shall be used to place backer rod into saw cut.

(o) The lead-in wires for the sensor loops can be spliced (as directed by the Engineer) to new lead-in cables at the final pull box. The splice shall be made by the use of a splice kit. The splice kit shall be utilized in accordance with the manufacturer's specifications. The splice shall be inspected by the Engineer before acceptance. Ensure sufficient wire lengths are provided to be able to connect wires into the terminal block inside the EVC cabinet without splices.

(p) The Engineer will make the final connection into the terminal block inside the EVC cabinet, however, the Contractor shall label the wires clearly to identify traffic direction, lane number, and sequence of loops and piezo sensors in each lane per direction. All labeling at the pull box and cabinet must be consistent.

(q) Splice points of cables must be suspended near the top of the pull box with j-hook or equivalent.

(3) Pull Boxes.

(a) Furnish and install pull boxes as indicated in the Contract documents. Carefully excavate areas for pull boxes.

(b) Install pull boxes so that covers are level with curb or sidewalk grade or 1" above existing ground.

(c) Give frames and covers two coats of asphaltic base paint after installation.

(4) Foundations.

(a) Construct foundations as indicated in the Contract documents. Foundations within the clear zone, as defined by the AASHTO *Roadside Design Guide*, including anchor bolts, shall not extend more than 4 inches above the surrounding ground.

(b) Set forms true to correct line and grade. Use rigid forms, securely braced in place. Place conduit ends and anchor bolts in proper position and height and hold in place with rigid top template. In addition to rigid top template, hold anchor bolts in place by means of rigid bottom template made of steel. Bottom template shall provide proper spacing and alignment of anchor bolts near their bottom embedded end. Install bottom template before placing footing concrete. Anchor bolts installed more than 1:40 from vertical will be rejected. Hold conduit ends and anchor bolts in place by template until concrete sets. Cure concrete not less than 72 hours.

(c) Mix, place and cure concrete for foundations in accordance with Section 601 – Structural Concrete and Section 503 – Concrete Structures.

(5) EVC Cabinet. Mount EVC cabinet. Set cabinet at required locations as ordered by the Engineer.

(6) Conduits.

(a) Install the ducts to drain towards the pull box. Conduits shall not drain towards the EVC cabinet.

(b) Make directional changes in the conduits, such as bends and changes to clear obstructions with curved segments using accepted deflection couplings or with short lengths of straight ducts and couplings. The deflection angle between two adjacent lengths of ducts shall not exceed six degrees (6°). The bends shall not have a radius of less than twelve (12) times the nominal size of the conduit. The Contractor may use factory-made ells.

(c) Cut the rigid PVC conduits with a hacksaw. Square and trim the ends after cutting to remove rough edges. The connections shall be of the solvent weld type. Make the solvent weld joints according to the conduit manufacturer's recommendations and as accepted.

(d) Seal the ends of the duct with plugs at the end of each day of work, whenever problems interrupt the duct installation work and whenever ducts are subject to submergence in water.

(e) Keep the conduits clean during construction.

(f) Use only hand shovels in compacting concrete encasements. Cure the concrete for at least 72 hours before permitting vehicular traffic to run over the concrete.

(g) Provide each conduit run with a No. 10 gage flexible, zinc-coated pull wire extending through its entire length. Double an additional five (5) feet back into the conduit at each end of the run. Conduits and sleeves entering pull boxes shall end flush in the wall with ends ground smooth. Plug the conduits and sleeves temporarily.

(h) Give the exterior portions of the direct burial steel conduits not encased in concrete two coats of asphaltic base paint.

(i) The entire length of a conduit run between pull boxes or standards shall be of one type of material.

(j) The completed duct lines shall be subject to a field test. Pass a bullet-shaped test mandrel about fourteen (14) inches long with a diameter 0.5 inch less than the inside diameter of the ducts through the entire length of each duct run. The Engineer will consider scouring found on the mandrel deeper than one thirty-seconds of an inch an indication of burrs and/or obstructions in the duct run. Normal abrasion between the duct line and bottom of mandrel is not an indication of burrs and/or obstructions in the duct run. Remove such burrs and/or obstructions. Pass the test mandrel through again. Repeat the process until the Contractor gets a satisfactory result.

(k) The Contractor shall seal the wire splicing made within the pullbox with a splice kit. The Contractor shall tag and identify all wire splicings clearly.

(l) The Contractor shall seal the ends of the conduits completely to keep out moisture.

(7) Wiring.

(a) Wiring shall conform to the appropriate articles of the Code. Arrange the wiring within assemblies, and pull boxes neatly. Encase the wiring installed underground in conduits. Before installing the wires and cables in conduits, pull a wire brush, swab and mandrel through each conduit for the removal of extraneous matter and verification of the absence of obstructions and debris from the conduit system.

(b) Furnish the cables on reels and handle the cables with great care to avoid damage to the conductors or the jacket. Pull the cables directly from their cores or reels into the conduits. Do not pull off and lay the cables on the ground before installation. Make the pulls in one direction only. Lubricants used shall be as recommended by the cable manufacturer or accepted by the Engineer. Do not leave the wires or cables under tension nor tight against bushings or fittings.

(c) The Contractor shall pull the cable in the conduit with a cable grip designed to provide a firm hold on the exterior covering of the cable. The Contractor shall pull the cable with a minimum of dragging on the ground or pavement. The Contractor shall use powdered soapstone, talc, or other acceptable lubricants to ease the pulling of the cable.

(d) Remove the damaged ends resulting from the use of pulling grips soon after pulling the cable. Maintain the cable end seals. Do not pull the open ended cables through the conduits. Cables shall be continuous from pulling point to pulling point. The Engineer will not permit splices within the continuous conduit sections. Tape or seal the ends of the spare conductors as accepted.

(e) Splicing shall be made by use of a splice kit.

(f) Coil neatly, at least 5 feet of slack conductor or cable near each EVC cabinet foundation, at both ends of each conductor and cable run, and at least 2 feet of slack at each traffic signal box.

(g) The Contractor shall tape the cable ends to exclude moisture. The cable ends shall remain taped until the Contractor attaches the terminal equipment. The Contractor shall submit brochures for cable connections in terminal cabinets for acceptance.

(h) The Contractor shall tag and label all lead-in cables in the EVC cabinet and the pull box permanently according to the Contract. The Contractor shall place two (2) additional pull lines through each conduit to facilitate any future replacement of the lead-in cables.

(D) Bonding and Grounding.

(1) Secure metallic conductor and cable sheaths, and conduits, mechanically and electrically to form continuous system.

(2) Ground system in accordance with the NEC and as specified herein. Provide No. 8 AWG copper wire or equivalent copper strap of same cross-sectional area for bonding and grounding jumpers.

(3) Ground conduits and neutral wires at service points as required in accordance with the NEC, using No. 6 AWG or equal for grounding conductors.

(4) Install copper-clad steel or pure copper ground rod 5/8-inch diameter by 8 feet long alongside each traffic signal standard and controller concrete base.

(5) Connect grounding rods with No. 6 AWG wire to No. 8 AWG ground wire loop and power system neutral.

(6) On wood poles, ground equipment mounted less than 8 feet above ground surface.

(E) Power Service. The solar panel assembly shall be constructed as follows:

(1) Solar panel assembly shall be constructed to handle winds up to 108 mph gusts without damage or permanent deformation.

(2) Solar panel(s) and associated supports shall be as specified in construction plans.

(3) Solar panel(s) shall be positioned to receive the maximum daily exposure to the sun.

(F) Inspection and Testing.

(1) Preliminary Arrangements. The equipment shall be given requisite factory tests as necessary to determine that the workmanship and materials are free from defects and to establish that the design and construction are necessary.

Arrange for and conduct shop tests of the equipment to establish compliance of the Contract documents and all applicable codes and standards. Furnish certified reports showing the results of all such tests. Test facilities shall be subject prior inspection by the Engineer. Notify the

Engineer at least 21 calendar days before the scheduled start of a test so that the Engineer may elect to witness any or all such tests. Furnish protection of equipment to prevent damage during the test period. All repair or replacement costs of any item damaged as a result directly or indirectly of the test will be at no cost to the State.

Unless otherwise noted in the Contract documents, shop testing and inspection of the components or the complete system shall be in accordance with the Contractor's standard practice. Supply a list of all the Contractor's standard testing with the equipment submittal. The Engineer shall not be charged for any of the preliminary testing.

(2) Inspection. The Engineer reserves the right to inspect all material during fabrication and before shipment and shall have access to the manufacturer's or Contractor's plant as required.

(3) Tests.

(a) After installation of piezo sensors, perform and furnish written test results for each piezo sensor showing:

1) Resistance: The resistance should be at least 1 MegaOhm.

2) Capacitance: The capacitance should range from 5 to 20 nano Farads.

3) Dissipation Factor: The reading should be less than 0.04.

Provide all testing equipment such as BK 875A or equivalent LCR meter, Fluke 75 or higher/equivalent multimeter, Megohmeter, and Scope meter or oscilloscope for the above tests.

(b) After the installation of the inductive loop detectors, furnish written test results for each loop sensor showing:

1) Induced voltage (V)

2) f = Frequency of Loop (KHz)

3) L = Inductance of Loop (uH)

4) R = Resistance of Loop (Ohm)

5) Meg Test = Loop insulation resistance should be > 100M ohm.

Correct any defects discovered as a result of the Static tests at no additional cost to the State.

(4) Acceptance of EVC System.

(a) The EVC System shall not be accepted and payment shall not be made until the system has successfully met the required testing.

(b) **Inspection.** The Owner reserves the right to inspect all material during fabrication and before shipment and shall have access to the manufacturer's or Contractor's plant as required.

(G) Restoring Pavements and Other Improvements. Restore the existing pavements and other improvements to their original condition according to the Contract. Materials used for restoration work shall meet be equal or better in quality than the materials the Contractor will replace and matching in thickness, texture, and color whenever applicable. The grades of the restored surfaces shall match the existing grades or as indicated in the construction plans.

(H) Warranty. Materials and equipment installed for permanent construction shall be new. The Contract contemplates the use of first-class material and equipment throughout the performance of the Contract.

Secure from the manufacturer(s), a warranty or warranties guaranteeing equipment from defects in materials, design and workmanship for not less than twelve (12) months from the date of acceptance.

When requiring adjustments or repairs during the warranty period, adjust or repair the existing unit within twenty-four (24) hours from the time of notification.

When requiring repairs that need factory corrections during the warranty period, replace the existing unit with an accepted temporary operational replacement unit within twenty-four (24) hours from the time of notification until the Contractor can install the new unit. Install the new, identical non-defective unit within thirty (30) days from the time of notification.

627.04 Measurement. The Enhanced Vehicular Classification (EVC) Traffic Counting System will be paid for per each.

627.05 Payment. The Engineer will pay for the accepted EVC System per each. 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
EVC Traffic Counting Systems	Each
Restore EVC Traffic Counting Systems	Each”

END OF SECTION 627

Amend Section 629 – Pavement Markings to read as follows:

"SECTION 629 - PAVEMENT MARKINGS

629.01 Description. This section describes furnishing, installing, and removing pavement markings.

629.02 Materials.

White and Yellow Traffic Paint	755.01
Pavement Markers	755.02
Adhesives for Pavement Markers	755.03
Preformed Pavement Marking Tape	755.04
Retroreflective Thermoplastic Compound Pavement Markings	755.05

Pavement markers shall be of uniform composition, free from surface irregularities, and free from other physical damage or defects that affect appearance or performance, or both.

629.03 Construction.

(A) General. Pavement markings shall conform to most recent edition of MUTCD, and as amended; and shall be applied as indicated in the contract documents.

Establish control points and layout pavement markings.

Remove surface moisture and other materials that may adversely affect bonding before applying pavement markings.

If bituminous adhesive is used, apply pavement markers not less than 7 days after completing pavement. If epoxy adhesive is used, apply markers not less than 14 days after completing pavement.

Do not allow more than 1-inch deviation from intended alignment of longitudinal pavement markings on tangents and curves with radii greater than 5,000 feet. Do not allow more than 2-inch deviation from intended alignment of longitudinal pavement markings on curves with radii of 5,000 feet or less. Correct misalignments by removing and reinstalling misaligned portion(s), plus an additional 25-foot segment from each end, within one working day after notification of misalignment by the Engineer.

(B) Temporary Pavement Markings. Install temporary pavement markings by end of work day in accordance with Table 629.03-1 - Temporary Pavement Markings when the following conditions exist:

(1) Permanent pavement markings are not installed after completion of each day's final paving.

(2) Additional guidance through area is required.

(3) Markings for special traffic patterns are warranted.

Install temporary, solid, 6-inch pavement marking tapes on edges of traveled way for newly paved, scarified, or cold-planed surfaces, reconstructed areas, and unmarked areas. Where curbs are present at edges of traveled way, 6-inch pavement marking tapes may be eliminated.

Maintain and replace temporary pavement markings, flexible delineators, and barricades.

Remove temporary markings before installing permanent pavement markings.

Cover or temporarily remove signs that conflict with temporary pavement markings.

When pavement markings are not installed by the completion of construction operations for each day, the Engineer will suspend work and progress payment in accordance with Subsection 105.01(A) - Authority of the Engineer.

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."	

(C) Permanent Pavement Markings.

(1) Permanent Pavement Markers. Provide pavement markers conforming to shapes, dimensions, tolerances, types, uses, and layout as indicated in the contract documents.

Submit samples of pavement markers and adhesives for testing and acceptance 10 days before usage. The Engineer will sample and test pavement markers in accordance with Subsection 755.02 – Pavement Markers.

Use bituminous adhesive or standard set type epoxy adhesive to bond pavement markers to pavement.

Heat and dispense bituminous adhesive from equipment that can maintain required temperature.

When using epoxy adhesive, mix components by employing two-component type automatic mixing and extruding apparatus. Automatic mixing equipment shall use positive displacement pumps and shall properly meter components in ratio of 1:1, $\pm$ 5 percent by volume. Check ratio in presence of the Engineer at beginning of each day or as ordered by the Engineer.

Mix only standard set type adhesive manually, and do not mix more than 1 quart.

Place pavement markers within 60 seconds after mixing and extruding adhesive. No further movement of placed marker will be

allowed. Use completely each mixed batch of adhesive within 5 minutes after start of mixing. Place adhesive on pavement surface or on bottom of marker, covering entire area of contact, without voids and with uniform thickness, to produce slight excess after pressing marker in place. Place marker in position and apply pressure with slight twisting motion until firm contact is made with pavement. If adhesive cannot be readily extruded from under marker when pressure is applied, discard remaining batch of adhesive. Immediately remove excess adhesive around edge of marker, on surrounding pavement, and on exposed surfaces of markers.

Remove adhesive from exposed faces of markers, using soft rags moistened with mineral spirits conforming to MIL-PRF-680A(1) or kerosene. Other solvents will not be allowed.

Where bituminous adhesive is used, protect marker against impact until adhesive has hardened to the degree designated by the Engineer. Where epoxy adhesive is used, protect pavement markers against impact until adhesive has hardened in accordance with Table 629.03-2 – Adhesive Set Time For Epoxy Pavement Markers:

TABLE 629.03-2 - ADHESIVE SET TIME FOR EPOXY PAVEMENT MARKERS

Temperature* (Degrees F)	Standard Set Type (Hours)	Rapid Set Type (Minutes)
100	1.5	15
90	2	20
80	3	25
70	4	30
60	5	35
50	7	45
40	No application below 50 degrees F	65
30		85
20		No application

10		below 30 degrees F
*Either pavement surface temperature or ambient air temperature, whichever is lower.		

Do not use hardness of epoxy rim around marker as an indication of degree of cure.

Remove and replace pavement markers that do not meet set time requirements indicated in Table 629.03-2 - Adhesive Set Time For Epoxy Pavement Markers.

Do not install pavement markers when relative humidity is greater than 80 percent, or when pavement surface is not dry.

When using Types A and J pavement markers for delineating 10-foot lane stripes, install markers in sets of four, with no fractional sets allowed. Adjust lengths of each 10-foot stripe and each 30-foot gap for skip striping ± 1 foot, to present uniform and balanced pattern.

Do not install pavement markers over longitudinal or transverse joints of pavement surface, pavement marking tape, and thermoplastic extrusion markings.

(2) Traffic Paint. Use wheeled, manually or motor-propelled applicator machine to apply traffic paint at nominal thickness of 0.015 inch or at rate of 300 linear feet of single 4-inch stripe for 1 gallon paint. Use applicator having appropriate shields around nozzles to permit sharp stripe definition, and separate nozzle to direct air stream immediately ahead of paint application for clearing debris, dust, and other foreign matter. Immediately remove misted, dripped, and spattered paint from pavements.

Protect freshly painted pavement markings from traffic until paint will not transfer to tires or other devices.

Repair or correct pavement markings damaged by traffic and paint marks on pavement caused by traffic crossing wet paint.

(3) Thermoplastic Extrusion Pavement Marking.

(a) Equipment. Apply material to pavement by extrusion method. One side of shaping die shall be pavement surface and other three sides shall be contained by, or shall be part of

equipment for heating and controlling flow of material.

Equipment shall provide continuous mixing and agitation of material. Conveying parts of equipment shall be constructed to prevent accumulation and clogging.

Mixing and conveying parts, including shaping die, shall maintain material at plastic temperature.

Equipment shall produce continuously uniform stripe dimensions.

