



**STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
HONOLULU, HAWAII**

**SPECIAL PROVISIONS
PROPOSAL
CONTRACT AND BOND**

FOR

**SAND ISLAND ACCESS ROAD
TRUCK WEIGH STATION
FEDERAL-AID PROJECT NO. NH-064-1(010)
DISTRICT OF HONOLULU
ISLAND OF OAHU
FY 2021**

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

The receiving of SEALED BIDS for Sand Island Access Road Truck Weigh Station, District of Honolulu, Island of Oahu, Project No. NH-064-1(010), will begin as advertised on April 21, 2021, in HlePRO. Bidders are to register and submit bids through HlePro only.

See the following HlePRO link for important information on registering:

<https://hiepro.ehawaii.gov/welcome.html>.

Deadline to submit bids is Monday, May 24, 2021, at 2:00pm HST. Bids received after said due date and time shall not be considered.

Applicable permits for the project will include a Notice of General Permit Coverage (NGPC), National Pollutant Discharge Elimination System (NPDES), and Notice of Intent (NOI) Permit Application, Form C. NPDES coverage for hydrotesting and dewatering will be the responsibility of the Contractor.

The scope of work consists of the widening of Sand Island Access Road to provide an access lane to a weigh station facility, construction of a weigh-in-motion scale system, construction of a weigh station building and portable scale enclosure, construction of drain, sewer, water, and electrical (power, telecommunications, and traffic signalization) systems, and the installation of pavement markings, striping, and signage. The estimated cost of construction is between \$7,000,000.00 and \$8,000,000.00.

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

A pre-bid conference is scheduled for May 5, 2021, at 10am. All prospective bidders or their representatives (employees) are encouraged to attend, but attendance is not mandatory.

FEDERAL PROJECTS

Due to the impacts of COVID 19, the pre-bid meeting will be conducted virtually. Questions applicable to the Project Specifications should be submitted to the Project Manager no later than two days prior to the scheduled date of the pre-bid meeting.

Contact Mr. Lawrence Laus, Project Manager, by phone at (808) 692-8431, by facsimile at (808) 692-7590 or by email at Lawrence.M.Laus@hawaii.gov to obtain the venue for the pre-bid meeting.

ALL requests for information shall be received in writing via HlePRO no less than 14 calendar days before bid opening. Questions received after the deadline will not be addressed. Verbal requests for information will not receive a response. Anything said at the conference is for clarification purposes and any changes to the bid documents will be made by addendum and posted in HlePRO.

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

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

The U.S. Department of Transportation (DOT) Regulation entitled “Nondiscrimination in Federally-Assisted Programs of the U.S. DOT,” Title 49, Code of Federal Regulations (CFR), Part 21 is applicable to this project. Bidders are hereby notified that the DOT will affirmatively ensure that the contract entered into pursuant to this advertisement will 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).

FEDERAL PROJECTS

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. DOT Regulations entitled "Participation by Disadvantaged Business Enterprise (DBE) in DOT Programs", Title 49, CFR, Part 26 is applicable to this project. Bidders are hereby notified that the DOT will strictly enforce full compliance with all of the requirements of the DBE program with respect to this project.

Bidders are directed to read and be familiar with the DBE Requirements for Federal-Aid Projects regarding DBE, which establishes the program requirements pursuant to Title 49 CFR Part 26 and, particularly, the requirements of certification, method of award, and evidence of good faith.

Driving While Impaired (DWI) Education. Hawaii DOT encourages all organizations contracted with the DOT 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. Hawaii DOT 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 Mr. Lawrence Laus, Project Manager, by phone at (808) 692-8431, by fax at (808) 692-7590 or by email at Lawrence.M.Laus@hawaii.gov.

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



JADE T. BUTAY
Director of Transportation

INSTRUCTIONS FOR CONTRACTOR'S LICENSING

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

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

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

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

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

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

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

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

DISADVANTAGED BUSINESS ENTERPRISE REQUIREMENTS

I. GENERAL

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

II. POLICY

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

III. DBE ASSURANCES

Each contract signed with a 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 contractor agrees to include the above statements in any subsequent contracts that it enters into with other contractors, and shall require those contractors to include similar statements in further agreements.

IV. BIDDER/OFFEROR RESPONSIBILITIES

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

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

Bidders/offerors, suppliers, and subcontractors 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, trucker, or vendor of materials or supplies. DBEs may also team with other DBE 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 the Department under the appropriate North American Industry Classification System (NAICS) code and work in their registered field of work in order for credit to be allowed.
- E. Information regarding the current certification status of DBEs is available on the Internet at <http://hawaii.gov/dot/administration/ocr/DBE>.
- 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% 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, the Department must evaluate the amount of work subcontracted, industry practices, whether the amount the firm is to be paid under the contract is commensurate with the work it is actually performing, the DBE credit claimed for performance of the work, and other relevant factors. The prime contractor is responsible to ensure that the DBE performs a CUF.

V. PROPOSAL REQUIREMENTS

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

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

- B. DBE manufacturers, suppliers and any second tier subcontractors shall be listed in the proposal in order to receive credit.
- C. Copies or faxes of all “Confirmation by DBE” forms signed by each DBE listed in the proposal shall be submitted to the Project Manager listed in the proposal **five (5) days after bid opening.**² Information to be provided on the form shall include the name of the DBE, address, project name and number, prime contractor name, appropriate NAICS code and description of the type of work the DBE is certified to perform under this contract. Failure to provide this completed form may be cause for bid/proposal rejection.
- D. The dollar amount of each subcontract (both DBE and non-DBE firms) for all subcontractors, manufacturers and suppliers listed in the proposal shall be submitted within five (5) calendar days of bid opening. Failure to comply with this requirement for all bidders, whether they are the low bidder or not, may result in bid rejection.
- E. If the contract goal is not met, documentation of good faith efforts including quotations for both DBE and non-DBE subcontractors when a non-DBE is selected over a DBE for the project, shall be submitted five (5) calendar days after bid opening.
- F. 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. This DBE contract goal is applicable to all the contract work performed for this project and is calculated as follows:
 - 1.
$$\text{DBE contract goal percentage} = \frac{\text{Contract Dollar Value of the work to be performed by DBE subcontractors and manufacturers, plus 60\% of the contract dollar value of DBE suppliers}}{\text{sum of all contract items (sum of all contract items is the total amount for comparison of bids less mobilization, force account items, and allowance items)}}$$
 - 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.

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

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.

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 the Department 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 operates or maintains a factory or establishment that produces (on the premises) the materials, supplies, articles, or equipment required under the contract and of the general character described by the specifications;
 - 3. If the materials or supplies are purchased from a DBE regular dealer, count 60 percent of the cost of the materials or supplies toward DBE goals;
 - 4. For purposes of determining DBE goal credit, a regular dealer is a firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials, supplies, articles or equipment of the general character described by the specifications and required under the contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business;
 - 5. To be a regular dealer, the firm must be an established, regular business that engages, as its principal business and under its own name, in the purchase and sale or lease of the products in question;

6. A person may be a regular dealer in such bulk items as petroleum products, steel, cement, gravel, stone, or asphalt without owning, operating, or maintaining a place of business as provided in the DBE Regulations, if the person both owns and operates distribution equipment for the products. Any supplementing of a regular dealers' own distribution equipment shall be by a long-term lease agreement and not on an ad hoc or contract-by-contract basis;
7. Packagers, brokers, manufacturers' representatives, or other persons who arrange or expedite transactions are not regular dealers;
8. With respect to materials or supplies purchased from a DBE, which is neither a manufacturer nor a regular dealer, count the entire amount of fees or commissions charged for assistance in the procurement of the materials and supplies, or fees or transportation charges for the delivery of materials or supplies required on a job site, toward DBE goals, provided that the Department determines the fees to be reasonable and not excessive as compared with fees customarily allowed for similar services. Do not count any portion of the cost of the materials and supplies themselves toward DBE goals; however,
9. If a firm is not currently certified as 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 §26.87(i);
10. Do not count the dollar value of work performed under a contract with a firm after it has ceased to be certified toward the Department's overall goal; and
11. Do not count the participation of 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 (1) fully licensed, insured, and operational truck used on the contract;
3. The DBE receives credit for the total value of the transportation services it provides on the contract using trucks it owns, insures, and operates using drivers it employs;
4. The DBE may lease trucks from another DBE firm, including an owner-operator who is certified as 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 Department operating administration.

EXAMPLE: DBE firm X uses two (2) of its own trucks on a contract, leases two (2) trucks from DBE Firm Y and six (6) trucks from non-DBE Firm Z. DBE credit would be awarded for the total value of transportation services provided by Firm X and Firm Y, and may also be awarded for the total value of transportation services provided by four (4) of the six (6) trucks provided by Firm Z. In all, full credit would be allowed for the participation of eight (8) trucks. With respect to the other two (2) trucks provided by Firm Z, DBE credit could be awarded only for the fees or commissions pertaining to those trucks Firm X receives as a result of the lease with Firm Z;

6. The DBE may lease trucks without drivers from a non-DBE truck leasing company. If the DBE leases trucks from a non-DBE truck leasing company and uses its own employees as drivers, it is entitled to credit for the total value of these hauling services.

EXAMPLE: DBE Firm X uses two (2) of its own trucks on a contract. It leases two (2) additional trucks from non-DBE Firm Z. Firm X uses its own employees to drive the trucks leased from Firm Z. DBE credit would be awarded for the total value of the transportation services provided by all four (4) trucks; and

7. For purposes of determining whether a trucking firm performs a CUF, a lease must indicate that the DBE has exclusive use of and control over the truck. This does not preclude the leased truck from working for others during the term of the lease with the consent of the DBE, so long as the lease gives the DBE absolute priority for use of the leased truck. Leased trucks must display the name and identification number of the DBE.

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

- I. Effects of a Summary Suspension of a DBE. When a DBE's certification is suspended, the DBE may not be considered to meet a contract goal on a new contract and any work it does on a contract received during the suspension shall

not be counted towards the overall goal. The DBE may continue to perform work under an existing contract executed before the DBE received a Notice of Suspension and may be counted towards the contract goal during the period of suspension as long as the DBE is performing a CUF under the existing contract.

- J. Effects of Decertification of a DBE. 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. The Department must approve the use of joint checks prior to use by contractors and/or DBEs. As part of this approval process the Department will analyze industry practice to confirm that the use of joint checks is commonly employed outside of the DBE program for non-DBE subcontractors on both federal and state funded contracts. Using joint checks shall not be approved if it conflicts with other aspects of the DBE regulations regarding CUF; and
 5. The Department will monitor the use of joint checks closely to avoid abuse.
- B. Contractors and DBEs should review the following general guidelines when determining whether to use joint checks closely to avoid abuse:
1. That standard industry practice applies to all contractors (federal and state contracts);
 2. Use of joint checks must be available to all subcontractors;
 3. Material industry sets the standard industry practice, not prime contractors;
 4. Short term, not to exceed reasonable time (i.e., one (1) year, two (2) years) to establish/increase a credit line with the material supplier;

5. No exclusive arrangement between one (1) prime and one (1) DBE in the use of joint checks that might bring the independence of the DBE into question;
6. Non-proportionate ratio of DBE's normal capacity to size of contract and quantity of material to be provided under the contract;
7. The DBE is normally responsible to install and furnish the work item; and
8. The DBE must be more than an extra participant in releasing the check to the material supplier.

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

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

VIII. DEMONSTRATION OF GOOD FAITH EFFORTS FOR CONTRACT AWARD

- A. It is the sole responsibility of the bidder/offeror to submit any and all documents, logs, correspondence, and any other records or information to the Department that will demonstrate that the bidder/offeror made good faith efforts to meet the DBE goal. In its good faith evaluation, the Department shall perform the following as part of its evaluation: a) request additional information and documents from the bidder/offeror; b) 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; c) verify contacts by bidders/offerors with DBEs; and d) 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. 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 at the time of bid opening (i.e. DBE name, address, NAICS code, description of work, project name, and number), and dollar amounts for all subcontractors, within five (5) days of bid opening;
2. Whether the bidder/offeror solicited through all reasonable and available means (e.g. attendance at pre-bid meetings, advertising and/or written notices) the interest of all certified DBEs who have the capability to perform part or all of the work to be included under the contract. The Department will also consider whether the bidder/offeror solicited the participation of potential DBEs as early in the procurement process as practicable, and allowed sufficient time for the DBEs to properly inquire about the project and respond to the solicitation. The Department will also review whether the bidder/offeror took appropriate steps to follow up with interested DBEs in a timely manner to facilitate participation by DBEs in this project;
3. Whether the bidder/offeror identified and broke up portions of work that can be performed by DBEs in order to increase the likelihood that 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;
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 themselves, 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; and
 11. Whether other bidders/offerors met the goal and whether the apparent successful bidder/offeror could have met the goal with additional efforts. The Department may determine that an apparent successful bidder/offeror who fell short of meeting the goal, made good faith efforts when it met or exceeded the average DBE participation obtained by other bidders/offerors.
- B. 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.

IX. ADMINISTRATIVE RECONSIDERATION.

- A. If under the provisions of 49 CFR, Part 26.53(d), if it is determined by the Department that the apparent successful bidder/offeror has failed to meet the provisions of this subsection, the bidder/offeror may submit a protest to request an administrative reconsideration. The bidder/offeror must file this request with the Department's OCR within five (5) calendar days of notification by the Department that the bidder/offeror failed to meet the requirements of this subsection. As part of this reconsideration request, it is the bidder's/offeror's responsibility to provide to the OCR, any and all written documentation, correspondence, logs, and any other documents or evidence the bidder/offeror believes relates to the issue of whether it met the DBE project goal or made good faith effort to do so.
- B. The OCR DBE Liaison Officer will be responsible for resolving the reconsideration dispute.
- C. Upon request by the bidder/offeror, the bidder/offeror will be allowed an opportunity to meet in person with the Liaison Officer to discuss the issue of whether it met the DBE project goal, or made good faith effort to do so. If a meeting is requested, the bidder/offeror must be ready, willing, and able to meet with the Liaison Officer within five (5) calendar days of the bidder's/offeror's receipt of written notification that the bidder/offeror failed to meet the requirements of this subsection.

- D. The Liaison Officer will render a decision on the reconsideration, and notify the bidder/offeror in writing of the decision. The decision will explain the basis for the Liaison Officer's findings and the reasons for the decision.
- E. The decision is not appealable to the USDOT, but is appealable in accordance with Section 103D-709, Hawaii Revised Statutes.

X. AWARD OF CONTRACT

- A. In a sealed bid procurement, the Department reserves the right to reject any or all bids. The award of contract, if it is awarded, will be to the lowest responsive and responsible bidder who meets or exceeds the DBE project goal, or who makes good faith efforts to meet or exceed the DBE project goal, as determined by the Department.
- B. If the lowest responsible bidder does not meet the DBE project goal and does not demonstrate to the satisfaction of the Department that it made good faith efforts to meet the DBE project goal, such bid shall be rejected as non-responsive. The Department will then consider the next lowest responsive and responsible bidder for award in accordance with paragraph A above.

XI. REPLACEMENT OF 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 the Department to replace a DBE. If the Department's consent is not provided, the contractor shall not be entitled to any payment for work or material unless it is performed or supplied by the listed DBE. The Department reserves the right to request copies of all DBE subcontracts.

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

The written notice by the contractor must include the following:

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

5. Documentation of contractor's good faith efforts to enable affected DBE to perform the work;
6. The current percentage of work completed on each bid item by the affected DBE;
7. The total dollar amount currently paid per bid item for work performed by the affected DBE;
8. The total dollar amount per bid item remaining to be paid to the DBE for work completed but for which the DBE has not received payment, and with which the contractor has no dispute; and
9. The total dollar amount per bid item remaining to be paid to the DBE for work completed, for which the DBE has not received payment, and with which the contractor and DBE have a dispute.

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

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

1. The DBE subcontractor fails or refuses to execute a written contract;
2. The listed DBE subcontractor fails or refuses to perform the work of its subcontract in a way consistent with normal industry standards;
3. The listed DBE subcontractor fails or refuses to meet the prime contractor's reasonable, nondiscriminatory bond requirements;
4. The listed DBE subcontractor becomes bankrupt, insolvent, or exhibits credit unworthiness;
5. The listed DBE subcontractor is ineligible to work on public works projects because of suspension and debarment proceedings pursuant to 2 CFR Parts 180, 215 and 1200 or applicable state law;
6. The Department has determined that the listed DBE subcontractor is not a responsible contractor;
7. The listed DBE subcontractor voluntarily withdraws from the project and provides to the Department written notice of its withdrawal;
8. The listed DBE is ineligible to receive DBE credit for the type of work required; and
9. 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 the Department to replace a DBE, the contractor's good faith efforts shall be documented and submitted to the Department within seven (7) calendar days. This time period may be extended for another seven (7) calendar days upon request by the prime contractor.