Applicator shall cleanly and squarely cut off stripe ends. Pans, aprons, or similar appliances that the die overruns will not be allowed.

Apply beads to entire surface of completed stripe by automatic bead dispenser attached to liner.

Equip bead dispenser with automatic cutoff control synchronized with cutoff of thermoplastic material.

Use equipment that provides for varying die widths to produce varying widths of traffic markings.

Provide kettle for melting and heating composition. Equip kettle with automatic thermoplastic control device so that heating can be done by controlled heat transfer liquid rather than direct flame.

Equip and arrange applicator and kettle in accordance with National Fire Underwriters requirements.

Use mobile and maneuverable applicator that is capable of following straight lines and making curves in true arcs.

Use applicator capable of containing minimum of 125 pounds of molten material.

(b) Application. Clean off dirt, blaze, paint, tape, and grease. Apply thermoplastic extrusion pavement marking only when pavement surface is dry.

Use equipment that can apply material in variable widths from 2 inches to 12 inches. Apply material for full width of stripe in one application or pass.

On concrete pavements, on HMA pavements more than seven days old, and on HMA pavements paved within seven days containing less than 6 percent bituminous asphalt, pre-stripe application area with binder material, primer, or prime seal coat recommended by pavement marker manufacturer.

Line thickness, as viewed from lateral cross section, shall measure not less than 90 mils at edges, and not less than 125 mils in center.

Take measurements as average throughout 36-inch sections of line. Two thousand pounds of thermoplastic materials supplied in granular or block form shall yield approximately 6,600 feet of 4-inch striping with 90-mil thickness.

Where required by the contract documents to apply new markings over existing markings, bond new line over old line so that no splitting or separation takes place during its useful life.

Provide finished lines with well-defined edges, free of waviness.

(c) Profiled marking. Profiled thermoplastic markings shall be produced in one continuous integral process consisting of an extruded base line with raised ribs positioned at regular and predetermined intervals. The product shall be available in standard widths and standard colors of white and yellow.

The base line shall consist of thermoplastic materials extruded to a thickness of not less than 100 mils nor more than 125 mils. The width of the line shall be in accordance with the plans. The edges of the lines shall be well defined and free from waviness.

The raised ribs shall be positioned at regular 36 inch intervals when measure center to center. The general shape of the ribs approximates a trapezoid when viewed from a profile aspect. The raised rib shall stand a minimum of 265 mils above the extruded base line. The length of the raised rib shall be a minimum of 2.5 inches measured at the widest portion of the crown of the rib. In addition, the ribs shall be approximately rectangular in shape.

(4) Preformed Pavement Marking Tape. Apply temporary or permanent preformed pavement marking tape manually or with tape applicators, in accordance with tape manufacturer's recommendations and the contract documents. Install preformed pavement marking tape only when pavement surface is dry.

Do not apply preformed pavement marking tape over other markings. Remove existing pavement markings and prepare surface for tape application in accordance with Subsection 629.03(A) - General.

Apply preformed pavement marking tape only when ambient air temperature is at least 60 degrees F and rising, and roadway surface temperature is at least 70 degrees F and rising. Application of preformed pavement marking tape will not be allowed when roadway surface temperature exceeds 150 degrees F.

Before applying preformed pavement marking tape, prime existing roadway surfaces with primer in accordance with tape manufacturer's recommendations.

Use tapes of specified width or use tapes of different widths to form specified stripe width. The Engineer will pay for specified width of stripe when different tape widths are used to form specified width.

Use butt splices only. Tape material shall not be overlapped.

Areas marked with preformed pavement marking tape shall be ready for traffic immediately after application.

(5) Thermoplastic Hot Spray Pavement Marking.

(a) Equipment. Use equipment constructed for preparation and application of thermoplastic hot spray pavement marking.

Equipment shall provide continuous mixing and agitation of material. Conveying parts of equipment shall be constructed to prevent accumulation and clogging.

Use applicator capable of containing minimum of 125 pounds of molten material.

Provide kettle for melting and heating composition. Equip kettle with automatic thermostat control device so that

heating can be done by controlled heat transfer liquid rather than direct flame.

Equip and arrange applicator and kettle in accordance with National Fire Underwriters requirements.

Mixing and conveying parts, including the spray gun, shall maintain material at molten temperature.

Apply beads to entire surface of completed stripe by automatic bead dispenser attached to hot spray applicator.

Equip bead dispenser with automatic cutoff control synchronized with cutoff of thermoplastic material.

Use equipment that provides for varying spray widths to produce varying widths of traffic markings.

Use mobile and maneuverable applicator that is capable of following straight lines and making curves in true arcs.

(b) Application. Clean off dirt, debris, blaze, paint, tape, and grease. Apply thermoplastic hot spray pavement marking only when pavement surface is dry.

Use equipment that can apply material in variable widths from 2 inches to 12 inches. Apply material for full width of stripe in one application or pass.

On concrete pavements, or on HMA pavements more than seven days old, or on HMA pavements paved within seven days containing less than 6 percent bituminous asphalt, pre-stripe application area with binder material, primer, or prime seal coat recommended by pavement marker's manufacturer and accepted by the Engineer.

Line thickness, as viewed from lateral cross section, shall measure not less than 90 mils at edges, and not less than 125 mils in center.

Where required by the contract documents to apply new markings over existing markings, bond new line over old line so that no splitting or separation takes place during its useful life.

Provide finished lines with well-defined edges, free of waviness.

(D) Removal of Existing Pavement Markings. Remove and dispose of existing pavement markings before performing the following activities: applying temporary or permanent traffic paint, thermoplastic extrusion pavement marking, or preformed pavement marking tape; and making changes in traffic pattern. Dispose of material in accordance with Subsection 201.03(F) - Removal and Disposal of Material. Use one of the following removal methods:

(1) Grinding. Feather edges of grinding to make smooth transition to existing roadway surface. Limit feathering to 3 inches beyond edge of existing striping to be removed. Vary feathered edges to differentiate them from traffic stripes. Coat ground asphalt pavement with rapid-setting slurry.

(2) Burning. Burn off existing painted pavement markings using excess oxygen method.

(3) Sandblasting. As work progresses, immediately remove sand and other material deposited on pavement.

(4) Other. Remove preformed pavement marking tape by methods recommended by manufacturers. Eradication of existing markings by painting over them will not be allowed.

Areas where pavement markings, temporary or permanent, have been removed, must match existing pavement, be matt, no depressions and should not look like a pavement marking when wet or the sun is low in the sky. The removal area must have the approximate appearance and friction of the existing pavement and have no trace of the previous pavement markings.

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 measure the transverse markings by the linear foot or per each according to the contract.

The Engineer will measure crosswalk markings per lane according to the contract.

The Engineer will measure pavement arrows (single and multiple heads), symbols, and words per each according to the contract.

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 Engineer will measure the temporary pavement markings and temporary signs installed as ordered by the Engineer for special temporary traffic patterns on a force account basis per Subsection 109.06 – Force Account Provisions and Compensation, if the contract specifies payment in the proposal.

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.

The Engineer will measure the longitudinal pavement markings by the linear foot according to the contract. Longitudinal gaps for skip striping that are 30 feet or less will be included in the measurement.

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 Engineer will pay for crosswalk markings at the contract price of per lane basis according to the contract.

The Engineer will pay for profiled thermoplastic striping at the contract price of per each basis according to the contract.

The Engineer will pay for pavement arrows (single and multiple heads), symbols, and words at the contract price per each 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.

If the contract specifies payment for temporary pavement markings installed as ordered by the Engineer for special temporary traffic patterns, the Engineer will pay from an allowance for “Temporary Construction Zone Markings”.

The Engineer will compute the actual amount paid to the Contractor for force account work according to Subsection 109.06 – Force Account Provisions and Compensation.

If the contact specifies payment for removal of pavement markings under unit price pay items, the Engineer will pay for the accepted quantities at the contract unit prices bid. The prices shall be full compensation for removing such items according to the contract.

(B) The Engineer will pay for the various types of pavement markers at the contract price per each 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
Single 4-Inch White Pavement Striping (Thermoplastic Extrusion)	Linear Foot
Single 4-Inch White Guide Line (Thermoplastic Extrusion)	Linear Foot
Double 4-Inch White Pavement Striping (Thermoplastic Extrusion)	Linear Foot
Double 4-Inch Yellow Pavement Striping (Thermoplastic Extrusion)	Linear Foot
Double 4-Inch Yellow Dashed Pavement Striping (Thermoplastic Extrusion)	Linear Foot
Single 6-Inch White Pavement Striping (Thermoplastic Extrusion)	Linear Foot
Single 6-Inch Yellow Pavement Striping (Thermoplastic Extrusion)	Linear Foot
Single 8-Inch White Pavement Striping (Thermoplastic Extrusion)	Linear Foot
Single 8-Inch White Lane Drop Marking (Thermoplastic Extrusion)	Linear Foot
Single 12-Inch White Pavement Striping (Thermoplastic Extrusion)	Linear Foot
Single 12-Inch Yellow Pavement Striping (Thermoplastic Extrusion)	Linear Foot
24-Inch Crosswalk Marking	Lane
Profiled Thermoplastic Striping (White)	Each
Profiled Thermoplastic Striping (Rumble Strip)	Each
Type C Pavement Marker	Each
Type D Pavement Marker	Each
Type F Pavement Marker (BWS Fire Hydrant Marker)	Each
Type H Pavement Marker	Each

Pavement Arrow (Thermoplastic Extrusion)	Each
Pavement Word Marking (Thermoplastic Extrusion)	Each
Pavement Symbol (Thermoplastic Extrusion)	Each”

END OF SECTION 629

SECTION 630 – TRAFFIC CONTROL GUIDE SIGNS

Make the following amendment to said Section:

(I) Amend **Section 630.02 - Materials**, by replacing lines 28 to 29 to read:

"Retroreflective sheeting shall conform to criteria listed in ASTM D 4956 for the applicable type and class, or as amended in accordance with Subsection 750.01 - Signs."

(II) Amend **Section 630.04 - Measurement**, by replacing lines 204 to 221 to read:

"**630.04 Measurement.** The Engineer will measure destination and guide sign panels by the square foot of sign face.

The Engineer will measure destination and guide signs per each as indicated in the contract documents.

The Engineer will measure reinstalling existing street name signs per each as indicated in the contract documents.

When the Engineer accepts an alternative design, the method of measurement for the various contract items affected by the design shall be identical with the various original contract items shown in the contract. The Engineer will not measure the additional items that the Contractor requires for the alternate design.

The Engineer will not measure removal and disposal and storing of existing and temporary signs and markers that the Contractor will not incorporate in the completed highway for payment."

(III) Amend **630.05 – Payment** by revising lines 223 to 303 to read as follows:

"**630.05 Payment.** The Engineer will pay for destination and guide sign panels at the contract price per square foot for the type specified complete in place. Payment will be full compensation for the work prescribed in this section and the contract documents.

The Engineer will pay for destination and guide signs per each as indicated in the contract documents. Payment will be full compensation for the work prescribed in this section and the contract documents.

The Engineer will measure reinstalling existing street name signs per each as indicated in the contract documents. Payment will be full compensation for the work prescribed in this section and the contract documents.

The Engineer will not pay for removing and disposing or storing of existing and temporary signs that the Contractor will not incorporate in the completed highway separately. The Engineer will consider them incidental to the various contract items.

The Engineer will pay for the following pay items when included in the proposal schedule:

Pay Item	Pay Unit
Replacement of Existing Sign Panel with New Destination and Guide Sign Panels (Extruded Aluminum Panels)	Square Feet
Replacement of Existing Sign Panel with New Destination and Guide Sign Panels (Sheet Aluminum)	Square Feet
Destination Sign (10 Sq. Feet or Less) with Post	Each
Destination Sign (10 Sq. Feet or Less) without Post	Each
Guide Sign – Conventional Road (10 Sq. Feet or Less) with Post	Each
Guide Sign – Conventional Road (10 Sq. Feet or Less) without Post	Each
Reinstall Existing Street Name Signs to New Post	Each

When the Engineer accepts an alternate design, the total amount paid shall be full compensation for furnishing and installing materials and furnishing equipment, tools, labors, and incidentals necessary to complete the work. The Engineer will not make payment for additional materials, equipment, tools, labor and other incidentals that might become necessary to complete the installation due to the alternate design.

END OF SECTION 630

SECTION 631 – TRAFFIC CONTROL, REGULATORY, WARNING, AND MISCELLANEOUS SIGNS

Make the following amendment to said Section:

(I) Amend Section 631.03(C) Labeling of Signs, from lines 42 to 51 to read:

"**(C) Labeling of Signs**. Label back of each sign with sign stickers as directed by the State. Sign stickers will be provided by the State."

(II) Amend **Section 631.04 – Measurement** by replacing lines 67 to 69 to read:

"**631.04 Measurement.** The Engineer will measure regulatory, warning, school, and miscellaneous signs as complete units of the type and design specified in the proposal.

The Engineer will not measure removal and disposal and storing of existing and temporary signs that the Contractor will not incorporate in the completed highway for payment."

(III) Amend **Section 631.05 – Payment** by replacing lines 71 to 99 to read as follows:

"**631.05 Payment.** The Engineer will pay for regulatory, warning, school, and miscellaneous signs at the contract price per each for the type and design specified complete in place. Payment will be full compensation for excavating and backfilling, furnishing and installing materials, furnishing equipment, tools, labors and incidentals necessary to complete the work.

The Engineer will not pay for removing and disposing or storing of existing and temporary signs that the Contractor will not incorporate in the completed highway separately. The Engineer will consider them incidental to the various contract items.

The Engineer will pay for the following pay items when included in the proposal schedule:

Pay Item	**Pay Unit**
Regulatory Sign (10 Sq. Feet or Less) with Post	Each
Regulatory Sign (10 Sq. Feet or Less) without Post	Each
Regulatory Sign (more than 10 Sq. Feet) with Post	Each
Regulatory Sign (more than 10 Sq. Feet) without Post	Each

Warning Sign (10 Sq. Feet or Less) with Post	Each
Warning Sign (10 Sq. Feet or Less) without Post	Each
Warning Sign (more than 10 Sq. Feet) with Post	Each
Warning Sign (more than 10 Sq. Feet) without Post	Each
School Sign (10 Sq. Feet or Less) with Post	Each
School Sign (10 Sq. Feet or Less) without Post	Each
Miscellaneous Sign (10 Sq. Feet or Less) with Post	Each
Miscellaneous Sign (10 Sq. Feet or Less) without Post	Each
Miscellaneous Sign (more than 10 Sq. Feet) with Post	Each
Miscellaneous Sign (more than 10 Sq. Feet) without Post	Each”

END OF SECTION 631

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 reflector marker, milepost marker and Type III object marker per each as complete units of the type and design specified in the proposal."

(II) Amend **Section 632.05 – Payment** by replacing lines 83 to 100 to read:

"**632.05 Payment.** The Engineer will pay for reflector marker, milepost marker with post (bi-directional), milepost marker and Type III object marker at the contract price per each for the type and design specified complete in place. Payment will be full compensation for excavating and backfilling, 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
Reflector Marker RM-2 (with Flexible Post)	Each
Reflector Marker RM-2 (without Post)	Each
Type III Object Marker (OM1-1) without Post	Each
Type III Object Marker (OM1-1) with Post	Each
Type III Object Marker (OM2-2V) without Post	Each
Type III Object Marker (OM3-1L) without Post	Each
Type III Object Marker (OM3-1R) with Post	Each
Type III Object Marker (OM3-1R) without Post	Each
Mile Post Marker (with Post)	Each
Mile Post Marker (without Post)	Each
Mile Post Marker with Post (Bi-directional)	Each"

END OF SECTION 632

SECTION 634 – PORTLAND CEMENT CONCRETE SIDEWALKS

Make the following amendment to said Section:

(I) Amend **Section 634.04 - Measurement** by replacing lines 60 to 61 to read:

"**634.04 Measurement.** The Engineer will measure Portland cement concrete sidewalks by the square yard of finished surface."

(II) Amend **Section 634.05 – Payment** by replacing lines 62 to 72 to read:

"**634.05 Payment.** The Engineer will pay for the accepted quantities of Portland cement concrete sidewalk at the contract unit price per square yard complete in place as shown in the proposal.

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**
Portland Cement Concrete Sidewalk	Square Yard

The Engineer will pay for excavation of unsuitable material and backfill with material acceptable to the Engineer under Section 203 – Excavation and Embankment. If no pay item exists, refer to Subsection 104.02 – Changes."

END OF SECTION 634

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 Data Submittals (Section 108.03)
(2) Contract Time (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 – Control of Work and 106 – Control of Material)
(6) Field-posted Drawings (Section 648)
(7) Pre-Final and Final Inspection submittals (Section 108.13)
(8) Guarantee of Work (Section 108.17)
(9) Final Settlement of Contract (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 638 – PORTLAND CEMENT CONCRETE CURB AND GUTTER

Make the following amendments to said Section:

(I) Amend **638.04 – Measurement** by revising lines 130 to 131 to read as follows:

"**638.04 Measurement.** The Engineer will measure curb, both new and reset, by the linear foot. The Engineer will measure along the front face of the curb at the finished grade elevation."

(II) Amend **638.05 – Payment** by revising lines 133 to 148 to read as follows:

"**638.05 Payment.** The Engineer will pay for the accepted quantities of curb and curb and gutter at the contract unit price.

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**
Curb, Type 2D	Linear Foot
Concrete Gutter	Linear Foot
2" Concrete Curb	Linear Foot
HDOT Driveway Curb	Linear Foot
HDOT Driveway Curb and Gutter	Linear Foot
4" Curb and Gutter	Linear Foot
0" to 4" Curb Height Transition	Linear Foot
0" to 6" Curb Height Transition	Linear Foot
2" Curb to 6" Curb Height Transition	Linear Foot
4" Curb to HDOT Driveway Curb Transition	Linear Foot
6" Curb to HDOT Driveway Curb Transition	Linear Foot
3" Curb and Gutter to HDOT Driveway Curb and Gutter Transition	Linear Foot

6” Curb and Gutter to HDOT Driveway Curb and Gutter Transition	Linear Foot
Type E Curb to HDOT Driveway Curb Transition	Linear Foot
Type E Curb and Gutter to HDOT Driveway Curb and Gutter Transition	Linear Foot”

END OF SECTION 638

Amend **Section 645 – Traffic Control Devices** to read as follows:

"SECTION 645 - WORK ZONE TRAFFIC CONTROL

645.01 Description. This section describes the following:

(A) Furnishing, installing, maintaining and subsequently removing work zone traffic control devices, and personnel. Work zone traffic control shall include providing flaggers and police officers.

(B) Keeping roads for public traffic open and in passable condition; providing and maintaining temporary access crossings for trails, businesses, parking lots, garages, residences, farms, parks, and other driveways; taking necessary work precautions for the protection, safety, and convenience of the public; should pedestrian facilities exist, taking necessary measures for safe and accessible passage, with route information and ADAAG compliance, for pedestrians traveling through or near work zone.

(C) Taking safety and precautionary measures, such as illuminating roadway obstructions during hours of darkness, in accordance with Chapter 286, HRS; Title 19, Subtitle 5, Chapters 127, 128, and 129, HAR; and *MUTCD*.

645.02 Materials.

Signs	750.01
Sign Posts	750.02
Fasteners for Signs and Route Markers	750.03
Reflector Marker	750.07
Flexible Delineator Posts and Reflectors	750.08
Traffic Delineators	750.09
Preformed Pavement Marking Tape	755.04

Submit electronic crashworthy documentation, including but not limited to, drawings in pdf and CADD, crash test reports, and FHWA eligibility letters certifying compliance with MASH 2016, for signs, sign supports, barricades, tubular markers, cones, vertical panels, and other traffic control devices. Only devices that are deemed crashworthy will be allowed.

Upon request of the Engineer, furnish self-certified MASH 2016 compliant letter from vendor for each type of Category 1 traffic control device, as defined by FHWA and/or AASHTO, including single-piece traffic cone, single-piece drum, and tubular marker.

Use of new signs, sign supports, barricades, cones, vertical panels, drums, tubular markers, and other traffic control devices that are not certified to be MASH 2016 compliant will not be allowed.

Traffic control devices, including signs, barricades, warning lights, arrow boards, portable changeable message signs, cones, tubular markers, and temporary concrete barriers shall conform to the American Traffic Safety Services Association (ATSSA), *Quality Guidelines for Temporary Traffic Control Devices and Features* and the *MUTCD*.

Other traffic control devices including barricades, warning signs, lights, and temporary signals shall conform to Title 19, Subtitle 5, Chapters 127, 128, and 129, HAR. Retroreflectorization for protective devices such as barricades, tubular markers, and warning signs shall conform to *Subsection 750.01 – Signs*.

645.03 Construction. Furnish, install, and maintain barricades, signs, cones, delineators, lights, flashing signals, and other traffic control devices.

Furnish two (2) police officers for each location that requires work zone traffic control. If contractor submitted TCP during project, furnish number of police officers indicated in the accepted TCP, whichever is greater. All police officers shown in the accepted TCP shall be consider incidental to the lump sum contract item No. 645.0100 - Traffic Control.

Furnish, deploy, maintain, and remove portable message signs (i.e., electronic message boards, EMB) as specified in *Subsection 645.03(l) – Portable Message Sign*.

When directing traffic, flaggers or police officers, or both shall be in direct communication with each other.

TCP Development. Contractor shall develop site-specific Traffic Control Plan (TCP) and work schedule based on work hours and lane closure restrictions stipulated in the contract documents.

TCP shall be developed after Contractor conducted field investigation of traffic conditions, including but not limited to, traffic volume counts taken during anticipated work hours, detour routes, interchange ramp & city street traffic signal timing, and public gathering places such as schools, businesses and shopping malls within the project limits and surrounding areas.

If excessive work zone traffic delays within project limits were observed during construction, the State reserves the rights to suspend TCP if Contractor failed to adjust his work and/or TCP to address traffic concerns brought forth by the State in a timely and responsive manner.

If TCP affects City & County of Honolulu streets, such as but not limited to, traffic detours onto City streets, or traffic control devices placed on City streets, a City & County of Honolulu, Department of Transportation services (DTS) Permit for Street Usage shall be obtained prior to starting work. A TCP stamped by a registered Civil Engineer from the State of Hawaii may be required to obtain the DTS Permit for Street Usage.

TCP Submittal. Submit TCP and work schedule for review and acceptance following the procedures established in *Subsection 105.04 - Review and Acceptance Process*. TCP and schedule shall be accepted by the Engineer prior to starting work in each area. Submit modifications and deviations from accepted TCP following the procedures established in *Subsection 105.04 - Review and Acceptance Process*. Illegible TCP will not be accepted.

Include the following in TCP and schedule:

(1) Signs (type, size, designation, and placement).

(2) Traffic movements shown by arrows.

(3) Positions of flaggers and police officers.

(4) Barricades, cones, delineators, and additional traffic control devices and measures necessary for protection of work and public safety; and placement, spacing, distances, and reference points for traffic control devices.

(5) Layout, drawn to scale, of traffic control devices, including information needed to layout TCP.

(6) Brief description of work.

(7) Dates of work.

(8) Times of day affected.

(9) Proposed public information sign.

(10) Proposed news release.

(11) For lane closures indicate the max. length of roadway to be closed.

(12) For mobile operations such as rumble strip milling and striping, provide instruction details for warning sign and flagger deployment.

(13) Minimum lane width and offset distances to adjacent roadway elements (e.g., bridge railing, guardrail, portable concrete barrier, etc.)

(14) Eradicate conflicting pavement striping per *Subsection 629.03(D) – Removal of Existing Pavement Markings*. Eradication of existing markings by painting over them will not be allowed.

(15) If the work will affect a pedestrian or bike route, show an alternative route and provide appropriate warning signs.

Place sign or device situated farthest upstream from work zone first. Then place others progressively downstream toward work zone.

Extend cones or delineators to point where cones or delineators are visible to approaching traffic.

For signs with messages on both faces, cover inapplicable message before placement.

Keep barriers, end treatments, barricades, construction and warning signs, and other traffic control devices in good condition. Repair, clean, or replace barriers, end treatments, barricades, signs, or other devices as required to maintain effectiveness and appearance. The Engineer will solely decide if the barriers, end treatments, barricades, signs, or other traffic control devices are in suitable condition to remain or needs cleaning, repair, or other actions.

Remove or cover regulatory and warning signs that conflict with accepted TCP. Restore signs upon completion of work or as ordered by the Engineer. Affix object markers to post(s) of covered sign.

Promptly remove or cover construction and warning signs that are not applicable or not in use.

Promptly remove traffic control devices that are no longer needed.

Remove traffic control devices in reverse order of installation, starting closest to work zone and continuing away from work zone.

Maintain abutting owners' existing access until replacement access is usable. Obtain permission from abutting owners, including conditions for closing existing access. Submit copy of agreement with abutting owners before beginning work in the affected area.

When working on existing facility that will be kept open to traffic, provide smooth and even surface for public traffic use. Only work on a portion of roadway at one time, and stage construction from one side to other while routing traffic over opposite side.

During subgrade and paving operations, paved shoulders may be used for public traffic.

Do not store work zone signs, if not in use, sign stands, material or equipment where it will interfere with public traffic. Remove equipment and other obstructions out of right-of-way or clear zone to permit free and safe passage of public traffic during non-working hours or suspension of work. For storage of materials and equipment, see *Subsection 105.14 – Storage and Handling of Materials and Equipment*.

(A) Signs. Install signs sufficiently ahead of location where operations may interfere with use of road by traffic and at intermediate points where new work crosses or coincides with existing road.

Place signs in accordance with TCP as accepted by the Engineer.

(B) Construction Signs. Erect post-mounted construction signs at the beginning of project and at the end of project at the location indicated by the Engineer. These signs shall remain for the duration of the highway project. Maintain these signs. Place these signs besides the required traffic control signs called for herein.

Furnishing, installing, maintaining, and subsequently removing two (2) sets of post-mounted construction signs as ordered by the Engineer.

Install post-mounted construction signs on each main approach to the project work zone, excluding any ramps or side roads/streets.

The construction signs shall be new and become the property of the Contractor, when the project obtains final acceptance or when directed by the Engineer.

(C) Barricades

(1) General. Provide, erect, and maintain necessary barricades suitable for protection of work and safety of the public.

Barricades shall be in good condition. Barricade application and installation shall be in accordance with accepted TCP.

Provide sandbags if required or ordered by the Engineer. Sandbags and installation method shall comply with *MUTCD* and be accepted by the Engineer prior to use. Do not place sandbags on striped barricade rail.

During hours of darkness, install steady burn lamps on barricades selected by the Engineer. Flashing lamps must not be used, unless directed by the Engineer or required by the Contract Documents. Attach lamps on barricade ends closest to traveled way and visible to oncoming traffic. Replace non-functioning lamps within 24 hours of discovery. Perform nighttime inspection of the lamps and work zone devices every 48 hours.

Do not install signs on barricades unless signs and barricades have been crash tested as a unit and accepted under MASH 2016.

(2) Retroreflectorization. Retroreflectorize barricade rails and attachment with retroreflective sheeting in accordance with *Subsection 750.01(C)(4) - Type III or IV Retroreflective Sheeting (High Intensity)* or *Subsection 750.01(C)(5) - Hardened Aluminum-Backed Retroreflective Sheetin*g.

Retroreflectorize both vertical faces of each barricade rail.

(3) Color. Provide white colored rails, frames, and braces with front and back rail faces having 6-inch-wide alternating orange or red and white stripes sloping downward toward traveled way at angle of 45 degrees from vertical. Use stripe colors in accordance with the following:

(a) Use orange and white stripes for the following conditions:

1. Construction work.

2. Detours.

3. Maintenance work.

(b) Use red and white stripes for the following conditions:

1. On roadways with no outlet, such as dead-ends and cul-de-sacs.

2. Ramps or lanes closed for operational purposes.

3. Permanent or semi-permanent closure or termination of roadway.

(4) Maintenance. Keep barricades in good condition. Repair, repaint, clean, or replace barricades to maintain effectiveness and appearance. Immediately replace missing or damaged barricades, lamps, sandbags, and other accepted weights.

Clean and repair barricades immediately when effectiveness is impaired, or when directed by the Engineer and before relocating to other locations.

(D) Traffic Delineators. Install traffic delineators in accordance with accepted TCP.

Maintain traffic delineators in good condition. Immediately replace missing or damaged traffic delineators.

Clean delineator immediately when effectiveness is impaired or when directed by the Engineer and before relocating to a new location.

(E) Cones. Install traffic cones in accordance with accepted TCP.

Maintain traffic cones. Keep traffic cones clean and in good repair. Immediately replace lost, stolen, or damaged traffic cones.

Clean cones immediately when effectiveness is impaired or when directed by the Engineer and before relocating to a new location.

(F) Lane Closures. Lane closures will be allowed only during the following hours. 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.

(1) Work not requiring lane closures. Contractor may perform work not requiring lane closures during day-time working hours of 8:30 a.m. to 3:00 p.m., Monday through Friday, on side roads only. No work will be allowed on H-1 outside of night-time work.

(2) Night-time work maintaining three (3) through lanes. Night-time lane closures that maintain a minimum of three (3) through lanes in a particular direction (i.e. H1 eastbound or H-1 westbound) will be allowed during the following hours:

Sunday to Thursday	8:30 p.m. to Midnight
Monday to Friday	Midnight to 4:30 a.m.

The Contractor may request to close Eastbound and Westbound lanes simultaneously for Item (2) above. Obtain the Engineer's acceptance prior to implementing lane closures in both directions.

(3) Night-time work closing all freeway lanes in one direction. Night-time lane closures that close all freeway lanes in one direction will be allowed during the following hours:

Sunday to Thursday	8:30 p.m. to Midnight
Monday to Friday	Midnight to 4:30 a.m.

Full freeway lane closures shall not be combined with other lane closures. No lane closures will be allowed in the opposite direction of the full freeway lane closure. Full freeway lane closures will be limited to 120 nights for the duration of the contract.

(4) Weekly Cross Streets/Frontage/Ramp work Closures. For cross streets/frontage streets/ramp construction, only single lane closures will be allowed during the following hours:

Monday to Friday	9:00 a.m. to 3:00 p.m.

(5) Cross Streets/Frontage/Ramp Full Road Closures. Work that requires full road closures will be allowed only during the following hours after obtaining Engineer's acceptance:

Sunday	8:00 a.m. to 12:00 am.

See *Subsection 107.03 – Working Hours* of the project Special Provisions for description of Noise Variance hours, noise control conditions and restrictions during weekend and night work.

At the Director's discretion, with a one-week prior notification to the Contractor, work may be suspended to allow traffic to flow freely during major public events, such as concerts, parades, sporting events, etc. The Contractor will not be compensated but the Contractor's Roadway Completion Time and/or Contract Time will be adjusted accordingly.

The Director may also suspend work at any time due to unforeseen circumstances that occur within the immediate vicinity of project that may disrupt traffic on the freeway and/or alternate routes, or in times of emergencies. The Contractor will be compensated for work performed up to the time of the suspension and Contractor's Roadway Completion Time and/or Contract Time will be adjusted accordingly.

For island of Oahu, no lane closures will be allowed during 24-hour periods as follows:

(1) Day preceding holiday (3:00 p.m. to Midnight), except as otherwise specified.

(2) Holidays (Midnight to 6:30 p.m.).

(3) Thanksgiving weekend (Thursday to Sunday).

(4) Three-week holiday period for Christmas and New Year.

(5) One-week "Beat-the-School-Jam" period, to be determined, beginning approximately third week of August (first week of University of Hawaii Manoa Session).

(6) Other dates of events indicated in the contract documents.

No time extension will be given for the above restrictions. The contract time for the project has accounted for any loss of time due to the above restrictions.

Before scheduling work, submit requests for detours, lane and/or full closures as follows:

(1) Detours - 8 weeks before implementing detours.

(2) Lane closures - 6 weeks before implementing lane closures.

(3) Closing all lanes in one direction – 6 weeks before implementing full closure.

Detours or lane closures will not be allowed before the Engineer accepts detour or lane closure request.

(G) Advisory Signs. Submit advisory sign shop drawings. Furnish, install, maintain and remove two (2) advisory as ordered by the Engineer.

Place signs at locations designated by the Engineer. Provide signs, minimum 8 feet wide by 4 feet high, with black letters on orange background, and with three 4.00 pounds/foot flanged channel posts for each sign.

Include starting date and hours of construction in sign message. Use letter heights of 8 inches, Series D. The Engineer will review and accept advisory signs' wording before fabrication. Install advisory signs two weeks before start of construction. Remove advisory signs immediately after construction has been completed or as ordered by the Engineer.

(H) Advertisement. All public notices, including advertisements in newspaper, shall be paid for under lump sum contract item No. 697.1000 - Public Communication and Coordination, unless otherwise directed by the Engineer.

(I) Portable Message Sign. Furnish, deploy, maintain and remove the following as directed by the Engineer:

(1) Up to eight (8) portable message signs/EMB in the outbound (OB) direction during project duration.

(2) Up to five (5) portable message signs/EMB in the inbound (IB) direction during project duration.

The portable message signs/EMB shall have remote message capabilities to be used for the duration of the project, as directed by the Engineer. Remote message access shall be granted to HDOT personnel if requested by the Engineer.

During work that would require lane closures, deploy portable message signs/EMB on all approaches to the work area at locations accepted by the Engineer, seven (7) days prior to and during such work.

645.04 Measurement.

(A) Traffic control as specified in *Subsection 645.03 - Construction* will be measured on a contract lump sum basis and will not include any work performed under other specific traffic control contract bid items. Measurement for payment will not apply.

(B) The Engineer will measure additional police officers, additional traffic control devices, and advertisement, if ordered by the Engineer, on a force account basis, in accordance with *Subsection 109.06 - Force Account Provisions and Compensation*.

(C) Up to eight (8) portable message signs (i.e., electronic message boards) in the outbound direction and up to five (5) in the inbound direction with remote message capabilities for the duration of the project, as accepted by the Engineer, shall not be paid for separately and shall be considered incidental to the contract item No. 645.0100 - Traffic Control for respective base bid and additive bid.

645.05 Payment. The Engineer will pay for the accepted “Traffic Control”, “Additional Police Officers, Additional Traffic Control Devices and Advertisement” items 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.

All labor, materials, tools, equipment and incidentals, including but not limited to, traffic control signs, detour route signs, traffic control devices, police officers, portable message signs/EMBs, that are shown in site-specific Traffic Control Plan (TCP) accepted by the Engineer shall not be paid for separately and shall be consider incidental to the lump sum contract item No. 645.0100 - Traffic Control for respective base bid and additive bid.