If 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 effort to obtain such a substitute DBE subcontractor to perform said work, may constitute a breach of this contract for which the Department may terminate the contract or pursue such remedy as deemed appropriate by the Department.

XII. CONTRACT COMPLIANCE

This contract is subject to contract compliance tracking, and the prime contractor and all subcontractors are required to report payments electronically in the HDOT online Certification and Contract Compliance Management System (hereafter referred to as "online tracking system"). The prime contractor 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 contract information and contract records.

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

<https://hdot.dbesystem.com/>

XIII. PAYMENT

- A. The Department will make an estimate in writing each month based on the items of work performed and materials incorporated in the work and the value therefore at the unit prices or lump sum prices set forth in the contract. All progress estimates and payments will be approximate only and shall be subject to correction at any time prior to or in the final estimate and payment. The Department will not withhold any amount from any payment to the contractor, including retainage.
- B. The contractor shall pay all subcontractors within ten (10) calendar days after receipt of any progress payments from the Department. This clause applies to both DBE and non-DBE subcontractors, and all tiers of subcontracts.
- C. The Contractor will verify that payment or retainage has been released to the subcontractors or its suppliers within the specified time through entries in the Department's online tracking system during the corresponding monthly audits. Prompt payment will be monitored and enforced through the Contractor's reporting of payments to its subcontractors and suppliers in the online tracking system.

Subcontractors, including lower tier subcontractors and/or suppliers will confirm the timeliness and the payment amounts received utilizing the online tracking

system. Discrepancies will be investigated by the DBE Program Office and the project engineer. Payments to the subcontractors, including lower tier subcontractors, and including retainage released after the subcontractor or lower tier subcontractor's work has been accepted, will be reported by the Contactor or the subcontractor.

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

XIV. RECORDS

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

1. The names, race/ethnicity, gender, address, phone number, and contact person of all DBE and non-DBE consultants, subcontractors, manufacturers, suppliers, truckers and vendors identified as DBEs (for vendor to identify whether it is a supplier or manufacturer);
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

All contractors, subcontractors, manufacturers and suppliers are hereby advised that failure to carry out all DBE requirements specified herein shall constitute a material breach of contract that may result in termination of the contract or such other remedy as deemed appropriate by the Department.

REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS

- I. General
- II. Nondiscrimination
- III. Nonsegregated Facilities
- IV. Davis-Bacon and Related Act Provisions
- V. Contract Work Hours and Safety Standards Act Provisions
- VI. Subletting or Assigning the Contract
- VII. Safety: Accident Prevention
- VIII. False Statements Concerning Highway Projects
- IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
- X. Compliance with Governmentwide Suspension and Debarment Requirements
- XI. Certification Regarding Use of Contract Funds for Lobbying

ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under Title 23 (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).

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.

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). 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 bid proposal or request for proposal 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).

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.

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. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

II. NONDISCRIMINATION

The provisions of this section related to 23 CFR Part 230 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 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, 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 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, 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 230, 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 (28 CFR 35, 29 CFR 1630, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 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 35 and 29 CFR 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.

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, 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 who 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.

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, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure 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. 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, 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, 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 there under. 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, 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 and 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. Assurance Required by 49 CFR 26.13(b):

a. The requirements of 49 CFR Part 26 and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.

b. The contractor 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 contracting agency deems appropriate.

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 \$10,000 or more.

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, 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). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

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

a. All laborers and mechanics employed or working upon the site of the work, 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 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.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions

of paragraph 1.d. 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 shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). 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 classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH-1321) shall 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. (1) The contracting officer shall 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 shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore 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 utilized 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) 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 shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. 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.

(3) 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 shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. The Wage and Hour 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.

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall 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.

c. 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 shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

d. 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, 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.

2. Withholding

The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract, or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the contracting agency may, 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.

3. Payrolls and basic records

a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, 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 section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) 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 section 1(b)(2)(B) of the Davis-

Bacon Act, the contractor shall 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. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

b. (1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <http://www.dol.gov/esa/whd/forms/wh347instr.htm> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency..

(2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed 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 Regulations, 29 CFR part 3;

(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 of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(2) of this section.

(4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, 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 may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and trainees

a. Apprentices (programs of the USDOL).

Apprentices will be permitted to work at less than the predetermined rate for the work they performed 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 Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall 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 the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly

rate specified in the applicable wage determination. Apprentices shall 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, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

b. Trainees (programs of the USDOL).

Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

d. 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. 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 journeymen 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.

6. Subcontracts. The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 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.

9. Disputes concerning labor standards. 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 he or she) 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 section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

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

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

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 watchmen 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.

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. 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 watchmen and guards, employed in violation of the clause set forth in paragraph (1.) of this section, in the sum of \$10 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.

3. Withholding for unpaid wages and liquidated damages. The FHWA or the contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or 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, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2.) of this section.

4. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1.) through (4.) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1.) through (4.) of this section.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

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

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" 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:

- (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.

2. 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. 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.

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

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 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.

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 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).

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 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 1, 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

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

By submission of this bid/proposal or the execution of this contract, or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.

2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

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.

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.

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.

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.

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 and 1200. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee 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 grantee or subgrantee 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.

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.

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. 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 Excluded Parties List System website (<https://www.epls.gov/>), which is compiled by the General Services Administration.

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. 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) 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;

(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; 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.

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

2. 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)

a. By signing and submitting this proposal, the prospective lower tier 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.

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 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 grantee or subgrantee 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 grantee or subgrantee 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.

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.

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 Excluded Parties List System website (<https://www.epls.gov/>), which is compiled by the General Services Administration.

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.

* * * * *

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

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall 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 20).

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.

**ATTACHMENT A - EMPLOYMENT AND MATERIALS
PREFERENCE FOR APPALACHIAN DEVELOPMENT
HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS
ROAD CONTRACTS**

This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

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

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

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

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

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

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

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

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

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
HONOLULU, HAWAII

SPECIAL PROVISIONS

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

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

“DIVISION 100 - GENERAL PROVISIONS

SECTION 101 - TERMS, ABBREVIATIONS, AND DEFINITIONS

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

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

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

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

47	AREA	American Railway Engineering Association
48		
49	ASA	American Standards Association
50		
51	ASCE	American Society of Civil Engineers
52		
53	ASLA	American Society of Landscape Architects
54		
55	ASTM	American Society for Testing and Materials
56		
57	AWG	American Wire Gauge
58		
59	AWPA	American Wood Preserver's Association
60		
61	AWS	American Welding Society
62		
63	AWWA	American Water Works Association
64		
65	BMP	Best Management Practice
66		
67	CCO	Contract Change Order
68		
69	CFR	Code of Federal Regulations
70		
71	CRSI	Concrete Reinforcing Steel Institute
72		
73	DCAB	Disability and Communication Access Board, Department of
74		Health, State of Hawaii
75		
76	DOTAX	Department of Taxation, State of Hawaii
77		
78	EPA	U.S. Environmental Protection Agency
79		
80	FHWA	Federal Highway Administration,
81		U.S. Department of Transportation
82		
83	FSS	Federal Specifications and Standards,
84		General Services Administration, U.S. Department of
85		Defense
86		
87	HAR	Hawaii Administrative Rules
88		
89	HDOT	Department of Transportation, State of Hawaii
90		
91	HIOSH	Occupational Safety and Health, Department of Labor and
92		Industrial Relations, State of Hawaii
93		

94	HMA	Hot Mix Asphalt
95		
96	HRS	Hawaii Revised Statutes
97		
98	ICEA	Insulated Cable Engineers Association (formerly IPCEA)
99		
100	IMSA	International Municipal Signal Association
101		
102	IRS	Internal Revenue Service
103		
104	ITE	Institute of Transportation Engineers
105		
106	MUTCD	Manual on Uniform Traffic Control Devices for Streets and
107		Highways, FHWA, U.S. Department of Transportation
108		
109	NCHRP	National Cooperative Highway Research Program
110		
111	NEC	National Electric Code
112		
113	NEMA	National Electrical Manufacturers Association
114		
115	NFPA	National Forest Products Association
116		
117	NPDES	National Pollutant Discharge Elimination System
118		
119	OSHA	Occupational Safety and Health Administration/Act,
120		U.S. Department of Labor
121		
122	SAE	Society of Automotive Engineers
123		
124	SI	International Systems of Units
125		
126	UFAS	Uniform Federal Accessibility Standards
127		
128	UL	Underwriter's Laboratory
129		
130	USGS	U.S. Geological Survey
131		
132	VECP	Value Engineering Cost Proposal
133		
134	101.03 Definitions. Whenever the following words, terms, or pronouns are	
135	used in the contract documents, unless otherwise prescribed therein and without	
136	regards to the use or omission of uppercase letters, the intent and meaning shall	
137	be interpreted as follows:	
138		
139	Addendum (plural - Addenda) - A written or graphic document, including	
140	drawings and specifications, issued by the Director during the bidding period.	