The Engineer will pay for the following pay items when included in the proposal schedule:

Pay Item	**Pay Unit**
Traffic Control	Lump Sum
Additional Police Officers, Additional Traffic Control Devices, And Advertisement	Force Account

An estimated amount for the force account may be allocated in the proposal schedule under “Additional Police Officers, Additional Traffic Control Devices, and Advertisement”, 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.

The Engineer will not pay for request submittals. The Engineer will not consider claims for additional compensation of late submittals or requests by Contractor.

TWO-LANE HIGHWAY - ONE LANE CLOSED

FIGURE 1 - TRAFFIC CONTROL PLAN

R11/97

492
493
494

NOTES:

1. CW20-1Ad sign required for posted speed limit of 45 m.p.h. or greater
2. See TABLE 1 for additional dimensions.
3. The advisory speed (xx) shall be determined by the Engineer.

MULTILANE UNDIVIDED HIGHWAY - RIGHT LANE CLOSED

FIGURE 2 - TRAFFIC CONTROL PLAN

R2/97

MULTILANE UNDIVIDED HIGHWAY - LEFT LANE CLOSED

FIGURE 3 - TRAFFIC CONTROL PLAN

R10/96

MULTILANE DIVIDED HIGHWAY - ONE LANE CLOSED

FIGURE 4 - TRAFFIC CONTROL PLAN

R10/96

501
502
503

NOTES:

1. For work being performed in the left center lane, use mirror image of above with appropriate left lane closure signs and taper.
2. For undivided highways, delete advance warning signs shown posted in median area.
3. The advisory speed (xx) shall be determined by the Engineer.
4. See TABLE 1 for additional dimensions.
*5. For posted speeds of 40 m.p.h. or less, use sign spacings and taper lengths from TABLE 1 and change signs CW21-4-A and CW20-5(R) to CW20-1A(3D) and CW20-5(2D)(R) as shown in Figure 4.

MULTILANE HIGHWAY - CENTER LANE CLOSED

FIGURE 5 - TRAFFIC CONTROL PLAN

R10/96

504
505

NOTES:

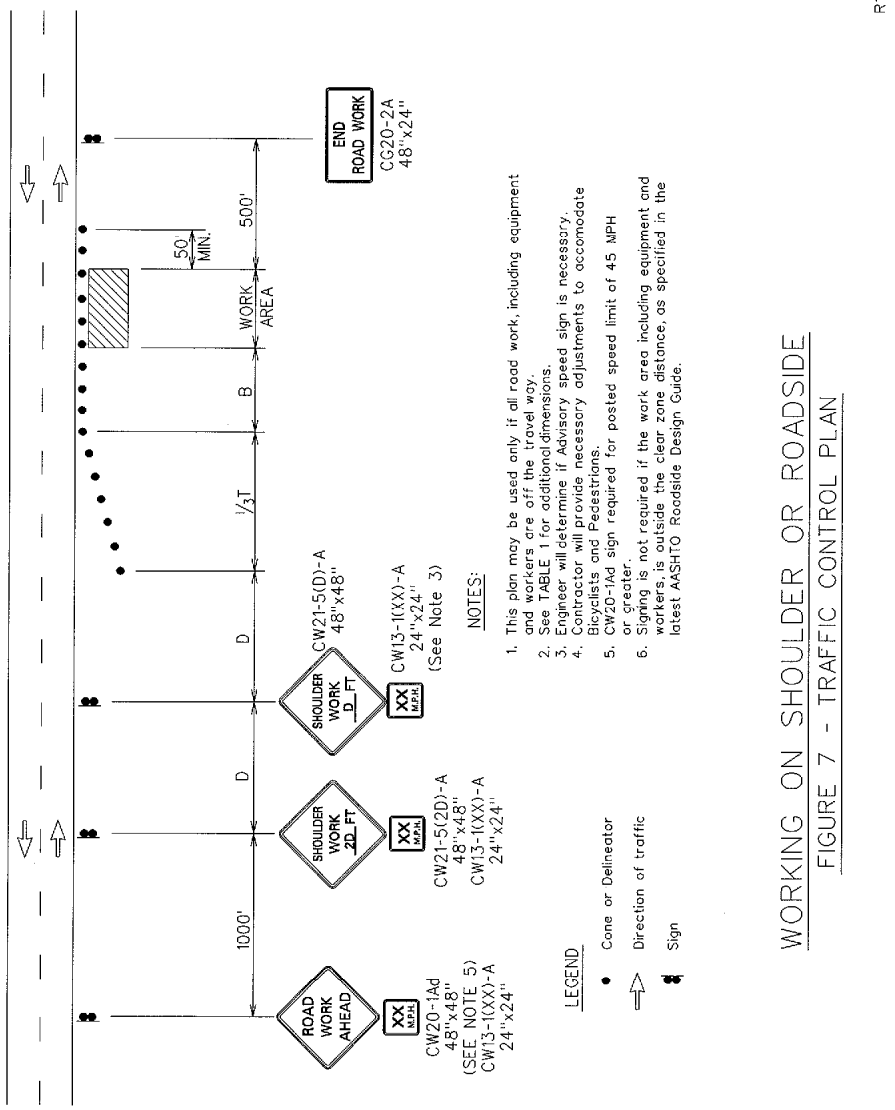
1. For work being performed in the left center lane, use mirror image of above with appropriate left lane closure signs and taper.
2. For undivided highways, delete advance warning signs shown posted in median area.
3. The advisory speed (xx) shall be determined by the Engineer.
4. See TABLE 1 for additional dimensions.
•5. For posted speeds of 40 m.p.h. or less, use sign spacings and taper lengths from TABLE 1 and change signs CW21-4-A and CW20-8(R) to CW20-1A(3D) and CW20-8(2D)(R) respectively.

MULTILANE HIGHWAY - MULTIPLE LANE CLOSED

FIGURE 6 - TRAFFIC CONTROL PLAN

R10/96

506
507



WORKING ON SHOULDER OR ROADSIDE

FIGURE 7 - TRAFFIC CONTROL PLAN

R10/96

"

END OF SECTION 645

Make the following Section a part of the Standard Specifications:

"SECTION 676 – CONCRETE DECK REPAIR

676.01 Description. The work in this section includes providing documentation; conducting construction and public traffic control; locating and confirming the size of defective areas in the concrete roadway decking and proposing areas to repair and then obtaining the Engineer's acceptance of areas to repair; carrying out the repairs including such steps as; preparing the repair areas by removing material and roughening the surface, lowering reinforcing steel with inadequate concrete cover, replacing damaged reinforcing steel, abrasive blasting and cleaning the surfaces, replacing the removed concrete, finishing and curing the concrete, replacing joints; replacing pavement markings; performing tests; and providing documentation of work and tests completed.

676.02 Materials.

(A) Replacement Concrete. Use replacement concrete that is a Very Early Strength Latex Modified Concrete (VESLMC) with fibers which provides a low color contrast with the surrounding deck surfaces. The nominal maximum size of coarse aggregate shall be 3/8 inch. The Engineer may accept an alternative replacement concrete that is equal or better in performance, when compared to the characteristics stated below.

(1) The VESLMC shall use cement which is finished calcium – sulfo-aluminate that contains no more than 2 percent C_3A 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 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 also include 1½ inch length alkali-resistant (AR) glass fiber at 6 lbs/cy.

(4) Corrosion inhibitor shall be migrating amine carboxylate, water based. Use 1½ pints of corrosion inhibitor per cubic yard of VESLMC.

(5) To allow monolithic VESLMC placement, the material shall achieve a minimum 3-hour bond strength of 250 psi. Approved epoxy bonding agents may be used to achieve the minimum bond strength. If the minimum bond strength is not achieved, monolithic pours shall be used to avoid construction joints.

(6) The VESLMC concrete shall also meet the following requirements:

Characteristics	Requirements	Test Methods
Minimum Compressive Strength: At 3 hours At 28 days	 3000 psi 6000 psi	 ASTM C1074 ASTM C39
Air Content	5 percent maximum (includes any tolerance)	ASTM C231
Abrasion Resistance	Depth of wear not to exceed 0.035 inches in 60 minutes	ASTM C779 (Procedure A)
Modulus of Elasticity Minimum @ 3 hrs Maximum @ 56 days	 3,000,000 psi 4,000,000 psi	ASTM C469
Ring Test	No cracking at age Less than 28 days	ASTM C1581
Flexural Fatigue strength (based on a testing arrangement similar to ASTM C78)	500 psi @ 3 million cycles	ASTM C78 *See modification below
Rapid Chloride Permeability Test	Charge passed less than 100 coulombs @ 63 days	ASTM C1202
Flexural Strength (Modulus of Rupture @ 28 days)	1100 psi	ASTM C78

*Modified ASTM C78 Testing Procedures:

To modify the testing procedure for determination of fatigue resistance, the following parameters were used.

- Load application frequency of 5 Hz without rest periods.
- Sinusoidal pulse was used to vary the loading amplitude.
- Load was initially applied 10-20% stress ratio to seat the sample and insure gage functionality.
- Servo-hydraulic universal test machine with feedback controlled close-loop configuration, maximum load capacity 20 kips.
- Maximum/minimum ratio 10%.
- Specimens covered with wet burlap and kept moist during testing.

- Tests performed at 50% of static flexural strength.
- Three concrete beam samples tested.

(a) Provide certified test data from the concrete manufacturer and cement manufacturer that the replacement concrete complies with these requirements. Perform the material sampling and testing in the presence of the Engineer or as acceptable to the Engineer. The certification shall be valid for 6 months after completion of tests. New certification shall be submitted prior to continuing the placement of the VESLMC.

(b) In addition to the aforementioned requirements, provide a strength-maturity relationship for the 2, 3, 4, 6, and 12 hour test ages from trial batched of the proposed replacement concrete. Allow the Engineer to monitor additional specimen(s) using the maturity meters provided in subsection 676.03 – Construction Requirements.

(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	602

676.03 Construction Requirements. Conform to the requirements of Section 503 – Concrete Structures and as required in these specifications.

The Contractor shall retain a Hawaii Licensed Structural Engineer to review the repair procedures and continually review the daily areas to be repaired by the Contractor and to provide assurance to the Engineer that the areas under repair do not endanger the public, State forces and Contractor forces; or structurally impair the structure, based on the anticipated loads.

(A) Submittal Requirements. At least four weeks prior to the start of this work, provide eight 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 required in Subsection 676.02 - Materials.

(2) Information on the replacement 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 repair work including but not limited to equipment for sounding the deck, determining surface profiles and compressive strengths, demolishing concrete, cleaning the repair areas, quality control/quality assurance(QC/QA) plan, placing (handling, mixing, consolidating, finishing, curing and texturing) of concrete, and post repair testing for delaminations. If equipment includes use of a continuous volumetric concrete mixer, provide the documentation required under Section 676.03(C) - Continuous Volumetric Concrete Mixers.

(4) Detailed step by step procedures for all aspects of the repair work including sounding the deck, determining surface profiles and compressive strengths, demolishing concrete, removing concrete, cleaning the repair areas, preparing any repair substrata, placement (handing, mixing, consolidating, finishing, curing and texturing) of concrete, and post repair testing for delaminations.

(5) Detailed plans and procedures to be in compliance with the requirements of Section 107 Legal Relations and Responsibility to the Public including complying to noise variances, and controlling of work to appropriately minimize dust and air borne debris from concrete demolition, abrasive blasting, 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 at the time of placement with regards to concrete repair work:

(a) Ambient air temperature

(b) Wind speed

(c) Temperature of plastic concrete delivered

(d) Relative humidity

(e) Evaporation rate as determined from ACI 305 Hot Weather Concreting

(f) Theoretical evaporation rate as determined from ACI 305 Hot Weather Concreting

(g) Rain

(h) Placement of repair concrete

(i) Preparation of any concrete substrata

(j) Equipment and traffic control near or on repair areas during placement and curing operations

(7) Planned emergency procedures for concrete repair areas that cannot be appropriately constructed within the allotted closure hours of if preparation of work area results in a complete depth penetration of the deck.

(8) Procedures for documentation of all aspects of repair work including the measurement and locations of repair areas.

(9) Test reports of compressive strengths and maturity readings of repaired areas during the progress of the work.

(B) Early Strength Monitoring. Provide a minimum of two wireless or sacrificial sensor type maturity meters to determine concrete conformance to early strength requirements. The maturity meters shall have a secure and unalterable means of collecting data.

Verify the calibration of the maturity meters in the presence of the Engineer prior to use on the project by placing a temperature sensor in a controlled temperature water bath and recording whether the indicated temperature agrees with the known temperature of the water bath. Perform temperature comparison test at approximately 5 different temperatures, 75°F, 100°F, 125°F, 150°F and 175°F. The temperature recording device shall be accurate to within ± 2°F.

Develop strength-maturity relationship using only maturity meters, materials and conditions to be used or encountered on the project for all replacement concrete prior to placing any concrete on the project. Notify the Engineer when the development of the maturity curve will be done and conduct all tests in the presence of the Engineer in accordance with ASTM C1074 Estimating Concrete Strength by the Maturity Method at the concrete producer's laboratory or other approved laboratory facilities. For every concrete design, prepare a minimum size of each batch of concrete of at least one cubic yard and cast a minimum of 15 cylinders in accordance with AASHTO T23. Test three cylinders at ages of 2, 3, 4, 6,

and 12 hours. Submit all results and curves to the Engineer for review and acceptance.

Any alterations in mix proportions or material source or type of material, in excess of those tolerable by batching variability, requires the development of a new strength-maturity relationship prior to use. This includes a change in material type, source, or proportion of cement, fly ash, coarse aggregate, fine aggregate, fibers or admixtures. The Engineer will require the development of a new strength-maturity relationship for any changes in the water to cement ratio of greater than 0.02.

Submit the following information of the strength-maturity relationship prior to placing any concrete on the project.

(1) Project number, concrete mix number and test date.

(2) Air content, slump and total free water of the batch of concrete.

(3) Type and amount of admixtures used in the batch of concrete.

(4) Strength of each specimen and average strength of specimens at each test age.

(5) Maturity index for each instrumented test specimen and the average maturity index for the instrumented specimens at each test age.

(6) Graphs of the average compressive strength verses the average value of the maturity index as described in the strength-maturity relationship of ASTM C1074.

Provide a minimum of two maturity meters at the project site for monitoring the early strength of concrete during each section of concrete placement. Assure that the batteries for the maturity meters are adequately charged prior to use. Use the same brand and type of maturity meters and thermocouple sensors as those used to develop and verify the strength-maturity relationship.

Install at least two maturity meter sensors per concrete placement with locations to be determined by the Engineer. Place sensors no closer than 4 inches from any formed surface or edges of slab being placed and at mid-depth of the slab section. Anchor sensors so that they remain in the middle of the slab's thickness. Do not tie any sensor to reinforcing steel, any material that may corrode or any formwork. Modify means and methods subsequent to failures of sensors to prevent any reoccurrence.

Conduct a validation test for every 14th day or fraction thereof of concrete placement relationship by comparing an average compressive strength of three cylinders to the compressive strength as determined in the accepted strength-maturity relationship to verify that the in-place concrete compressive strengths are accurately represented. Submit the validation data with the same extent of information as the initial strength-maturity relationship submittal. The Engineer will consider the strength-maturity relationship valid for the predicted strengths within 5 percent of the actual compressive strength. Make a mathematical adjustment to the strength-maturity relationship when the actual average compressive strength for three validation tests are 5 to 10 percent above or below the predicted compressive strength as directed by the Engineer. Develop a new strength-maturity relationship when the actual average compressive strength for three validation tests exceeds 10 percent above or below the predicted compressive strengths.

The Contractor shall take surface temperature readings with a non-contact infrared thermometer after the concrete is poured. The readings shall be correlated to the actual times between the start and finish of placement operations. Areas with high or low temperature reading irregularities shall be further investigated using a rebound hammer in accordance with ASTM C805. These rebound hammer readings shall be compared to other readings taken where surface temperatures are satisfactory. A minimum 3,000 psi compressive strength must be confirmed prior to the opening of the roadway. Repaired areas with temperature irregularities and which fail the rebound hammer testing prior to the roadway opening shall be removed and replaced at the Engineer's request. Areas which are identified with irregularities but which meet the 3,000 psi minimum strength prior to roadway opening can be tested again after 24 hours to ensure that this area of concrete is maturing uniformly with the surrounding concrete placed at the same time. The Engineer will determine the need for replacement.

(C) Continuous Volumetric Concrete Mixers. The Engineer will allow the use of continuous volumetric concrete mixers. Use standard manufactured continuous volumetric concrete mixers that are capable of combining aggregate, cement, water, admixtures into a uniform mixture within the specified mixing time and comply with ASTM C685. The volumetric continuous concrete mixers shall also conform to the following requirements:

(1) Proportion cement, aggregate, water and admixture by volume.

(2) Carry each ingredient in separate compartments and produce a minimum of 6 cubic yards of concrete.

(3) Measure the cement as it is introduced into the mixture within a recording meter.

(4) Control the flow of water and admixtures as they are introduced into the mixture with calibrated and adjustable flow control valves.

(5) Indicate the number of gallons used to the nearest 0.10 gallons with a water flow control meter.

(6) Proportion and blend all components of the concrete mixture on a continuous or intermittent basis via automatic calibration.

Calibrate and perform uniformity checks in accordance with ASTM C685 and manufacturer's recommendations to ensure proper proportioning and consistency of concrete. Provide the Engineer with the means to verify the calibration of the mixer and uniformity of the mix. Submit mixer calibration and uniformity reports and equipment specifications for review and approval. Do not use the continuous volumetric concrete mixer until the submittals are approved by the Engineer.

(D) Just-in-Time Training. Just-in-Time Training (JITT) shall be mandatory, and consist of a formal joint training class on Very Early Strength Latex Modified Concrete (VESLMC) and paving techniques. Construction operations for rapid strength concrete shall not begin until the Contractor's and the Engineer's personnel have completed the mandatory JITT. The Contractor's personnel included in the list of participants for the Pre-Operation Conference along with the Engineer's representatives shall attend JITT.

The JITT session will be conducted for not less than 4 hours. The training class may be an extension of the Pre-Operation Conference and shall be conducted at the project filed location convenient for both the Contractor's and the Engineer's project staffs. Scheduling and completion of the JITT session shall be completed at least 15 days prior to the start of construction of VESLMS replacement concrete. The class shall be held during normal working hours.

The JITT instructor shall be experienced in the construction methods, materials, and test methods associated with VESLMC replacement concrete and paving techniques. The instructor shall not be an employee of the Contractor or a member of the Engineer's field staff. A copy of the syllabus, handouts, and presentation material shall be submitted to the Engineer at least 7 days before the day of the training and shall be furnished to each participant. Selection of the course instructor, the course content and training site shall be as mutually agreed to by the Contractor and the Engineer. The instructor shall issue a certificate of completion to the participants upon the completion of the class. The

certificate shall include the course title, date and location of the class, the name of the participant, instructor's name, location and phone number.

The Contractor's or Engineer's personnel involved with VESLMC replacement concrete operations will not be required to attend JITT if they have completed similar training with the previous 12 months of the date of the JITT for this project. The Contractor shall provide a certificate of class completion as described above for each staff member to be excluded from the JITT session. The final determination for exclusion of any staff member's participation will be determined by the Engineer. All attendees of the JITT shall complete, and submit to the Engineer, an evaluation of the training. The course evaluation form will be provided by the Contractor.

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.

(E) Pre-Operational Conference. The Contractor and concrete manufacturer and cement manufacturer's representative involved in construction operation of the repairs shall meet with the Engineer, at a mutually agreed time, to discuss and verify the method of accomplishing all phases of the repair operations, contingency planning, and standards of workmanship for the completed item of work. The Contractor's superintendents, foremen, subcontractors, concrete and cement manufacturer's technical representatives, and all key personnel involved with the repair shall attend the pre-operation conference. Placement of replacement concrete shall not begin before the Engineer accepts the pre-operational conference as completed.

(F) Pre-Operational Demonstration. The Contractor shall demonstrate the repair work on a trial test slab using the same step by step procedures, equipment and materials as proposed for the actual repair operation in the presence of the repair material manufacturers' representatives, and the Engineer. The demonstration shall be on a suspended slab 5 feet above the ground on a repair area approximately 6 feet wide x 10 feet long with support along the longitudinal edges. Install OSHA-compliant handrails and if required toe boards. The State may allow a trial test slab on a planned repair area under the following conditions:

(1) Traffic control is in accordance with contract requirements and is incidental. Liquidated damages apply.

(2) Test slab location to be agreed to by the State in a location with minimal impact to traffic and on a non-travel lane. Direct access to the underside of the test slab shall be provided for State inspection.

(3) An emergency repair procedure accepted by the State shall be in place to restore and reopen the work area to traffic.

(4) Unacceptable repair shall be redone at no additional cost to the State.

The demonstration shall include the following:

(1) The Contractor's superintendents, foremen, subcontractors, manufacturer's technical representatives, and all key personnel involved with the repair shall be present.

(2) Unless allowed within the project area above, the trial test slab location shall be outside the project limits, acceptable to the Engineer and require no traffic control.

(3) The concrete test slab shall be steel reinforced, 6½ inches thick, and have a minimum concrete compressive strength of 3,000 psi at the time of the test. The reinforced concrete slab shall include no. 5 reinforcing bars that are 6 inches on centers transversely and 12 inches on centers longitudinally for both top and bottom mats. The top mat transverse bars shall have concrete cover of 1½ inches. The cover of the bottom mat shall be 1¼ inches. The Contractor, prior to performing the repair demonstration, shall have the details of the trail test slab accepted by the Engineer.

(4) The area of the slab to be repaired shall be determined by the Engineer.

(5) Demonstrate splicing of reinforcing bars by lap welding.

(6) Qualification tests in accordance with Subsection 676.03(S)(1) – Plastic Concrete Sampling and Testing shall be demonstrated on the 6' x 10' test area.

(7) The repair materials shall be mixed and used as recommended by the manufacturer.

(8) Strength Testing and Verification: Using a certified laboratory, perform qualification testing consisting of three sets of concrete compressive strength tests of cylinders at 3 hours and at 28 days. Include monitoring of samples using maturity meters and logging sensors to verify strength using the strength-maturity relationship data.

Placement of replacement concrete within the project limits shall not begin before the Engineer accepts the pre-operational demonstration as completed and acceptable.

(G) Authorization to Work. Proceed with the repair work within the project limits when the first six of the following items and either the seventh or eighth item has met the requirements and is accepted by the Engineer in writing.

(1) Subsection 676.03(A) Submittal Requirements.

(2) Subsection 676.03(B) Early Strength Monitoring.

(3) Subsection 676.03(C) Continuous Volumetric Concrete Mixers.

(4) Subsection 676.03(D) Just-in-Time Training.

(5) Subsection 676.03(E) Pre-Operational Conference.

(6) Subsection 676.03(F) Pre-Operational Demonstration.

(7) Temporary Work Acceptance. The Engineer accepts a request in writing to do a specific work on a particular day.

(8) Qualified to Work. The Engineer accepts the most recent required qualification tests and all the following criteria are satisfied. Otherwise, request and use a temporary work acceptance from the Engineer to be authorized to work as an unqualified Contractor.

(a) No conditions exist that would require new qualification testing.

(b) No quality assurance tests have failed to meet specification requirements since the previous accepted tests.

(c) No concrete repairs have failed. This criterion is not applicable if the Engineer accepts the plans for remedial actions for the failed repairs and those failed repairs do not hold up further concrete repair work.

(H) Deck Condition Survey. The roadway plans are a guide to illustrate the general locations of areas to be visually examined and sounded, and not as a specification of specific repair areas. Damaged areas shall be determined by the Contractor in accordance with visual observation and ASTM D4580. Mark the locations and limits of deteriorations and delaminations as determined by the visual and sounding methods, then mark additional areas according to the plans with

perimeters of the proposed repair areas being perpendicular and parallel to the traffic lanes. The Contractor shall provide drawings of the damaged locations including the outlines of the proposed repair areas. The total area of repairs shall be calculated and provided to the Engineer with the drawings. The Contractor shall not begin any repair until the Engineer verifies and accepts the location and size of the area to be repaired. The Engineer may direct the Contractor to do repairs outside of the areas determined in the deck condition survey. As part of the deck condition survey, in areas near joints, the Contractor will determine if the preformed compressive joint seal for the joints is in need of repair. Upon agreement by the Engineer, the Contractor will propose a method of repair as approved by a Hawaii licensed structural engineer for the Engineer's approval.

(l) Preparation of Repair Areas. 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 ACI546.1R-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 viaduct repair area. Provide falsework calculations performed and stamped by a Hawaii licensed structural engineer. Prepare the repair areas as follows:

(1) Removing Material:

(a) Determine the concrete cover prior to saw cutting. Saw cutting shall not damage the existing reinforcing steel.

(b) Saw cut the limits of the repair area ½ inch deep, or to the top of transverse top reinforcing steel if the depth of cover is less than ½ inch.

(c) Remove the concrete within the limits of repair. Use chipping or pneumatic tools weighing less than 15 pounds. Hydrodemolition with controlled pressure settings may be used to remove concrete. Special care shall be taken to ensure compliance with Section 676.03(A) – Submittal Requirements and especially 676.03(A)(5).

(d) 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.

(e) Remove sound concrete beyond unsound areas to provide a good bond in accordance with the contract.

(f) Deck repairs shall be done to a depth where sound concrete is encountered. If reinforcing steel is encountered the depth shall be increased to allow proper bond between the VESLMC and reinforcing steel.

(g) No material is allowed to fall or flow into streams or drainage systems.

(h) The reinforcing steel at the edges of the repair areas shall be well bonded to the surrounding deck with no significant loose scaly rust or contaminants that would interfere with concrete bond.

(i) Debris and waste material shall be disposed of at a disposal site in accordance with all applicable Federal, State and County laws, rules and ordinances and as accepted by the Engineer.

(2) Corroded Reinforcing Steel. Strengthen any reinforcing steel that is found to have lost 20% or more of the original cross sectional area by weld lap splicing new reinforcing steel according to Section 602 – Reinforcing Steel and as shown in the plans.

(3) Preparation of Repair Area. Use ICRI CSP6 (Concrete Surface Profile) for surface profile preparation of repair area. Sandblast the concrete substrate and any reinforcing steel in the repair area. Remove any contaminants, heavy rust or scale, dust, loose concrete and sand that may affect bonding of the repair concrete. Any thin rust or bits of hard mortar that are tightly adhered to the reinforcing steel need not be removed. The reinforcing steel shall generally be shiny (some rust and hard mortar allowed) and welds with their heat affected area shall be shiny (bare metal only) after sand blasting. Hydroblast the exposed area with fresh water. Spare abrasive blasting equipment shall be provided and kept on the project site during working hours. 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 repair area shall be free of dust, dirt, oil, grease and other contaminants that may affect bonding of the concrete repair mortar. The Contractor shall protect the public from dust pollution and other damages resulting from the blast cleaning operation. The Contractor shall prevent abrasives and debris from entering drainage systems and streams.

(J) Traffic and Equipment Control on Bridge.

(1) Construction vehicles shall not exceed a 5-mph speed limit within 100 feet longitudinally and 12 feet transversely of the placement area for both arrival and departure directions.

(2) Equipment and vehicles shall not contaminate or drive on the prepared deck surface.

(3) The Contractor shall not permit compressors or other equipment that produce vibrations on the precast girder span undergoing deck repair. Equipment shall not be located on precast girder spans undergoing deck repair unless approved by the Engineer.

(4) Vehicular traffic shall not exceed a 15-mph speed limit on the bridge span being repaired during concrete pour and cure.

(5) The replacement concrete shall have minimum compressive strength of 3,000 psi as determined by Early Strength Monitoring prior to opening to traffic.

(6) Contractor shall not allow any equipment or vehicles within 4 feet laterally from any repair for the duration of traffic control. This is a structural integrity issue.

(7) The bridge deck shall not be used as a storage area for equipment or for stockpiling materials. Loads exceeding the legal limit shall not be used on the bridge unless an overload and/or oversize permit has been approved by the Engineer.

(8) Construction dead loads combined with other dead and live loads shall not exceed the capacity (inventory and operating rating) of the bridge.

(K) Placement of Replacement Concrete.

(1) The concrete manufacturer's and cement manufacturer's technical representatives shall be present during initial repair 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.

(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 replacement concrete according to the replacement 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 replacement concrete manufacturer and cement manufacturer shall be used where replacement 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 surfaces to be repaired 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 replacement concrete.

(8) Any falsework and formwork required shall be considered incidental to this work.

(9) Replacement concrete shall be mixed as recommended in writing by the manufacturer.

(10) Runoff from the adjacent deck is not allowed on the repair area.

(L) Consolidation. Consolidate the replacement concrete as recommended by the manufacturer.

(M) Finishing. Finish while the replacement concrete is plastic and workable. Position float parallel to road centerline and finish in the transverse direction passing gradually from one side of the pavement to the other. Move ahead along pavement centerline advancing not more than one-half of float length. Finish the replacement concrete to meet the requirements of the Surface Testing subsection. Texture surface of the replacement concrete to match existing adjacent textures.

(N) Protection and Curing. Protect freshly placed replacement concrete from plastic shrinkage, premature drying, excessive hot temperatures and direct wind. See Section 676.03(A) – Submittal

Requirements for submittal requirements. Cure the replacement concrete as recommended by the concrete, cement, and curing manufacturers.

(O) Joints.

(1) Construction Joints. Use construction joints only with the acceptance of the Engineer and in accordance with the Contract.

(2) Steel Armor Angles and Expansion Joints. Armor angles and expansion joints shall not be altered or damaged and shall be restored to the original configuration. Non-concrete joint material damaged by the Contractor shall be restored to the original condition at no additional cost.

(P) Over-cut Saw Kerf Groove Filling. If sawing of repair areas extends beyond the corners of the repair areas, then those over-cut grooves shall be filled with a material which is compatible with the replacement concrete and acceptable to the Engineer.

(Q) Pavement Marking. Pavement markings within the project's limits such as striping, markers and arrows which are missing, damaged, or have been removed shall be replaced. This work shall conform to the requirements of Specification Section 629 – Pavement Marking and the costs shall be incidental to the work of this Section 676 – Concrete Deck Repair. The new or replaced markings shall be similar to existing.

(R) Surfacing Testing. The finished bridge deck shall conform to the following requirements when tested by the Contractor in the presence of the Engineer within 14 days following the placement of concrete:

(1) Surface Flatness. The surface of the replaced pavement shall not vary more than 1/8 inch under a 10-foot straightedge placed parallel to or perpendicular to the traffic lanes to within the limits of the repaired area after the repair has cured.

(2) Joint Smoothness. The surface smoothness at the repair edges or joints shall be such that neither side of the joint will vary from a true plane enough to permit a 1/16 inch thick shim 3 inches wide to pass under a one-yard straightedge adjacent to either side of the joint when the straightedge is laid on the pavement perpendicular to joint and its midpoint at the joint.

(3) Surface Elevation. The surface elevation of the repair shall be between 0 to 1/16 inch above the surface determined by the top elevation of the existing deck slabs adjacent to all four edges of the repaired deck surface.

(4) Surface Condition. The repaired area shall be sound and free from cracks greater than 0.01 inch in width.

(S) Quality Control/Quality Assurance (QC/QA):

(1) Plastic Concrete Sampling and Testing. Perform QC/QA concrete sampling and testing in accordance with the QC/QA plan and following requirements:

(a) QC/QA tests shall include air content, temperature, slump and preparing compressive strength cylinders for testing at later dates. Perform plastic concrete test on the initial delivery for each concrete design mix each day. Ensure that QC/QA technicians and laboratory are qualified in accordance with HDOT's Quality Assurance Manual for Materials dated October 2001. Ensure one technician is present and performing test throughout the placement operation at each placement site. If any QC/QA plastic properties fail, reject the remainder of the load, terminate the LOT and notify the Engineer. A LOT shall be one day's production, once every maximum of 20 cubic yards of concrete, or approximately once every 1000 square feet of repaired area, whichever is least. Cast a set of cylinders representing the LOT of concrete from the same sample of concrete.

(b) Following the termination of a LOT, obtain samples from a new load and perform plastic properties tests until such time as water to cementitious material ratio, air content, temperature and slump. Initiate a new LOT once the testing indicates compliance.

(c) 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.

(T) Verification and Independent Assurance. HDOT may perform Verification sampling and testing to validate Contractor sampling and testing as well as the quality of the materials produced. Furnish sufficient concrete of each design mix for verification and independent assurance sampling and testing as required by the Engineer. When the Engineer perform verification, the Contractor may perform the same tests on the concrete at the same time. HDOT's Independent Assurance Program will be conducted to evaluate all sampling and testing used in the acceptance material.

(U) Acceptance.

(1) Sampling and Testing. Sample and test concrete of each mix design for water to cementitious material ratio, air content, temperature, slump and cast a set of three cylinders for compressive strength once per LOT. A LOT shall be one day's production, once every maximum of 20 cubic yards of concrete, or approximately once every 1000 square feet of repaired area, whichever is least. 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.

Take these acceptance samples randomly in accordance with ASTM D3665 or as determined by a random number table acceptable to the Engineer. Select and document the selection of random sample(s) prior to the work activity. Include the date and time of determination of the selection.

Provide curing facilities that have the capacity to store cylinder samples for QC and Verification, and Independent Assurance simultaneously for initial curing. Deliver the QC samples to the final curing facility in accordance with AASHTO T23. At the same time, the Engineer will deliver verification and independent assurance samples to their final curing facility. All cylinders will be clearly identified.

Test the QC laboratory cured samples for compressive strength at the age of 3 hours, 7 days, and 28 days 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.

The Engineer will average the QC compressive strengths data, average the Verification compressive strength data and compare the results. Comparison of results can also be on the latest five Verification data and the QC data during the same period. Based on this comparison, the Engineer will determine if the Validation Criteria as shown in the following table has been met.

Validation Criteria	
Range of Average Compressive Strength	QC and Verification Difference
Less than 3,500 psi	450 psi
3,501 – 4,500 psi	590 psi
4,501 – 6,500 psi	910 psi
6,501 – 8,500 psi	1,275 psi
Greater than 8,500 psi	1,360 psi

When the difference between the QC and Verification are less than or equal to the Validation Criteria, the QC data is validated and the Engineer will use the Contractor's data as a part of the acceptance procedures. When the difference between QC and Verification data exceeds the Validation Criteria, the Engineer will initiate the dispute resolution process requirements of Section V of Highway's Quality Assurance Manual for Materials.