This document modifies or interprets the bidding documents by additions, deletions, clarifications or corrections.

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

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

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

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

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

Bag - 94 pounds of cement.

Barrel - 376 pounds of cement.

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

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

Bid - See Proposal.

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

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

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

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

Calendar Day - See Day.

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

Completion - See Substantial Completion and Final Completion.

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

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

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

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

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

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

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

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

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

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

Contracting Officer - See Engineer.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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., direct submittal or fax by the contractor to the Material Testing and Research Branch, of such things as contractor QC test results or schedules 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, in general, is not used for payment purposes unless the Engineer or MTRB designated as such.

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 (Bid) - The executed document submitted by a Bidder in response to a solicitation request, to perform the work required by the proposed contract documents, for the price quoted and within the time allotted.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Subcontractor - An individual, partnership, firm, corporation, or joint venture or other legal entity, as covered in Chapter 444 of the 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

NH-064-1(010)

101-12a

10/01/17

1 Make this section a part of the Standard Specifications:

2
3 **"SECTION 102 - BIDDING REQUIREMENTS AND CONDITIONS**

4
5
6 **102.01 Prequalification of Bidders.** Prospective bidders shall be capable of
7 performing the work for which they are bidding.

8
9 In accordance with HRS Chapter 103D-310, the Department may require
10 any prospective bidder to submit answers to questions contained in the 'Standard
11 Qualification Questionnaire For Prospective Bidders On Public Works Contracts'
12 furnished by the Department, properly executed and notarized, setting forth a
13 complete statement of the experience of such prospective bidder and its
14 organization in performing similar work and a statement of the equipment
15 proposed to be used, together with adequate proof of the availability of such
16 equipment. Whenever it appears to the Department, from answers to the
17 questionnaire or otherwise, that the prospective bidder is not fully qualified and
18 able to perform the intended work, the Department will, after affording the
19 prospective bidder an opportunity to be heard and if still of the opinion that the
20 bidder is not fully qualified to perform the work, refuse to receive or consider any
21 bid offered by the prospective bidder. All information contained in the answers to
22 the questionnaire shall be kept confidential. Questionnaire so submitted shall be
23 returned to the bidders after serving their purpose.

24
25 No person, firm or corporation may bid where (1) the person, firm, or
26 corporation, or (2) a corporation owned substantially by the person, firm, or
27 corporation, or (3) a substantial stockholder or an officer of the corporation, or (4)
28 a partner or substantial investor in the firm is in arrears in payments owed to the
29 State or its political subdivisions or is in default as a surety or failure to do faithfully
30 and diligently previous contracts with the State.

31
32 **102.02 Contents of Proposal Forms.** The Department will furnish prospective
33 bidders with proposal forms posted in HlePRO stating:

- 34
35 (1) The location,
36
37 (2) Description of the proposed work,
38
39 (3) The approximate quantities,
40
41 (4) Items of work to be done or materials to be furnished,
42
43 (5) A schedule of items, and
44
45 (6) The time in which the work shall be completed.
46

102.04

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 HlePRO.

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

102.03 Issuance of Proposal Forms. The Department reserves the right to refuse to issue proposal forms to prospective bidders, which refusal may be based on the following:

- (1) Lack of competency or adequate machinery, plant, and other equipment (which determination may be based on the financial statement and experience questionnaires required under Subsection 102.01 - Prequalification of Bidders);
- (2) Uncompleted work that might hinder or prevent the prompt completion of additional work if awarded;
- (3) Failure to pay or settle bills due for labor and material on former contracts in force at the time of issuance of the solicitation;
- (4) Failure to comply with qualification regulations of the Department;
- (5) Default under previous contracts; or
- (6) Lack of responsibility and cooperation from past work.

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 Contractor'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.

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

102.14

102.09 Delivery of Proposal. The bidder shall submit the proposal in HlePRO. Bids received after said due date and time shall not be considered.

102.10 Withdrawal or Revision of Proposals. A bidder may withdraw or revise a proposal after the bidder submits the proposal in HlePRO. Withdrawal or revision of proposal must be completed before the time set for the receiving of bids.

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 in HlePRO. The request must be posted in HlePRO 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. Hawaii Products and Recycled Products 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 HlePRO. 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

1 Make this section a part of the Standard Specifications:
2

3 **“SECTION 103 - AWARD AND EXECUTION OF CONTRACT**
4
5

6 **103.01 Consideration of Proposals.** The Department will compare the
7 proposals in terms of the summation of the products of the approximate quantities
8 and the unit bid prices after the submittal date and time established in HlePRO. If
9 a discrepancy occurs between the unit bid price and the bid price, the unit bid price
10 shall govern.
11

12 The “Buy America” provisions in the Surface Transportation Assistance Act
13 of 1982 is applicable to Federal-aid projects. Bidders may submit a bid based upon
14 the furnishing and use of domestic steel or foreign steel. Manufacturing processes
15 for domestic steel shall occur in the United States.
16

17 The Department reserves the right to reject proposals, waive technicalities or
18 advertise for new proposals, if the rejection, waiver, or new advertisement favors
19 the Department.
20

21 **103.02 Award of Contract.** The award of contract, if it be awarded, will be made
22 within 60 calendar days after the opening of bids, to the lowest responsible
23 bidder whose proposal complies with all the requirements. (Through HlePRO). The
24 successful bidder will be notified by letter mailed to the address shown in its
25 proposal, that its proposal has been accepted, and that it has been awarded
26 the contract.
27

28 **(1) Requirement for Award.** To be eligible for award, the apparent
29 low bidder will be contacted to submit copies of the documents listed
30 below to demonstrate compliance with HRS Section 103D-310(c). The
31 documents should be submitted to the Department as soon as possible.
32 If a valid certificate/clearance is not submitted on a timely basis for award
33 of a contract, a bidder otherwise responsive and responsible may not
34 receive the award. See also Subsection 108.03 – Preconstruction Data
35 Submittal.
36

37 **(A) Tax Clearance.** Pursuant to HRS Sections 103D-310(c), 103-53 and
38 103D-328, the successful bidder shall be required to submit a certified copy
39 of its tax clearance issued by the Hawaii State Department of Taxation
40 (DOTAX) and the Internal Revenue Service (IRS) to demonstrate its
41 compliance with HRS Chapter 237. A tax clearance is valid for six (6) months
42 from the most recent approval stamp date on the tax clearance and must be
43 valid on the bid’s first legal advertisement date or any date thereafter up to
44 the bid opening date.
45

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

<http://www.hawaii.gov/tax/>

To receive DOTAX Forms by fax or mail, phone (808) 587-7572 or 1-800-222-7572.

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

(B) DLIR Certificate of Compliance. Pursuant to HRS Section 103D-310(c), the successful bidder shall be required to submit a copy (faxed copies are acceptable) of its approved certificate of compliance issued by the Hawaii State Department of Labor and Industrial Relations (DLIR) to demonstrate its compliance with unemployment insurance (HRS Chapter 383), workers' compensation (HRS Chapter 386), temporary disability insurance (HRS Chapter 392), and prepaid health care (HRS Chapter 393). The certificate is valid for six (6) months from the most recent approval stamp date on the certificate and must be valid on the bid's first legal advertisement date or any date thereafter up to the bid opening date. For certificates which receive a "pending" approval stamp, a DLIR approval stamp is required prior to the issuance of the Notice to Proceed.

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

www.hawaii.gov/labor

More information is available by calling the DLIR Unemployment Insurance Division at (808) 586-8926.

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 and must be submitted directly to the DLIR. The approved certificate may then be submitted to the Department.