(2) Hardened Concrete. Hardened concrete will be accepted or rejected on the basis of strength tests and any of the requirements or characteristics in Subsection 676.02 – Materials. Do not discard a cylinder strength test result based on a low strength (strength below the specified minimum strength). The Engineer will accept at full payment only for acceptable LOTS of concrete. The compressive strength of the LOT shall meet the specified minimum strength of 6,000 psi at 28 days. The Engineer may accept the average compressive strength of three individual test results in lieu of individual strength test results provided that no single test result is less than 90 percent of the average value. The concrete shall also meet the specified minimum compressive strength of 3,000 psi at 3 hours as determined by the maturity meter readings.

(V) Documentation of Repairs. Include in the preparation of posted drawing as required in Section 648 – Field-Posted Drawings, records of each repaired concrete area.

The documentation shall include the following:

(1) The replacement concrete pour date.

(2) The location of the center of each repair rectangle as indicated by:

(a) The baseline station number.

(b) The transverse offset from the baseline with offset direction information.

(3) The dimensions of the rectangle in the following directions:

(a) Longitudinally in the direction of traffic flow.

(b) Transversely perpendicular to the direction of traffic flow.

(4) Identification of the repair area represented by the maturity sensors and cylinder samples collected or that the test was performed on

strength test results of cylinders and maturity meter readings shall be included for all repair areas.

(5) QC/QA and Acceptance test data.

(6) The Contractor shall also prepare a spread sheet tabulation of the above information.

(W) Post-Construction Survey, Sealing Cracks and Repairing Delaminations. Perform a post-construction survey with the Engineer present three months after replacement concrete placement. Contractor shall survey all concrete repairs in accordance with ASTM 4580 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 the repair concrete and acceptable to the Engineer. Replace unacceptable areas with replacement concrete as specified in this section at no increase in contract time or contract price. Repaired areas will be subject to reinspection. Provide documents of the post construction surveys that are acceptable to the Engineer.

676.04 Measurement.

(A) The Engineer will measure the Repair for Concrete Deck per square foot in accordance with the contract documents.

(B) Traffic control will be incidental to the work in this section.

(C) Documentation of repairs will be incidental to the work in this section.

676.05 Payment. The Engineer will pay for accepted pay items listed below at the contract price per 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**
Repair for Concrete Deck	Square Foot

(1) 60% of the contract bid price upon completion of the Subsections; 676.03(A) – Submittal Requirements, 676.03(F) – Pre-operational Demonstration, 676.03(H) – Deck Condition Survey, 676.03(I) – Preparation of Repair Areas, 676.03(J) – Traffic and Equipment Control on Bridge, 676.03(K) – Placement of Replacement Concrete, 676.03(L) – Consolidation, 676.03(M) – Finishing, 676.03(N) –

Protection and Curing, 676.03(O) – Joints, 676.03(P) – Over-cut Saw Kerf Groove Filling, 676.03(Q) – Pavement Markings and any other steps required to physically repair the deck, but not including testing and inspections paid for below.

(2) 30% of the contract bid price upon completion of Subsection 676.03(R) – Surfacing Testing. The Sampling and Testing verification of the compressive strength prior to the release of 30% payment

(3) 10% of the contract bid price upon completion of Subsection 676.03(W) – Post-Construction Survey, Sealing Cracks and Repairing Delaminations."

END OF SECTION 676

SECTION 693 – TERMINAL IMPACT ATTENUATOR

Make the following amendments to said Section:

(I) Amend **693.02 – Materials** by revising lines 13 to 19 to read as follows:

"Terminal impact attenuator and transitions shall be redirective, non-gating, and energy absorbing. Within 15 working days following award of contract, submit certification attesting that terminal impact attenuator satisfies AASHTO MASH, with Test Level as indicated in the contract documents, is approved by FHWA, and is accepted by HDOT. Concrete for terminal impact attenuator shall have minimum 28-day compressive strength of 4,000 psi and shall confirm to Section 601 – Structural Concrete."

(II) Amend **693.04 – Measurement** by revising lines 58 to 61 to read as follows:

"**693.04 Measurement.** The Engineer will measure Quadguard and transitions per each."

(II) Amend **693.05 – Payment** by revising lines 63 to 79 to read as follows:

"**693.05 Payment.** The Engineer will pay for the accepted quantities of Quadguard and transitions at the contract unit price.

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**
Quadguard Elite M10 Wide (with Tension Strut Backup), TL-3	Each
Transition, QUAD M10 to Thrie-Beam (37 1/2" Post Spacing)	Each
Quadguard M10 TL-2	Each
Transition, QUAD-W,610,QG,L,G	Each
Transition, QUAD-W,610,QG,R,G	Each"

END OF SECTION 693

Make the following Section a part of the Standard Specifications:

"**SECTION 694 –LONGITUDINAL CHANNELIZING CURB SYSTEM**

694.01 Description. This section describes the installation of Longitudinal Channelizing Curb Systems. The Longitudinal Channelizing Curb System shall be one of the following: Qwick Kurb System, Tuff Curb System, or other HDOT approved equivalent.

694.02 Materials.

(A) General. The Longitudinal Channelizing Curb System shall utilize modular curb units; curb end units (where needed); and upright flexible, retroreflective posts or panels, as specified by the contract. The complete system shall be MASH compliant as approved by FHWA. Within 10 working days following award of the contract, submit certification attesting that the Curb Channelizing System satisfies MASH and is approved by FHWA for high speed use.

(B) Curb Unit. The modular curb units shall be able to interface with each other to form a continuous curb. Each modular curb unit shall allow the use of end units and be bolt fastened to the underlying pavement or bridge deck according to the manufacture's recommendations. Each modular curb shall be made of high-density polyethylene or polyurethane, shall be UV resistant, and include retroreflectors. The Longitudinal Channelizing Curb System shall be designed such that it can be formed into a radius or curve, when required to follow the roadway geometry.

Individual modular curb units shall have a minimum length of 30 to 45 inches, height of 2 to 4 inches, and width of 7 to 12-1/2 inches. Each modular curb unit color shall be either yellow or white and match the adjacent pavement marking.

(C) Upright Post or Panel. Each modular curb unit shall include at least one upright post or panel. The number of posts or panels shall be as shown in the contract. Post or panel shall be flexible plastic, be able to withstand multiple errant vehicle impacts, and be UV resistant. Overall post height and retroreflective bands shall comply with the MUTCD. Posts shall be either yellow or white and match the modular curb unit and adjacent pavement marking.

694.03 Construction Requirements.

(A) Surface Preparation. The Longitudinal Channelizing Curb System shall be installed on clean, dry, and even surface. Clean roadway surfaces of debris with compressed air and dry the surface before placing curb. If pavement markers, delineator/channelizer

bases, and/or other irregularities are present, they shall be removed to provide a clean, dry, and even surface for mounting.

(B) Installation. Install the Longitudinal Channelizing Curb System per manufacturer's recommendations.

The Longitudinal Channelizing Curb System alignment, along with any drainage spaces, shall be laid out and marked. The engineer shall approve the alignment prior to installation. If the Longitudinal Channelizing Curb System needs to be realigned after installation, the Longitudinal Channelizing Curb System shall be lifted and then relocated. Sliding, dragging, or shoving of the Longitudinal Channelizing Curb System to correct alignment shall be grounds to reject the material.

Once the Longitudinal Channelizing Curb System alignment is complete and approved by the engineer, drill the mounting holes into the pavement or bridge deck. Mount each modular curb unit and post(s) or panel(s) with appropriate anchors as recommended by the manufacturer. Install the arched curb retroreflector units as recommended by the manufacturer.

694.04 Measurement. The Engineer will measure Longitudinal Channelizing Curb System and surface mounted delineators per linear foot.

694.05 Payment. The Engineer will pay for the accepted quantities of Longitudinal Channelizing Curb System and surface mounted delineators at the contract unit price per 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**
Longitudinal Channelizing Curb System	Linear Foot
Yellow Surface Mounted Delineators	Linear Foot"

END OF SECTION 694

Make the following section a part of the Standard Specifications:

"SECTION 695 – INERTIAL BARRIER SYSTEM

695.01 Description. This work includes removal of existing module barrels, furnishing and installing new Inertial Barrier System at the prepared site shown in the plans according to the requirements of the contract or as ordered by the Engineer.

695.02 Materials. The Inertial Barrier System shall be MASH eligible (Big Sandy® or approved equal) and shall consist of the following:

(A) Container. The Inertial Barrier shall consist of modules in 200, 400, 700, 1400, and 2100 lbs. sizes. The material shall be durable, weatherproof, and shall be formulated to resist deterioration from ultraviolet rays. The color shall be yellow. This model must be of continuous molded construction and be nestable. The modules shall be designed and manufactured from a polypropylene and high-density polyethylene UV stabilized molded plastic material which shall shatter upon impact to permit dispersion of the sand mass container within. Designed into each bottom surface of the module barrels shall be three stacking lugs which assemble into three recessed voids on the outer bottom surface. This feature locks the sections together vertically and prevents shifting during transport or when stored.

(B) Lid. Each module shall have a black plastic lid manufactured with one 37 in. diameter snap on lid have a lifting flange for purposes of attaching a lifting ring to move the barrels. Material shall be durable, weatherproof, and shall be formulated to resist deterioration from ultraviolet rays.

(C) Sand. Sand placed into these modules should be washed concrete sand conforming to ASTM-C-33 or equal.

The components of the modules shall interface to prevent leakage of sand contained therein. The interface shall, however, permit drainage of excess water contained within the sand mass

695.03 Construction Requirements. The contractor shall submit 7 days following the Award of Contract, a written certification to the Engineer stating that the crash cushion to be furnished satisfies the project requirements.

Placement of the modules within an array and the geometric design of the array shall be as shown on the plans, as indicated by the manufacturer's specifications or as ordered by the Engineer.

After completion of the project, the sand will be removed and disposed from each module and each empty module shall be hauled to the Pearl City Baseyard of as directed by the Engineer. Prior to hauling, each module shall be cleaned and nested together for transport. The Department‘s goal is to minimize inconvenience and provide up to date information to highway users, businesses and neighborhoods that abut, or are serviced by, the highways that comprise the project. It will be the responsibility of the Contractor to provide the following services for the well-being of the affected highway users, residents, and businesses.

695.04 Measurement. The Engineer will measure inertial barrier modules per each as complete units as specified in the contract documents.

695.05 Payment. The Engineer will pay for the accepted quantities of Inertial Barrier Modules, of the types specified in the proposal per each for the type and design specified complete in place. The price includes full compensation for submitting a list of materials and equipment to be incorporated in the work; grading: furnishing, installing, and compacting aggregate subbase; furnishing, assembling, and installing an Inertial Barrier Module; removal and disposal of the existing Inertial Barrier module with sand; removal & disposal of sand, cleaning and hauling the old empty modules as specified by the Engineer after completion of the project; and furnishing labor, materials, tools, equipment and incidentals necessary to complete the work.

Engineer will pay for the following pay item when included in proposal schedule:

Pay Item	**Pay Unit**
Inertial Barrier Module, 200 Pounds	Each
Inertial Barrier Module, 400 Pounds	Each
Inertial Barrier Module, 700 Pounds	Each
Inertial Barrier Module, 1400 Pounds	Each
Inertial Barrier Module, 2100 Pounds	Each

END OF SECTION 695”

Make the following section a part of the Standard Specifications:

"SECTION 697 – PUBLIC EDUCATIONAL CAMPAIGN

697.01 Description. This section describes the development of the project web page and hotline in accordance with the contract documents. This section also describes the public outreach campaign to inform the public of the project and its purpose and goals in accordance with the contract documents.

697.02 Materials. Not applicable.

697.03 Construction. The Department's goal is to minimize inconvenience and provide up to date information to highway users, businesses and neighborhoods that abut, or are serviced by, the highways that comprise the project. It will be the responsibility of the Contractor to provide the following services for the well-being of the affected highway users, residents, and businesses.

(A) The Contractor shall develop a project web page that contains the information listed below:

	Information		Update Frequency
(1)	Project Work Scope /Description	At	Notice-to-Proceed (NTP)
(2)	Project Site Map with description	At	NTP of information needed
(3)	Contractor's 24 hour 7 day a week Phone Number for Complaints (Hotline)	At	NTP
(4)	Project Schedule/Milestones	At	NTP and when schedule is adjusted or updated. Schedule changes shall be submitted to the Engineer for review and acceptance prior to posting.
(5)	Work Progress Narrative with Sketches		Every 14 calendar days

Work progress narrative with sketches may be provided in PDF format. Graphics images posted on the project web page shall not exceed 100k bytes per image and 300k bytes per page to facilitate public viewing. Enlarged images such as maps and information provided in PDF format may be linked to the project web page.

Information on linked pages has no size limits. Web technologies that require an extended waiting period for loading like Flash shall not be used.

(6)	Scheduled Road/Lane Closures	14 calendar days prior to closure changes. 14 calendar days notice shall be provided to the Engineer for any road/lane closures or changes to road/lane closures

The Engineer may link this project web page to the Department website. The Contractor shall include the web page address on a construction advisory sign that will be visible to the public in a format and location as directed by the Engineer.

The web page shall be established within 14 calendar days from construction award date or 14 calendar days prior to any lane closures, road closures, or traffic detours, whichever is earlier. The web page shall be maintained by the contractor until all lane closures, road closures, or traffic detours are completed.

(B) Hotline. Maintain a 24-hour telephone hotline to handle public inquiries and complaints. The hotline telephone number shall be visible throughout the project limits and on the project website. Responses to inquiries and/or complaints shall be logged and coordinated with the Engineer and be provided within a 24-hour period.

(C) Meetings. Attend all public informational meetings to assist the Engineer in answering questions from the public regarding the Contractor's activities. The Contractor's representative shall be knowledgeable in the Contractor's schedule of activities.

(D) Additional Public Education Materials or Services. When requested by the Engineer, furnish the following public educational materials or services.

1. 24 hours/7 days a week live chat website for questions and complaints.

2. Project fact sheet.

3. Project brochures, informational cards, flyers, mailers, posters, displays, PowerPoint presentations, mass e-mail notifications, and other forms of distributions.

4. Production of 30-second public service announcements for television and radio.

5. Media time on television and radio.

6. Hire a Public Relations Firm to assist with preparation, presentation, and distribution of educational materials and briefings.

7. Social Media Outreach.

697.04 Measurement. The Engineer will not measure project web page for payment.

Engineer will not measure hotline for payment.

Engineer will not measure the Contractor's attendance at public informational meetings.

Engineer will measure additional public educational material or services required and requested by the Engineer on a force account basis in accordance with Subsection 109.06 – Force Account Provisions and Compensation.

697.05 Payment. The Engineer will not pay for project web page separately and will consider the cost for project web page as indicated in the contract prices for various contract pay items. The cost is for the work prescribed in this section and the contract documents.

Engineer will not pay for hotline separately and will consider the cost for hotline as included in the contract prices for the various contract pay items. The cost is for the work prescribed in this section and the contract documents.

Engineer will not pay for the Contractor's attendance and assistance at public informational meetings separately and will consider the cost as included in the contract prices for the various contract pay items. The cost is for the work prescribed in this Section and the contract documents.

Engineer will pay for the following pay item when included in proposal schedule:

Pay Item	**Pay Unit**
Additional Public Educational Materials or Services	Force Account

An estimated amount for force account is allocated in proposal schedule under 'Additional Public Education Materials or Services', 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."

END OF SECTION 697

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 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 711 – CONCRETE CURING MATERIALS AND ADMIXTURES

Make the following amendment to said Section:

(I) Add the following sections to Section 711.03 Admixtures after line 75:

"**(D) Corrosion Inhibitor Admixture** The calcium nitrite corrosion inhibitor shall meet the requirements of AASHTO M194 for Type C concrete admixture.

The corrosion inhibiting admixture shall contain a minimum of 30% calcium nitrate by mass and shall be added at a dosage rate of 4.0 gallons per cubic yard of concrete.

The corrosion inhibitor shall be fully compatible with all type of Portland cement, and concrete containing pozzolans.

The Contractor shall furnish to the Engineer two (2) copies of the manufacturer's certified test report for the corrosion inhibitor showing calcium nitrite content, the mix water adjustment factor per gallon of corrosion inhibitor and other typical physical properties. Samples of the corrosion inhibitor may be taken and tested by the Department. Use of the calcium nitrite material and application rate may be based on any such tests.

When calcium nitrite corrosion inhibitor is used, the water-cement ratio of the concrete mix shall not exceed the water-cement ratio for the concrete specified. To maintain this water cement ratio, the quantity of mix water must be adjusted to compensate for the water in the corrosion inhibitor.

Prior to beginning full production, the concrete producer shall make trial mixes as necessary to determine the proportions of the basic ingredients as well as to determine the amounts and proper sequencing of admixtures to produce the required concrete mix.

Strictly adhere to the manufacturer's written recommendations regarding the use of admixtures including storage, transportation and method of mixing. If preferred, use calcium nitrite, which acts as an accelerator, in conjunction with a retarder to control the set of concrete, as per the manufacturer's recommendation.