(C) DCCA Certificate of Good Standing. Pursuant to HRS Section 103D-310(c), the successful bidder shall be required to submit a copy (faxed copies are acceptable) of its approved Certificate of Good Standing issued by the Hawaii State Department of Commerce and Consumer Affairs (DCCA), Business Registration Division (BREG) to demonstrate that it is either:

- 92 (1) Incorporated or organized under the laws of the State; or
93
94 (2) Registered to do business in the State as a separate branch or
95 division that is capable of fully performing under the contract.
96

97 The Certificate of Good Standing is valid for six (6) months from
98 the approval date on the certificate and must be valid on the bid's first
99 legal advertisement date or any date thereafter up to the bid opening
100 date. A Hawaii business that is a sole proprietorship, however, is not
101 required to register with the BREG, and therefore not required to
102 submit a Certificate of Good Standing. Bidders are advised that there
103 are costs associated with registering and obtaining a Certificate of
104 Good Standing from the DCCA.
105

106 To purchase a CERTIFICATE OF GOOD STANDING, go to On-Line
107 Services at the following website:
108

109 www.hawaii.gov/dcca/
110

111 The application for the Certificate of Good Standing is the
112 responsibility of the bidder and must be submitted directly to the DCCA. The
113 approved certificate may then be submitted to the Department.
114

115 (D) **Hawaii Compliance Express (HCE).** In lieu of the certificates
116 referenced above, the bidder may make available proof of compliance
117 through the Hawaii Compliance Express or any other designated certification
118 process. Bidders may apply and register at the "Hawaii Compliance Express"
119 website:
120

121 **103.03 Cancellation of Award.** The Department reserves the right to cancel
122 the award of contracts before the execution of said contract by the parties.
123 There will be no liability to the awardee and to other bidders.
124

125 **103.04 Return of Proposal Guaranty.** The Department will return the proposal
126 guaranties, except those of the three lowest bidders, after the Department
127 checks the proposals. The Department will return the proposal guaranties of the
128 remaining two lowest bidders not awarded the contract within five working days
129 following the execution of the contract. The Department will return the successful
130 bidder's proposal guaranty after the successful bidder furnishes a bond and
131 executes the contract.
132

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 inure 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.

176 **103.07 Failure to Execute Contract.** Failure to execute the contract and file
177 acceptable bonds shall be cause for the cancellation of the award in accordance
178 with Subsection 103.06 - Execution of the Contract. Also, the Contractor forfeits the
179 proposal guaranty which becomes the property of the Department. This is not a
180 penalty, but liquidated damages sustained by the State. The Department may then
181 make award to the next lowest responsible bidder or the Department may
182 readvertise and construct the work under contract.”
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END OF SECTION 103

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

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

(1) By written agreement on a fixed price adjustment 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.

(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.

(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

48 submission by the contractor of proper documentation of
49 completed force account work, whether periodic (conforming to the
50 applicable billing cycle) or final. The Engineer shall return any
51 documentation that is defective, to the contractor within fifteen days
52 after receipt, with a statement identifying the defect; or
53

54 **(B)** For change orders with value exceeding \$50,000 by a
55 unilateral determination by the Engineer of the costs attributable to
56 the events or situations with adjustment of profit and fee, all as
57 computed by the Engineer in accordance with applicable sections
58 of HAR Chapters 3-123 and 3-126, and Section 109.05 -
59 Allowances for Overhead and Profit. When a unilateral
60 determination has been made, a unilateral change order shall be
61 issued within ten days. Upon receipt of the unilateral change
62 order, if the contractor does not agree with any of the terms or
63 conditions, or the adjustment or nonadjustment of the contract time
64 or contract price, the contractor shall file a notice of intent to claim
65 within thirty days after the receipt of the written unilateral change
66 order. Failure to file a protest within the time specified shall
67 constitute agreement on the part of the contractor with the terms,
68 conditions, amounts, and adjustment or nonadjustment of the
69 contract time or the contract price set forth in the unilateral change
70 order.
71

72 A contractor shall be required to submit cost or pricing data if any
73 adjustment in contract price is subject to the provisions of HAR Chapter 3-122,
74 Subchapter 15. A fully executed change order or other document permitting
75 billing for the adjustment in price under any method listed in Subsections
76 104.06(1) through 104.06(7) shall be issued within ten days after agreement on
77 the method of adjustment."
78
79
80
81
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83

84 END OF SECTION 104

1 **SECTION 105 – CONTROL OF WORK**

2
3 Make the following amendments to said Section:

4
5 **(I)** Amend **105.01 – Authority** to read as follows:

6
7 **“105.01 Authority.**

8
9 **(A) Authority of the Engineer.** The Engineer is the representative
10 of the Director and has all the authority of the Director with respect to the
11 contract. The Engineer will make decisions on all questions that may
12 arise regarding the contract, such as, but not limited to:

13
14 **(1)** Interpretation of the contract documents.

15
16 **(2)** Acceptability of the materials furnished and work performed.

17
18 **(3)** Manner of performance and rate of progress of the work.

19
20 **(4)** Acceptable fulfillment of the contract on the part of the
21 Contractor.

22
23 **(5)** Compensation under the contract.

24
25 The Engineer’s decisions on questions, claims, and disputes will
26 be final and conclusive subject to **Subsection 107.15 – Disputes and**
27 **Claims.**

28
29 The Engineer may delegate specific authority to act for the
30 Engineer to a specific person or persons. Such delegation of authority
31 shall be established in writing and shall become effective upon delivery to
32 the Contractor.

33
34 **(B) Authority of the Inspectors.** Inspectors, as a representative of
35 the Engineer or other agencies, will inspect the work done and materials
36 furnished. Such inspection may extend to the preparation, fabrication
37 or manufacture of the materials to be used. The Inspector does not
38 have authority vested in the Engineer unless specifically delegated in
39 writing. The Inspector may not alter or waive the provisions of the
40 contract, issue instructions contrary to the contract, or act as agent or
41 representative of the Contractor.

42
43 Failure of an Inspector at any time to reject non-conforming work
44 shall not be considered a waiver of the State’s right to require work in strict
45 conformity with the contract documents as a condition of final acceptance.

47 **(C) Authority of the Consultant and Construction Management.**

48 The State may engage consultants and construction managements to
49 perform duties in connection with the work. Unless otherwise specified
50 in writing to the Contractor, such retained consultants and construction
51 managements shall have no greater authority than an Inspector.”

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

55
56 **“105.02 Submittals.** The contract contains the description of various
57 items that the Contractor must submit to the Engineer for review and acceptance.
58 The Contractor shall review all submittals for correctness, conformance with the
59 requirements of the contract documents and completeness before submitting
60 them to the Engineer. The submittal shall indicate the contract items and
61 specifications subsections for which the submittal is provided. The submittal
62 shall be legible and clearly indicate what portion of the submittal is being
63 submitted for review. The Contractor shall provide six copies of the required
64 submissions at the earliest possible date.”

65
66 **(III) Amend Subsection 105.08 (A) - Furnishing Drawings and Special**
67 **Provisions** to read as follows:

68
69 **“(A) Furnishing Drawings and Special Provisions.** The State will
70 furnish the Contractor electronic sets of the project plans and special
71 provisions. The Contractor shall have and maintain at least one set of
72 plans and specifications on the work site, at all times.”

73
74 **(IV) Amend Subsection 105.14(D) – No Designated Storage Area** from lines
75 421 to 432 to read as follows:

76
77 **“(D) No Designated Storage Area.** If no storage area is designated
78 within the contract documents, materials and equipment may be stored
79 anywhere within the State highway right-of-way, provided such storage
80 and access to and from such site, within the sole discretion of the
81 Engineer, does not create a public or traffic hazard or an impediment to
82 the movement of traffic.”