(E) Shrinkage Reducing Admixture Tetraguard AS20 shrinkage reducing admixture, eclipse plus shrinkage reducing admixture, or an approved equal, shall be included in the concrete mix for the concrete topping, Bridge railing. The required dosage shall be 128 ounces per cubic yard concrete. Addition of shrinkage reducing admixture shall be as recommended by the manufacturer."

END OF SECTION

SECTION 712 - MISCELLANEOUS

Make the following amendment to said Section:

(I) Amend **712.07(A) Frame and Cover** from line 98 to line 112 to read as follows:

"**(A) Frame and Cover.** Frame and cover for manhole or handhole shall meet requirements of AASHTO M 306."

(II) Amend **712.07(B) Frame and Grate** from line 114 to line 132 to read as follows:

(B) Frame and Grate. Cast iron frame and grate shall conform to AASHTO M 306, unless steel is specified in the contract documents.

Steel frame and grate shall conform to ASTM A 283/A 283 M, Grade D; ASTM A 27/A 27M, Grade 65-35; or ASTM A 47/A 47 M, Grade 35018. Zinc coating shall be provided in accordance with ASTM A 123/A 123M.

Reinforcing steel for grate shall conform to Subsection 709.01 - Reinforcing Steel. Frame and grate shall be cleaned thoroughly and painted on all sides that will not be imbedded in concrete with one coat of high-grade asphalt conforming to ASTM A 849, Class M, Fully Coated, at shop. Second coat of paint shall be applied on all sides not imbedded in concrete just before the pre-final inspection. Any damage to the zinc-coating of a frame or grate shall be repaired in accordance with ASTM A780 using a Zinc-based solder coating.

Fabricated frame and grate shall be true to line and free of twists, bends, and open joints. Splices will not be allowed. Cut surfaces and edges shall be made smooth by machining or grinding before fabrication of frame and grate.

Size and length of weld shall be as specified in contract documents. Welds shall be free of defects, discontinuities and shall have full penetration."

END OF SUBSECTION 712

Make the following Section a part of the Standard Specifications:

"SECTION 719 – MACRO-SYNTHETIC FIBERS FOR CONCRETE REINFORCEMENT

719.01 Macro-Synthetic Fibers for Concrete Reinforcement. Macro-Synthetic Fibers for Concrete Reinforcement shall conform to the following requirements:

(A) Macro-synthetic fibers shall be manufactured from virgin polyolefins (polypropylene and polyethylene) and comply with ASTM C 1116.4.1.3. Fibers manufactured from materials other than polyolefins must show documentary evidence confirming their long term resistance to deterioration when in contact with moisture and alkalies present in cement paste and/or the substances present in air-entraining and chemical admixtures.

(B) The minimum fiber length shall be 1.50 inches.

(C) Macro-synthetic fibers shall have an aspect ratio (length divided by the equivalent diameter of the fiber) between 45 and 150.

(D) Macro-synthetic fibers shall have a minimum tensile strength of 40 ksi when tested in accordance with ASTM D 3822.

(E) Minimum dosage rate in pounds of fibers per cubic yard of concrete shall be established by determining a minimum average residual strength of no less than 150 psi when tested in accordance with ASTM C 1399. The minimum fiber dosage rate shall be 3 lbs/cubic yard.

(F) Macro-synthetic fibers shall have a minimum modulus of elasticity of 400 ksi when tested in accordance with ASTM D 3822."

END OF SECTION 719

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

Make the following Section a part of the Standard Specifications:

"SECTION 761 – LIGHT EMITTING DIODE (LED) ROADWAY LIGHTING SYSTEMS MATERIALS

761.01 Light Poles. Light poles shall be made of aluminum or wood, conforming to requirements of AASHTO publication *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals*, and this subsection. Drawings for proposed poles shall be submitted in accordance with Subsection 622.03(A) - Equipment List and Drawings. Contractor to fill out and submit to Engineer _insert form name_ for each light pole installed.

(A) Aluminum Poles. Aluminum poles shall be spun tapered from seamless aluminum tubing, alloy 6063-T6, conforming to ASTM B 221, with minimum thickness of 0.250 inch. Circumferential or longitudinal welds will be allowed only at lower end of pole where pole is joined to anchor base.

Poles shall have anchor base consisting of permanent mold cast aluminum, alloy 356.0, conforming to ASTM B 108. Anchor bolts shall be stainless steel conforming to Subsection 718.01 – Standard Fasteners, and shall be of quantity and grade indicated in the contract documents. Poles mounted on walls and structures shall have anchor bases and side entry handholes. Poles mounted on bridge structures shall be equipped with vibration damper recommended by pole manufacturer and accepted by the Engineer.

Grounding nut or screw on inner portion of pole shall be placed opposite handhole.

Each pole shall be furnished complete with mast arm, base, ornamental pole top, base cover, and anchor bolts. Unless otherwise indicated in the contract documents, aluminum poles shall have polished natural aluminum finish and stainless steel hardware.

Aluminum poles shall be protected during shipment with protective paper.

761.02 Luminaire Mast Arms. Mast arms shall be made of seamless aluminum tubing conforming to ASTM B 221, and shall be of type, size, length, and rise, as indicated in the contract documents. Mast arms 8 fee long or shorter shall be tapered elliptical, self-supporting mast arms. Mast arms greater than 8 feet long shall be truss-type mast arms. Ends of mast arms shall be completed in two-inch slip fitter with inner-wired-type pole plates.

761.03 Luminaires for Roadway Lighting.

(A) Luminaires for Roadway Lighting. Luminaires for roadway lighting shall be nominal 4000K Light Emitting Diode (LED) type, suitable for wet locations per UL 1598. Luminaire shall be full cut-off and produce zero light at or above 90 degrees.

(1) Housing. Housing shall conform to the following:

(a) Die-cast aluminum with integral heat sinks.

(b) Rear-entry type with horizontal slip fitter for inner wiring. Slip fitter mounting shall allow for +/- 5 degrees of adjustment for leveling.

(c) Meets 3G vibration testing per ANSI C136.31.

(d) Paint finish shall meet or exceed a rating of 6 per ASTM D1654 after 1000 hours of salt spray testing per ASTM B117.

(e) Structured LED array with various photometric distributions.

(f) BUG rating of U=0

(g) Minimum Color Rendering Index (CRI) shall be 70 for 4000K CCT rated luminaire.

(2) Driver. Driver shall conform to the following:

(a) Start and operate LED (Light Emitting Diode) array(s) from 120/240-volt or 240/480-volt, single-phase; or 208/120-volt or 480/277-volt, three-phase, 60-Hz power source.

(b) Minimum power factor of 90% and THD (Total Harmonic Distortion) less than 20%.

(c) Class “A” audible sound rating.

(d) Integral surge protection in accordance with IEEE/ANSI C62.41 1991.

(e) Electromagnetic interference (EMI) rating that meets or exceeds the FCC 47 CFR Part 15 Class A.

(f) Rated to operate from -40 degree C to 40 degree C.

(g) IP66 rated.

(3) LED Array(s). LED arrays shall be high brightness, 70 CRI at 4000K. The design life of the LED array(s) shall be defined as L85 at 50,000 hours.

(4) Illumination. Luminaires shall provide roadway with minimum average maintained illumination value in accordance with manufacturer's specifications and IES light distribution type indicated in the contract documents. Photometric data with certification of conformance shall be submitted.

(5) Photoelectric Control Receptacle. Luminaires shall be furnished with or without photoelectric control receptacles, as indicated in the contract documents. When photoelectric control receptacle is included, rain tight shorting cap shall be installed.

(6) Warranty. Luminaires shall be warranted to be free from manufacturing defects for a period of 5 years.

761.04 Cables and Wires for Roadway Lighting System

(A) Cables and Wires.

(1) Circuit Cable. Cable for 120/240 volt or 240/480 volt roadway lighting circuits shall conform to the following requirements: single conductor, 600 volt, AWG sizes as indicated in the contract documents; stranded copper, Type XHHW suitable for use at 167 degrees F, with 2/32-inch-thick rubber insulation, and 3/64-inch thick neoprene jacket. Rubber insulation and neoprene jacket shall conform to NEC, RHW/USE standards, and ICEA S-105 692 standard.

(2) Pole Fixture Cable. Connection of circuit cables from base of light pole or pull box to each luminaire shall conform to the following requirements: single conductor, 600 volt, No. 10 AWG, stranded copper, and Type XHHW or RHW. Unless otherwise indicated in the contract documents, ground conductors shall conform to the following requirements: single conductor, 600 volt, No. 6 AWG, stranded copper, Type XHHW or RHW. Ground conductors shall be installed in conduits.

(B) Luminaire and Cable and Wire Identification. Tags of rigid, non-ferrous material shall be affixed, with machine embossed legend on two sides with non-ferrous wire to feeder, branch feeders, and sub-branch cables and wires in pullboxes and light standard bases. Legend with 1/4-inch-high letters shall indicate feeder designation.

761.05 Disconnect and Protective Devices.

(A) General. Splices and taps shall be limited to minimum number. Conductor-to-conductor connections shall be made with hydraulically indented lugs.

(B) Taps. Taps from feeders to highway lighting luminaires shall be made at lighting standards, with standard connector kits that provide quick-disconnect, fused branch connection to feeder conductors. Waterproof taps shall have dialect value equal to that of the insulation of conductors joined. Fuses shall be standard midget, ferrule-type, with ampere ratings as indicated in the contract documents.

(C) Splicing. Feeders shall be spliced with standard splicing kits of type recommended by cable manufacturer. Splices shall be waterproof and shall have dielectric value equal to that of the insulation of conductors joined.

761.06 Waterproof Connectors for Roadway Lighting. Where indicated in the contract documents, connector kits shall be of waterproof, molded rubber. Connectors shall be 600-volt, quick disconnect, in-line connectors, fused for ungrounded conductor and non-fused for neutral at each pole. Opening in line conductor connectors shall be suitable for cables furnished. Lubrication and taping shall be as recommended by manufacturer of connectors. Fused connectors shall accommodate standard midget, ferrule-type fuses with ampere rating as indicated in the contract documents.

761.07 Photoelectric Control. Photoelectric control unit shall have inrush current rating of 120 amperes. Photoelectric control shall withstand surge current up to 1,000 amperes. Chassis shall withstand hi-pot test of 5,000 volts. Cadmium-sulfide cells shall have 300 to 500 milliwatts maximum dissipation operating voltage range between 105 volts to 285 volts, and mounting features that conform to EEI Publication No. 148, NEMA Publication No. SH-18-1959. Photoelectric control unit shall be UL listed for wet locations.

Light level setting shall be adjustable from 0.5 to 3.0 foot-candles with time delay of up to three minutes. Light level setting shall be adjusted for turn on at 0.7 ±0.2 foot-candles.

END OF SECTION 761”

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 11/15/2024

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
10	10/25/2024
11	11/15/2024

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 09/02/2024

	Rates	Fringes
Diver (Aqua Lung) (Scuba))		
Diver (Aqua Lung) (Scuba) (over a depth of 30 feet)	$ 78.96	36.825
Diver (Aqua Lung) (Scuba) (up to a depth of 30 feet)	$ 69.59	36.825

Stand-by Diver (Aqua Lung) (Scuba)	$ 60.21	36.825
Diver (Other than Aqua Lung)		
Diver (Other than Aqua Lung)	$ 78.96	36.825
Diver Tender (Other than Aqua Lung)	$ 57.18	36.825
Stand-by Diver (Other than Aqua Lung)	$ 60.21	36.825
Helicopter Work		
Airborne Hoist Operator for Helicopter	$ 58.76	36.825
Co-Pilot of Helicopter	$ 58.90	36.825
Pilot of Helicopter	$ 59.07	36.825
Power equipment operator - tunnel work		
GROUP 1	$ 55.20	36.825
GROUP 2	$ 55.31	36.825
GROUP 3	$ 55.48	36.825
GROUP 4	$ 55.75	36.825
GROUP 5	$ 56.06	36.825
GROUP 6	$ 56.71	36.825
GROUP 7	$ 57.03	36.825
GROUP 8	$ 57.14	36.825
GROUP 9	$ 57.25	36.825
GROUP 9A	$ 57.48	36.825
GROUP 10	$ 57.54	36.825
GROUP 10A	$ 57.69	36.825
GROUP 11	$ 57.84	36.825
GROUP 12	$ 58.20	36.825
GROUP 12A	$ 58.56	36.825
Power equipment operators:		
GROUP 1	$ 54.90	36.825
GROUP 2	$ 55.01	36.825
GROUP 3	$ 55.18	36.825
GROUP 4	$ 55.45	36.825
GROUP 5	$ 55.76	36.825
GROUP 6	$ 56.41	36.825
GROUP 7	$ 56.73	36.825
GROUP 8	$ 56.84	36.825
GROUP 9	$ 56.95	36.825
GROUP 9A	$ 57.18	36.825
GROUP 10	$ 57.24	36.825
GROUP 10A	$ 57.39	36.825
GROUP 11	$ 57.54	36.825
GROUP 12	$ 57.90	36.825
GROUP 12A	$ 58.26	36.825
GROUP 13	$ 55.18	36.825
GROUP 13A	$ 55.45	36.825
GROUP 13B	$ 55.76	36.825
GROUP 13C	$ 56.41	36.825
GROUP 13D	$ 56.73	36.825
GROUP 13E	$ 56.84	36.825

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

ENGI0003-004 09/04/2017

	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 09/02/2024

	Rates	Fringes
Power Equipment Operators (PAVING)		
Asphalt Concrete Material Transfer	$ 55.88	37.32
Asphalt Plant Operator	$ 56.31	37.32
Asphalt Raker	$ 54.92	37.32
Asphalt Spreader Operator	$ 56.40	37.32
Cold Planer	$ 56.71	37.32
Combination Loader/Backhoe (over 3/4 cu.yd.)	$ 54.92	37.32
Combination Loader/Backhoe (up to 3/4 cu.yd.)	$ 53.94	37.32
Concrete Saws and/or Grinder (self-propelled unit on streets, highways, airports and canals)	$ 55.88	37.32
Grader	$ 56.71	37.32
Laborer, Hand Roller	$ 54.42	37.32
Loader (2 1/2 cu. yds. and under)	$ 55.88	37.32
Loader (over 2 1/2 cu. yds. to and including 5 cu. yds.)	$ 56.20	37.32
Roller Operator (five tons and under)	$ 54.65	37.32
Roller Operator (over five tons)	$ 56.08	37.32
Screed Person	$ 55.88	37.32
Soil Stabilizer	$ 56.71	37.32

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

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* PAIN1889-001 07/01/2024

	Rates	Fringes
Glaziers	$ 46.00	39.70

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:	**INTERSTATE ROUTE H-1 RESURFACING MILLER PEDESTRIAN OVERPASS TO KAPIOLANI INTERCHANGE DISTRICT OF HONOLULU ISLAND OF OAHU**
PROJECT NO.:	**NH-H1-1(279)R**
COMPLETION TIME:	**516 Calendar days from the Start Work Date from the Department.**
DBE PROJECT GOAL:	**8.9 %**

DESIGN PROJECT MANAGER:

NAME	**Evan Kimoto**
ADDRESS	**601 Kamokila Blvd. #688, Kapolei HI 96707**
PHONE NO.	**(808) 692-7551**

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. See SPECIAL PROVISIONS 102.09 DELIVERY OF PROPOSALS 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 of the 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	5,100	S.Y.	$_____	$_____
202.0100	Removal of Concrete Curb	3,010	L.F.	$_____	$_____
202.0200	Removal of Concrete Curb and Gutter	690	L.F.	$_____	$_____
202.0300	Removal of Bridge Railing - Concrete	161	L.F.	$_____	$_____
202.0400	Removal of Bridge Railing - Metal	570	L.F.	$_____	$_____
202.0500	Removal of Guardrail, End Terminals and Attenuators	11,650	L.F.	$_____	$_____
202.0600	Removal of Signs and Posts	2	EA	$_____	$_____
202.0700	Removal of 4-Foot Chain Link Fence	60	L.F.	$_____	$_____
202.0800	Removal of Flexible Delineators	1,300	L.F.	$_____	$_____
202.0900	Removal of Survey Monuments	23	EA	$_____	$_____
202.1000	Removal of Existing Geotextile Fabric	4,750	S.Y.	$_____	$_____
203.0100	Roadway Excavation	810	C.Y.	$_____	$_____
204.0100	Trench Excavation for Traffic Counting Station Systems	45	C.Y.	$_____	$_____
204.0200	Trench Backfill for Traffic Counting Station Systems	45	C.Y.	$_____	$_____
209.0100	Installation, Maintenance, Monitoring, and Removal of BMP	L.S.	L.S.	L.S.	$_____
209.0200	Additional Water Pollution, Dust, and Erosion Control	F.A.	F.A.	F.A.	$ 100,000.00
219.0100	Hazardous Waste Remediation	F.A.	F.A.	F.A.	$ 150,000.00