83
84 **(V) Amend 105.16(A) – Subcontract Requirements** by adding the following
85 paragraph after line 483:

86
87 The 'Specialty Items' of work for this project are as follows:

88
89 **Section Description**
90 **No.**

93 401 Contract Item No. 401.1000 under Section 401 – Dense
94 Graded HMA Pavement
95
96 606 All Contract Items under Section 606 - Guardrail
97
98 623 All Contract Items under Section 623 - Traffic Signal System
99
100 629 All Contract Items under Section 629 - Pavement Markings
101
102 631 All Contract Items under Section 631 - Traffic Control
103 Regulatory, Warning, and Miscellaneous Signs
104
105 632 All Contract Items under Section 632 - Markers
106
107 645 Contract Item No. 645.0100 under Section 645 – Work Zone
108 Traffic Control”
109

110 (VI) Amend **Subsection 105.16(B) – Substituting Subcontractors** by
111 revising the second sentence from line 490 to line 493 to read:
112

113 “Contractors may enter into subcontracts only with subcontractors listed in the
114 proposal or with non-listed joint contractors/subcontractors permitted under
115 **Subsection 102.06 – Preparation of Proposal.**”
116
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118
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121

END OF SECTION 105

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

END OF SECTION 106

1 **SECTION 107 - LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC**

2
3 Make the following amendments to said Section:

4
5 **(I)** Amend **Section 107.01 Insurance Requirements** from lines 5 to 81 to
6 read as follows:

7
8 **“(A) Obligation of Contractor.** Contractor shall not commence any
9 work until it obtains, at its own expense, all required insurance described
10 herein. Such insurance shall be provided by an insurance company
11 authorized by the laws of the State to issue such insurance in the State of
12 Hawaii. Coverage by a “Non-Admitted” carrier is permissible provided the
13 carrier has a Best’s Rating of “A-VII” or better. The Contractor shall
14 maintain and ensure all insurance policies are current for the full period of
15 the contract until final acceptance of the work by the State.
16

17 The Certificate of Insurance shall contain: a clause that it is agreed
18 that any insurance maintained by the State of Hawaii will apply in excess
19 of, and not contribute with, insurance provided by this policy; and shall be
20 accompanied by endorsement form CG2010 or equivalent naming the
21 State as an additional insured to the policy which status shall be
22 maintained for the full period of the contract until final acceptance of the
23 work by State.
24

25 The Contractor shall obtain all required insurance as part of the
26 contract price. Where there is a requirement for the State of Hawaii and
27 its officers and employees to be named as additional insureds under any
28 Contractor’s insurance policy, before the State of Hawaii issues the Notice
29 to Proceed, the Contractor shall obtain and submit to the Engineer a
30 Certificate of Insurance and a written policy endorsement that confirms the
31 State of Hawaii and its officers and employees are additional insureds for
32 the specific State project number and project title under such insurance
33 policies. The written policy endorsement must be issued by the insurance
34 company insuring the Contractor for the specified policy type or by an
35 agent of such insurance company who is vested with the authority to issue
36 a written policy endorsement. The insurer’s agent shall also submit
37 written confirmation of such authority to bind the insurer. Any delays in
38 the issuance of the Notice to Proceed attributed to the failure to obtain the
39 proof of the State of Hawaii and its officers and employees’ additional
40 insured status shall be charged to the Contractor.
41

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

47
48 Certificates shall contain a provision that coverages being certified
49 will not be cancelled or materially changed without giving the Engineer at
50 least thirty (30) days prior written notice. Contractor will immediately
51 provide written notice to the Director should any of the insurance policies
52 evidenced on its Certificate of Insurance form be cancelled, reduced in
53 scope or coverage, or not renewed upon expiration. Should any policy be
54 canceled before final acceptance of the work by the State, and the
55 Contractor fails to immediately procure replacement insurance as
56 specified, the State, in addition to all other remedies it may have for such
57 breach, reserves the right to procure such insurance and deduct the cost
58 thereof from any money due or to become due to the Contractor.
59

60 Nothing contained in these insurance requirements is to be
61 construed as limiting the extent of Contractor's responsibility for payment
62 of damages resulting from its operations under this contract, including the
63 Contractor's obligation to pay liquidated damages, nor shall it affect the
64 Contractor's separate and independent duty to defend, indemnify and hold
65 the State harmless pursuant to other provisions of this contract. In no
66 instance will the State's exercise of an option to occupy and use
67 completed portions of the work relieve the Contractor of its obligation to
68 maintain the required insurance until the date of final acceptance of the
69 work.
70

71 All insurance described herein shall be primary and cover the
72 insured for all work to be performed under the contract, all work performed
73 incidental thereto or directly or indirectly connected therewith, including
74 but not limited to traffic detour work, barricades, warnings, diversions, lane
75 closures, and other work performed outside the work area and all change
76 order work.
77

78 The Contractor shall, from time to time, furnish the Engineer, when
79 requested, satisfactory proof of coverage of each type of insurance
80 required covering the work. Failure to comply with the Engineer's request
81 may result in suspension of the work, and shall be sufficient grounds to
82 withhold future payments due the Contractor and to terminate the contract
83 for Contractor's default.
84

85 **(B) Types of Insurance.** Contractor shall purchase and maintain
86 insurance described below which shall provide coverage against claims
87 arising out of the Contractor's operations under the contract, whether such
88 operations be by the Contractor itself or by any subcontractor or by
89 anyone directly or indirectly employed by any of them or by anyone for
90 whose acts any of them may be liable.
91

92 **(1) Workers' Compensation.** The Contractor shall obtain
93 worker's compensation insurance for all persons whom they
94 employ in carrying out the work under this contract. This insurance
95 shall be in strict conformity with the requirements of the most
96 current and applicable State of Hawaii Worker's Compensation
97 Insurance laws in effect on the date of the execution of this contract
98 and as modified during the duration of the contract.
99

100 **(2) Auto Liability.** The Contractor shall obtain Auto Liability
101 Insurance covering all owned, non-owned and hired autos with a
102 Combined single Limit of not less than \$1,000,000 per occurrence
103 for bodily injury and property damage with the State of Hawaii
104 named as additional insured. Refer to SPECIAL CONDITIONS for
105 any additional requirements.
106

107 **(3) General Liability.** The Contractor shall obtain General
108 Liability insurance with a limit of not less than \$2,000,000 per
109 occurrence and in the Aggregates for each of the following:
110

111 **(a)** Products - Completed/Operations Aggregate,

112 **(b)** Personal & Advertising Injury, and

113 **(c)** Bodily Injury & Property Damage
114
115
116

117 The General Liability insurance shall include the State as an
118 Additional Insured. The required limit of insurance may be provided
119 by a single policy or with a combination of primary and excess
120 policies. Refer to SPECIAL CONDITIONS for any additional
121 requirements.
122

123 **(4) Builders Risk For All Work.** The Contractor shall take out
124 a policy of builder's risk insurance for the full replacement value of
125 the project work; from a company licensed or otherwise authorized
126 to do business in the State of Hawaii; naming the State as an
127 additional insured under each policy; and covering all work, labor,
128 and materials furnished by such Contractor and all its
129 subcontractors against loss by fire, windstorm, tsunamis,
130 earthquakes, lightning, explosion, other perils covered by the
131 standard Extended Coverage Endorsement, vandalism, and
132 malicious mischief. Refer to SPECIAL CONDITIONS for any
133 additional requirements."
134

135 **(II)** Amend **Section 107.03 Working Hours; Night Work** to read as follows:
136

137 "Normal working hours shall be from 7:00 a.m. to 3:30 p.m.,
138 Monday through Friday, excluding holidays. Work performed
139 between 3:30 p.m. and 7:00 a.m. of the following day is "night
140 work".

141
142 Lane closures shall only be allowed during the normal working
143 hours, or during night work hours, as allowed by the Engineer in
144 writing. The Contractor shall also abide by all State of Hawaii
145 Department of Transportation mandated periods for the suspension
146 of road work.

147
148 Unless otherwise directed by the Engineer in writing, all work on the
149 project shall be conducted during the normal working hours.

150
151 The Contractor shall be responsible for obtaining a noise variance
152 permit for night work."
153

154 **END OF SECTION 107**

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

2
3 **“SECTION 108 – PROSECUTION AND PROGRESS**

4
5
6 **108.01 Notice to Proceed (NTP).** A Notice To Proceed will be issued to the
7 Contractor not more 30 calendar days after the contract certification date. The
8 Engineer may suspend the contract before issuing the Notice To Proceed, in
9 which case the Contractor’s remedies are exclusively those set forth in Subsection
10 108.10 – Suspension of Work.

11
12 The Contractor shall be allowed up to 14 calendar days after the Notice to
13 Proceed to begin physical work. The Start Work Date will be established when
14 this period ends or on the actual day that physical work begins, whichever is first.
15 Charging of Contract Time will begin on the Start Work Date. The Contractor shall
16 notify the Engineer, in writing, at least five working days before beginning physical
17 work.