PROPOSAL SCHEDULE

ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT
301.0100	Hot Mix Asphalt Base Course	906	TON	$_____	$_____
301.0200	Hot Mix Asphalt Base Course with Polymer Modified Asphalt (PG 64E-22)	1,266	TON	$_____	$_____
314.0100	CLSM	350	C.Y.	$_____	$_____
401.0100	Pavement Smoothness Incentive	Allowance	Allowance	Allowance	$ 145,000.00
401.0200	HMA Pavement, Mix No. IV	405	TON	$_____	$_____
401.0300	HMA Pavement, Mix No. V	76	TON	$_____	$_____
401.0400	PMA Pavement, Mix No. IV with PG 64E-22	10,500	TON	$_____	$_____
406.0100	Stone Matrix Asphalt (SMA) Pavement	202	TON	$_____	$_____
411.0100	11-inch Concrete Pavement	14	C.Y.	$_____	$_____
414.0100	Excavation of Weakened Pavement Areas	190	C.Y.	$_____	$_____
414.0200	Furnishing and Installing Geogrid (GlassGrid 8511TF)	3,300	S.Y.	$_____	$_____
414.0300	Furnishing and Installing Geogrid (PG100)	5,620	S.Y.	$_____	$_____
415.0100	Cold Planing	61,000	S.Y.	$_____	$_____
503.0100	Retaining Wall (Traffic Counting Station Cabinet), Max Height 5.0'	30	L.F.	$_____	$_____
503.0200	34” Type KAT Transition	32	EA	$_____	$_____
503.0300	Modified 34” Type KAT Concrete Transition	370	L.F.	$_____	$_____

PROPOSAL SCHEDULE

ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT
503.0400	Concrete Patch on Existing Guardrail End Posts	26	EA	$_____	$_____
503.0500	34” Tall Aesthetic Concrete Bridge Rail	920	L.F.	$_____	$_____
503.0600	Type D2 End Post	3	EA	$_____	$_____
507.0100	Metal Bridge Railing	570	L.F.	650.00	$_____
507.0200	Concrete Bridge Railing	220	L.F.	1500.00	$_____
512.0100	Concrete Rehabiliation of Cracks	49	L.F.	$_____	$_____
512.0200	Concrete Rehabilitation of Spalls	200	S.F.	$_____	$_____
520.0100	Bridge Joint Repair	1,110	L.F.	$_____	$_____
602.0100	Replace Reinforcing Steel	F.A.	F.A.	F.A.	$ 50,000.00
603.0100	Adjusting Storm Drain Manhole Frame and Cover	20	EA	$_____	$_____
603.0200	Clean Existing Culverts	F.A.	F.A.	F.A.	$ 75,000.00
604.0100	Cast Iron Grate 8 ¼”x1’-11 ¾”x1” (Viaduct Deck Scuppers)	5	EA	$_____	$_____
606.0100	Midwest Guardrail System, MGS	7,200	L.F.	$_____	$_____
606.0200	Midwest Guardrail System on 2:1 Fill Slope (9ft Posts)	432	L.F.	$_____	$_____
606.0300	Thrie Beam Connection with Transition to Midwest Guardrail (25 LF Railing Replacement only)	6	EA	$_____	$_____
606.0400	Transition Section, Thrie Beam to Strong Post	1	EA	$_____	$_____

PROPOSAL SCHEDULE

ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT
606.0500	MGS Transition to Strong Post Guardrail	10	EA	$_____	$_____
606.0600	W-Beam Guardrail (Railing only, existing posts to remain, omitted post, nested)	670	L.F.	$_____	$_____
606.0700	Thrie Beam Guardrail, Type 3 (Railing only, existing posts to remain)	650	L.F.	$_____	$_____
606.0800	Thrie Beam with 18 3/4" Post Spacing	26	L.F.	$_____	$_____
606.0900	Thrie Beam Terminal Connector	1	EA	$_____	$_____
606.1000	Thrie Beam Rounded End Section	1	EA	$_____	$_____
606.1100	W-Beam Rounded End Section	5	EA	$_____	$_____
606.1200	MSKT - SP - MGS (TL-3) End Treatment	10	EA	$_____	$_____
606.1300	RubRail	25	LF	$_____	$_____
606.1400	MGS with 18 3/4" Post Spacing	35	LF	$_____	$_____
606.1500	HSS 8x8x3/16 Block Replacement	35	LF	$_____	$_____
606.1600	Trailing-End Anchorage System	13	EA	$_____	$_____
606.1700	MAX-Tension TL-2	1	EA	$_____	$_____
606.1800	Asymmetrical Transition Section (Left) (37 1/2" Post Spacing)	4	EA	$_____	$_____
606.1900	Asymmetrical Transition Section (Right) (37 1/2" Post Spacing)	4	EA	$_____	$_____
606.2000	MGS Long Span LSC-2	2	EA	$_____	$_____
606.2100	Guardrail Type 3 MASH Transition	32	EA	$_____	$_____

PROPOSAL SCHEDULE

ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT
606.2200	Retro-Rail System	116	LF	$_____	$_____
606.2300	Modified Hawaii Thrie Beam Approach Guardrail Transition	3	EA	$_____	$_____
606.2400	12.5 LF Thrie Beam Guardrail	1	EA	$_____	$_____
606.2500	12.5 LF Nested Thrie Beam Guardrail	1	EA	$_____	$_____
606.2600	6.25 LF Transition Section Thrie Beam to Strong Post (Railing only, existing posts to remain)	1	EA	$_____	$_____
607.0100	6-Foot Chain Link Fence, without Toprail	45	L.F.	$_____	$_____
612.0100	Grouted Rubble Paving Type 1 (GRP1)	4,975	S.F.	$_____	$_____
612.0200	Grouted Rubble Paving Type 2 (GRP2)	3,075	S.F.	$_____	$_____
612.0300	4-inch Layer 2.5-inch Dia. Recycled Crushed Concrete or Basalt Gravel	3,770	S.F.	$_____	$_____
613.0100	Reconstructing Centerline and Reference Survey Monuments	23	EA	$_____	$_____
613.0200	Adjusting Centerline and Reference Survey Monuments	1	EA	$_____	$_____
616.0100	Temporary Irrigation System	L.S.	L.S.	L.S.	$_____
616.0200	Relocation of Sprinkler System	F.A.	F.A.	F.A.	$ 20,000.00
617.0100	Imported Planting Soil	L.S.	L.S.	L.S.	$_____
619.0100	Wilhelmina Tenney Rainbow Shower Trees	2	EA	$_____	$_____
619.0200	Beach Naupaka Shrubs	74	EA	$_____	$_____

PROPOSAL SCHEDULE

ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT
619.0300	Pohinahina Shrubs	5	EA	$_____	$_____
619.0400	Yellow Allamanda Shrubs	45	EA	$_____	$_____
619.0500	Hydroseed Buffel Grass	21,480	S.F.	$_____	$_____
619.0600	Wood Chip Mulch	2,500	S.F.	$_____	$_____
622.0100	Roadway Lighting System	L.S.	L.S.	L.S.	$_____
622.0200	Relocation of Highway Lighting	F.A.	F.A.	F.A.	$ 50,000.00
622.0300	Adjust Electrical Manhole	3	EA	$_____	$_____
622.0400	Adjust Hawaiian Telcom Manhole	7	EA	$_____	$_____
623.0100	Traffic Signal System	L.S.	L.S.	L.S.	$_____
626.0100	Adjusting Water Manhole Frame and Cover	26	EA	$_____	$_____
626.0200	Adjusting Water Standard Valve Box	49	EA	$_____	$_____
626.0300	Adjusting Sewer Manhole Frame and Cover	29	EA	$_____	$_____
627.0100	EVC Traffic Counting Systems	23	EA	$_____	$_____
627.0200	Restore EVC Traffic Counting Systems	3	EA	$_____	$_____
629.0100	Single 4-Inch White Pavement Striping (Thermoplastic Extrusion)	950	L.F.	$_____	$_____
629.0200	Single 4-Inch White Guide Line (Thermoplastic Extrusion)	850	L.F.	$_____	$_____

PROPOSAL SCHEDULE

ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT
629.0300	Double 4-Inch White Pavement Striping (Thermoplastic Extrusion)	100	L.F.	$_____	$_____
629.0400	Double 4-Inch Yellow Pavement Striping (Thermoplastic Extrusion)	3,100	L.F.	$_____	$_____
629.0500	Double 4-Inch Yellow Dashed Pavement Striping (Thermoplastic Extrusion)	150	L.F.	$_____	$_____
629.0600	Single 6-Inch White Pavement Striping (Thermoplastic Extrusion)	13,000	L.F.	$_____	$_____
629.0700	Single 6-Inch Yellow Pavement Striping (Thermoplastic Extrusion)	12,750	L.F.	$_____	$_____
629.0800	Single 8-Inch White Pavement Striping (Thermoplastic Extrusion)	8,400	L.F.	$_____	$_____
629.0900	Single 8-Inch White Lane Drop Marking (Thermoplastic Extrusion)	400	L.F.	$_____	$_____
629.1000	Single 12-Inch White Pavement Striping (Thermoplastic Extrusion)	1,900	L.F.	$_____	$_____
629.1100	Single 12-Inch Yellow Pavement Striping (Thermoplastic Extrusion)	100	L.F.	$_____	$_____
629.1200	24-Inch Crosswalk Marking	85	LANE	$_____	$_____
629.1300	Profiled Thermoplastic Striping (White)	250	EA	$_____	$_____
629.1400	Profiled Thermoplastic Striping (Rumble Strip)	50	EA	$_____	$_____
629.1500	Type C Pavement Marker	1,050	EA	$_____	$_____
629.1600	Type D Pavement Marker	150	EA	$_____	$_____
629.1700	Type F Pavement Marker (BWS Fire Hydrant Marker)	40	EA	$_____	$_____
629.1800	Type H Pavement Marker	400	EA	$_____	$_____
629.1900	Pavement Arrow (Thermoplastic Extrusion)	48	EA	$_____	$_____

PROPOSAL SCHEDULE

ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT
629.2000	Pavement Word Marking (Thermoplastic Extrusion)	13	EA	$_____	$_____
629.2100	Pavement Symbol (Thermoplastic Extrusion)	30	EA	$_____	$_____
630.0100	Replacement of Existing Sign Panel with New Destination and Guide Sign Panels (Extruded Aluminum Panels)	3,000	S.F.	$_____	$_____
630.0200	Replacement of Existing Sign Panel with New Destination and Guide Sign Panels (Sheet Aluminum)	600	S.F.	$_____	$_____
630.0300	Destination Sign (10 Sq. Feet or less) with Post	4	EA	$_____	$_____
630.0400	Destination Sign (10 Sq. Feet or less) without Post	7	EA	$_____	$_____
630.0500	Guide Sign - Conventional Rd. (10 Sq. Feet or less) with Post	9	EA	$_____	$_____
630.0600	Guide Sign - Conventional Rd. (10 Sq. Feet or less) without Post	26	EA	$_____	$_____
630.0700	Reinstall Existing Street Name Signs to new posts	15	EA	$_____	$_____
631.0100	Regulatory Sign (10 Sq. Feet or less) with Post	139	EA	$_____	$_____
631.0200	Regulatory Sign (10 Sq. Feet or less) without Post	204	EA	$_____	$_____
631.0300	Regulatory Sign (more than 10 Sq. Feet) with Post	14	EA	$_____	$_____
631.0400	Regulatory Sign (more than 10 Sq. Feet) without Post	22	EA	$_____	$_____
631.0500	Warning Sign (10 Sq. Feet or less) with Post	30	EA	$_____	$_____
631.0600	Warning Sign (10 Sq. Feet or less) without Post	19	EA	$_____	$_____

PROPOSAL SCHEDULE

ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT
631.0700	Warning Sign (more than 10 Sq. Feet) with Post	23	EA	$_____	$_____
631.0800	Warning Sign (more than 10 Sq. Feet) without Post	15	EA	$_____	$_____
631.0900	School Sign (10 Sq. Feet or less) with Post	1	EA	$_____	$_____
631.1000	School Sign (10 Sq. Feet or less) without Post	1	EA	$_____	$_____
631.1100	Miscellaneous Sign (10 Sq. Feet or less) with Post	3	EA	$_____	$_____
631.1200	Miscellaneous Sign (10 Sq. Feet or less) without Post	5	EA	$_____	$_____
631.1300	Miscellaneous Sign (more than 10 Sq. Feet) with Post	3	EA	$_____	$_____
631.1400	Miscellaneous Sign (more than 10 Sq. Feet) without Post	6	EA	$_____	$_____
632.0100	Reflector Marker RM-2 (with Flexible Post)	151	EA	$_____	$_____
632.0200	Reflector Marker RM-2 (without Post)	271	EA	$_____	$_____
632.0300	Type III Object Marker (OM1-1) without Post	27	EA	$_____	$_____
632.0400	Type III Object Marker (OM1-1) with Post	3	EA	$_____	$_____
632.0500	Type III Object Marker (OM2-2V) without Post	18	EA	$_____	$_____
632.0600	Type III Object Marker (OM3-1L) without Post	1	EA	$_____	$_____
632.0700	Type III Object Marker (OM3-1R) with Post	7	EA	$_____	$_____
632.0800	Type III Object Marker (OM3-1R) without Post	4	EA	$_____	$_____
632.0900	Mile Post Marker (with Post)	6	EA	$_____	$_____

PROPOSAL SCHEDULE

ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT
632.1000	Mile Post Marker (without Post)	4	EA	$_____	$_____
632.1100	Mile Post Marker with Post (Bi-directional)	1	EA	$_____	$_____
634.0100	Portland Cement Concrete Sidewalk	12	C.Y.	$_____	$_____
636.0100	Additional E-Construction Programs, additional licenses or additional equipment	F.A.	F.A.	F.A.	$ 10,000.00
638.0100	Curb, Type 2D	790	L.F.	250.00	$_____
638.0200	Concrete Gutter	356	LF	$_____	$_____
638.0300	2" Concrete Curb	74	L.F.	$_____	$_____
638.0400	HDOT Driveway Curb	440	L.F.	$_____	$_____
638.0500	HDOT Driveway Curb and Gutter	338	L.F.	$_____	$_____
638.0600	4" Curb and Gutter	15	L.F.	$_____	$_____
638.0700	0" to 4" Curb Height Transition	58	L.F.	$_____	$_____
638.0800	0" to 6" Curb Height Transition	76	L.F.	$_____	$_____
638.0900	2" Curb to 6" Curb Height Transition	70	L.F.	$_____	$_____
638.1000	4" Curb to HDOT Driveway Curb Transition	46	L.F.	$_____	$_____
638.1100	6" Curb to HDOT Driveway Curb Transition	90	L.F.	$_____	$_____
638.1200	3" Curb and Gutter to HDOT Driveway Curb and Gutter Transition	20	L.F.	$_____	$_____

PROPOSAL SCHEDULE

ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT
638.1300	6" Curb and Gutter to HDOT Driveway Curb and Gutter Transition	60	L.F.	$_____	$_____
638.1400	Type E Curb to HDOT Driveway Curb Transition	20	L.F.	$_____	$_____
638.1500	Type E Curb and Gutter to HDOT Driveway Curb and Gutter Transition	30	L.F.	$_____	$_____
642.0100	Plant Maintenance	14	Month	$_____	$_____
642.0200	Irrigation Maintenance	14	Month	$_____	$_____
645.0100	Traffic Control	L.S.	L.S.	L.S.	$_____
645.0200	Additional Police Officers, Additional Traffic Control Devices, And Advertisement	F.A.	F.A.	F.A.	$ 500,000.00
648.0100	Field-Posted Drawings	L.S.	L.S.	L.S.	$_____
676.0100	Repair for Concrete Deck	770	S.F.	$_____	$_____
692.0100	Voluntary Partnering	F.A.	F.A.	F.A.	$ 25,000.00
693.0100	Quadguard Elite M10 Wide (with Tension Strut Backup), TL-3	7	EA	$_____	$_____
693.0200	Transition, QUAD M10 to Thrie-Beam (37 1/2" Post Spacing)	10	EA	$_____	$_____
693.0300	Quadguard M10 TL-2	4	EA	$_____	$_____
693.0400	Transition, QUAD-W,610,QG,L,G	2	EA	$_____	$_____
693.0500	Transition, QUAD-W,610,QG,R,G	1	EA	$_____	$_____
694.0100	Longitudinal Channelizing Curb System	780	L.F.	$_____	$_____
694.0200	Yellow Surface Mounted Delineators	310	L.F.	$_____	$_____

PROPOSAL SCHEDULE

ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT
695.0100	Inertial Barrier Module, 200 Pounds	8	EA	$_____	$_____
695.0200	Inertial Barrier Module, 400 Pounds	21	EA	$_____	$_____
695.0300	Inertial Barrier Module, 700 Pounds	47	EA	$_____	$_____
695.0400	Inertial Barrier Module, 1400 Pounds	20	EA	$_____	$_____
695.0500	Inertial Barrier Module, 2100 Pounds	21	EA	$_____	$_____
696.0100	Field Office Trailer (Not to Exceed $32,000.00)	L.S.	L.S.	L.S.	$_____
696.0200	Maintenance of Trailers	F.A.	F.A.	F.A.	$ 40,000.00
697.0100	Additional Public Educational Materials or Services	F.A.	F.A.	F.A.	$ 250,000.00
699.0100	Mobilization (Not to exceed 6 percent of the sum of all items excluding bid price of this item)	L.S.	L.S.	L.S.	$_____

SUMMARY FOR PROPOSAL SCHEDULES

a. TOTAL AMOUNT FOR COMPARISON OF BIDS …..... $_____

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.

PROPOSAL SCHEDULE

ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT

4. If a discrepancy occurs between the 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:

SAMPLE

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:

SAMPLE

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.

SAMPLE

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

SAMPLE

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.

Public reporting burden for this collection of information is estimated to average 30 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction (0348-0046), Washington, D.C. 20503.

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 _____