18
19 In the event that the Contractor fails to start physical work within the time
20 specified, the Engineer may terminate the contract in accordance with Subsection
21 108.11 – Termination of Contract for Cause.

22
23 During the period between the Notice to Proceed and the Start Work Date
24 the Contractor should adjust work forces, equipment, schedules, and procure
25 materials and required permits, prior to beginning physical work.

26
27 Any physical work done prior to the Start Work Date will be considered
28 unauthorized work. If the Engineer does not direct that the unauthorized work be
29 removed, it shall be paid for after the Start Work Date and only if it is acceptable.

30
31 In the event that the Engineer establishes, in writing, a Start Work Date that
32 is beyond 60 calendar days from the Notice to Proceed date, the Contractor may
33 submit a claim in accordance with, Subsection 107.15 – Disputes and Claims for
34 increased labor and material costs which are directly attributable to the delay
35 beyond the first 60 calendar days after the Notice to Proceed date.

36
37 The Contractor shall notify the Engineer at least 24 hours before restarting
38 physical work after a suspension of work pursuant to Subsection 108.10 –
39 Suspension of Work.

40
41 Once physical work has begun, the Contractor shall work expeditiously and
42 pursue the work diligently to completion with the contract time. If a portion of the
43 work is to be done in stages, the Contractor shall leave the area safe and usable
44 for the user agency and the public at the end of each stage.

108.03

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:

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

183
184 2. Include copies of pertinent documentation to
185 support the time extension request.

186
187 3. Cite the anticipated period of delay and the time
188 extension requested.

189
190 4. State either that the above circumstances have
191 been cleared and normal working conditions restored
192 as of a certain day or that the above circumstances will
193 continue to prevent completion of the project.

194
195 (b) The Contractor shall notify the Engineer in writing when
196 the delay ends. Time extensions will be the exclusive relief
197 granted and no additional compensation will be paid the
198 Contractor for such delays.

199
200 **(4) Delays in Delivery of Materials or Equipment.** For delays
201 in delivery of materials or equipment, which occur as a result of
202 unforeseeable causes beyond the control and without fault of the
203 Contractor, its subcontractor(s) or supplier(s), time extensions shall
204 be the exclusive relief granted and no additional compensation will
205 be paid the Contractor on account of such delay. The delay shall not
206 exceed the difference between the originally scheduled delivery date
207 and the actual delivery date. The Contractor may be granted an
208 extension of time provided that it complies with the following
209 procedures:

210
211 (a) The Contractor's written notice to the Engineer must
212 describe the delays and state the effect such delays may have
213 on the critical path.

214
215 (b) The Contractor, if requested, must submit to the
216 Engineer within five days after a firm delivery date for the
217 material and equipment is established, a written statement
218 regarding the delay. The Contractor must justify the delay as
219 follows:

220
221 1. State specifically all reasons for the delay.
222 Explain in a detailed chronology the effect of the delay
223 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.

(I) 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 informational copy is for information use only and requires no further response or further action from the MTRB. Number of copies of the detailed work schedule to be submitted will be determined by the Engineer. The three-week schedule is in addition to the TSLD and shall in no way be considered as a substitute for the TSLD or vice versa. The three-week schedule shall show:

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

(b) The duration of all events and delays.

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

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

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

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

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

When the Contractor fails to reach substantial completion of the work for which liquidated damages are specified, within the time or times fixed in the contract or any extension thereof, in addition to all other remedies for breach that may be available to the State, the Contractor shall pay liquidated damages to the State, in the amount of \$ 6100.00 per working day.

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

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

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

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

(2) The date of the completion of punchlist as determined by the Engineer and the date of the successful final inspection, and

(3) The date of the Final Inspection that results in Substantial Completion and the receipt by the Contractor of the written notice of Substantial Completion.

(C) Actual Damages Recoverable If Liquidated Damages Deemed Unenforceable. In the event a court of competent jurisdiction holds that any liquidated damages assessed pursuant to this contract are unenforceable, the State will be entitled to recover its actual damages for Contractor's failure to complete the work, or any designated portion of the work within the time set by the contract.

108.09 Rental Fees for Unauthorized Lane Closure or Occupancy. In addition to all other remedies available to the State for Contractor's breach of the terms of the contract, the Engineer will assess the rental fees in the amount of \$500 for every one-to fifteen-minute increment for each roadway lane closed to public use or occupied beyond the time periods authorized in the contract or by the Engineer. The maximum amount assessed per day shall be \$5,000. The State may, at its discretion, deduct the amount from monies due or that may become due under the contract. The rental fee may be waived in whole or part if the Engineer determines that the unauthorized period of lane closure or occupancy was due to factors beyond the control of the Contractor. Equipment breakdown is not a cause to waive liquidated damages.

108.10 Suspension of Work.

(A) Suspension of Work. The Engineer may, by written order, suspend the performance of the work, either in whole or in part, for such periods as the Engineer may deem necessary, for any cause, including but not limited to:

(1) Weather or soil conditions considered unsuitable for prosecution of the work.

(2) Whenever a redesign that may affect the work is deemed necessary by the Engineer.

(3) Unacceptable noise or dust arising from the construction even if it does not violate any law or regulation.

(4) Failure on the part of the Contractor to:

(a) Correct conditions unsafe for the general public or for the workers.

(b) Carry out orders given by the Engineer.

(c) Perform the work in strict compliance with the provisions of the contract.

(d) Provide adequate supervision on the jobsite.

(5) The convenience of the State.

(B) Partial and Total Suspension. Suspension of work on some but not all items of work shall be considered a "partial suspension". Suspension of work on all items shall be considered "total suspension". The period of suspension shall be computed from the date set out in the written order for work to cease until the date of the order for work to resume.

(C) Reimbursement to Contractor. In the event that the Contractor is ordered by the Engineer in writing as provided herein to suspend all work under the contract for the reasons specified in Subsections 108.10(A)(2), 108.10(A)(3), or 108.10(A)(5) of the "Suspension of Work" paragraph, the Contractor may be reimbursed for actual direct costs incurred on work at the jobsite, as authorized in writing by the Engineer, including costs expended for the protection of the work. An allowance of 5 percent for indirect categories of delay costs will be paid on any reimbursed direct costs, including extended branch and home-office overhead and delay impact costs. No allowance will be made for anticipated profits. Payment for equipment which is ordered to standby during such suspension of work shall be made as described in Subsection 109.06(H) - Idle and Standby Equipment.

(D) Cost Adjustment. If the performance of all or part of the work is suspended for reasons beyond the control of the Contractor except an adjustment shall be made for any increase in cost of performance of this contract (excluding profit) necessarily caused by such suspension, and the contract modified in writing accordingly.

However, no adjustment to the contract price shall be made for any suspension, delay, or interruption:

(1) For weather related conditions.

(2) To the extent that performance would have been so suspended, delayed, or interrupted by any other cause, including the fault or negligence of the Contractor.

(3) Or, for which an adjustment is provided for or excluded under any other provision of this Contract.

(E) Claims for Adjustment. Any adjustment in contract price made shall be determined in accordance with Subsections 104.02 – Changes and 104.06 – Methods of Price Adjustment.

Any claims for such compensation shall be filed in writing with the Engineer within 30 days after the date of the order to resume work or the claim will not be considered. The claim shall conform to the requirements of Subsection 107.15(D) – Making of a Claim. The Engineer will take the claim under consideration, may make such investigations as are deemed necessary and will be the sole judge as to the equitability of the claim. The Engineer's decision will be final.

(F) No Adjustment. No provision of this clause shall entitle the Contractor to any adjustments for delays due to failure of its surety, the cancellation or expiration of any insurance coverage required by the contract documents, for suspensions made at the request of the Contractor, for any delay required under the contract, for suspensions, either partial or whole, made by the Engineer under Subsection 108.10(A)(4) of the "Suspension of work" paragraph.

108.11 Termination of Contract for Cause.

(A) Default. If the Contractor refuses or fails to perform the work, or any separable part thereof, with such diligence as will assure its completion within the time specified in this contract, or any extension thereof, or commits any other material breach of this contract, and further fails within seven days after receipt of written notice from the Engineer to commence and continue correction of the refusal or failure with diligence and promptness, the Engineer may, by written notice to the Contractor, declare the Contractor in breach and terminate the Contractor's right to proceed with the work or the part of the work as to which there has been delay or other breach of contract. In such event, the State may take over the work, perform the same to completion, by contract or otherwise, and may take possession of, and utilize in completing the work, the materials, appliances, and plants as may be on the site of the work and necessary therefore. Whether or not the Contractor's right to proceed with the work is terminated, the Contractor and the Contractor's sureties shall be liable for any damage to the State resulting from the Contractor's refusal or failure to complete the work within the specified time.

(B) Additional Rights and Remedies. The rights and remedies of the State provided in this contract are in addition to any other rights and remedies provided by law.

(C) **Costs and Charges.** All costs and charges incurred by the State, together with the cost of completing the work under contract, will be deducted from any monies due or which would or might have become due to the Contractor had it been allowed to complete the work under the contract. If such expense exceeds the sum which would have been payable under the contract, then the Contractor and the surety shall be liable and shall pay the State the amount of the excess.

In case of termination, the Engineer will limit any payment to the Contractor to the part of the contract satisfactorily completed at the time of termination. Payment will not be made until the work has satisfactorily been completed and all required documents, including the tax clearance required by Subsection 109.11 – Final Payment are submitted by the Contractor. Termination shall not relieve the Contractor or Surety from liability for liquidated damages.

(D) **Erroneous Termination for Cause.** If, after notice of termination of the Contractor's right to proceed under this section, it is determined for any reason that good cause did not exist to allow the State to terminate as provided herein, the rights and obligations of the parties shall be the same as, and the relief afforded the Contractor shall be limited to, the provisions contained in Subsection 108.12 – Termination for Convenience.

108.12 Termination For Convenience.

(A) **Terminations.** The Director may, when the interests of the State so require, terminate this contract in whole or in part, for the convenience of the State. The Director will give written notice of the termination to the Contractor specifying the part of the contract terminated and when termination becomes effective.

(B) **Contractor's Obligations.** The Contractor shall incur no further obligations in connection with the terminated work and on the date set in the notice of termination the Contractor shall stop work to the extent specified. The Contractor shall also terminate outstanding orders and subcontracts as they relate to the terminated work. The Contractor shall settle the liabilities and claims arising out of the termination of subcontracts and orders connected with the terminated work subject to the State's approval. The Engineer may direct the Contractor to assign the Contractor's right, title, and interest under terminated orders or subcontracts to the State. The Contractor must still complete the work not terminated by the notice of termination and may incur obligations as necessary to do so.

810 **(C) Right to Construction and Goods.** The Engineer may require the
811 Contractor to transfer title and to deliver to the State in the manner and to
812 the extent directed by the Engineer, the following:
813

814 (1) Any completed work.

815
816 (2) Any partially completed construction, goods, materials, parts,
817 tools, dies, jigs, fixtures, drawings, information, and contract rights
818 (hereinafter called "construction material") that the Contractor has
819 specifically produced or specially acquired for the performance of the
820 terminated part of this contract.

821
822 (3) The Contractor shall protect and preserve all property in the
823 possession of the Contractor in which the State has an interest. If
824 the Engineer does not elect to retain any such property, the
825 Contractor shall use its best efforts to sell such property and
826 construction materials for the State's account in accordance with the
827 standards of HRS Chapter 490:2-706.
828

829 **(D) Compensation.**
830

831 (1) The Contractor shall submit a termination claim specifying the
832 amounts due because of the termination for convenience together
833 with cost or pricing data, submitted to the extent required by HAR
834 Subchapter 15, Chapter 3-122. If the Contractor fails to file a
835 termination claim within one year from the effective date of
836 termination, the Engineer may pay the Contractor, if at all, an amount
837 set in accordance with Subsection 108.12(D)(3).
838

839 (2) The Engineer and the Contractor may agree to a settlement
840 provided the Contractor has filed a termination claim supported by
841 cost or pricing data submitted as required and that the settlement
842 does not exceed the total contract price plus settlement costs
843 reduced by payments previously made by the State, the proceeds of
844 any sales of construction, supplies, and construction materials under
845 Subsection 108.12(C)(3), and the proportionate contract price of the
846 work not terminated.
847

848 (3) Absent complete agreement, the Engineer will pay the
849 Contractor the following amounts less any payments previously
850 made under the contract:
851

852 (a) The cost of all contract work performed prior to the
853 effective date of the notice of termination work plus a 5
854 percent markup on the actual direct costs, including amounts
855 paid to subcontractor, less amounts paid or to be paid for

completed portions of such work; provided, however, that if it appears that the Contractor would have sustained a loss if the entire contract would have been completed, no markup shall be allowed or included and the amount of compensation shall be reduced to reflect the anticipated rate of loss. No anticipated profit or consequential damage will be due or paid.

(b) Subcontractors shall be paid a markup of 10 percent on their direct job costs incurred to the date of termination. No anticipated profit or consequential damage will be due or paid to any subcontractor. These costs must not include payments made to the Contractor for subcontract work during the contract period.

(c) The total sum to be paid the Contractor shall not exceed the total contract price reduced by the amount of any sales of construction supplies, and construction materials.

(4) Cost claimed, agreed to, or established by the State shall be in accordance with HAR Chapter 3-123.

108.13 Pre-Final and Final Inspections.

(A) **Inspection Requirements.** Before the Engineer undertakes a final inspection of any work, a pre-final inspection must first be conducted. The Contractor shall notify the Engineer that the work has reached substantial completion and is ready for pre-final inspection.

(B) **Pre-Final Inspection.** Before notifying the Engineer that the work has reached substantial completion, the Contractor shall inspect the project and test all installed items with all of its subcontractors as appropriate. The Contractor shall also submit the following documents as applicable to the work:

- (1) All written guarantees required by the contract.
- (2) Two accepted final field-posted drawings as specified in Section 648 – Field-Posted Drawings;
- (3) Complete weekly certified payroll records for the Contractor and Subcontractors.
- (4) Certificate of Plumbing and Electrical Inspection.
- (5) Certificate of building occupancy as required.

(6) Certificate of Soil and Wood Treatments.

(7) Certificate of Water System Chlorination.

(8) Certificate of Elevator Inspection, Boiler and Pressure Pipe Inspection.

(9) Maintenance Service Contract and two copies of a list of all equipment installed.

(10) Current Tax clearance. The contractor will be required to submit an additional tax clearance certificate when the final payment is made.

(11) And any other final items and submittals required by the contract documents.

(C) Procedure. When in compliance with the above requirements, the Contractor shall notify the Engineer in writing that the project has reached substantial completion and is ready for pre-final inspection.

The Engineer will then make a preliminary determination as to whether or not the project is substantially complete and ready for pre-final inspection. The Engineer may, in writing, postpone until after the pre-final inspection the Contractor's submittal of any of the items listed in Subsection 108.13(B) – Pre-Final Inspection, herein, if in the Engineer's discretion it is in the interest of the State to do so.

If, in the opinion of the Engineer, the project is not substantially complete, the Engineer will provide the Contractor a punchlist of specific deficiencies in writing which must be corrected or finished before the work will be ready for a pre-final inspection. The Engineer may add to or otherwise modify this punchlist from time to time. The Contractor shall take immediate action to correct the deficiencies and must repeat all steps described above including written notification that the work is ready for pre-final inspection.

After the Engineer is satisfied that the project appears substantially complete a final inspection shall be scheduled within ten working days after receipt of the Contractor's latest letter of notification that the project is ready for final inspection.

If, as a result of the pre-final inspection, the Engineer determines the work is not substantially complete, the Engineer will inform the Contractor in writing as to specific deficiencies which must be corrected before the work will be ready for another pre-final inspection. If the Engineer finds the work

is substantially complete but finds deficiencies that must be corrected before the work is ready for final inspection, the Engineer will prepare in writing and deliver to the Contractor a punchlist describing such deficiencies. At any time before final acceptance, the Engineer may revoke the determination of substantial completion if the Engineer finds that it was not warranted and will notify the Contractor in writing the reasons therefore together with a description of the deficiencies negating the declaration.

When the date of substantial completion has been determined by the State, liquidated damages for the failure to complete the punchlist, if due to the State will be assessed in pursuant to Subsection 108.08(B) - Liquidated Damages for Failure to Complete the Punchlist.

(D) Punchlist; Clean Up and Final Inspection. Upon receiving a punchlist after pre-final inspection, the Contractor shall promptly devote all required time, labor, equipment, materials and incidentals to correct and remedy all punchlist deficiencies. The Engineer may add to or otherwise modify this punchlist until substantial completion of the project.

Before final inspection of the work, the Contractor shall clean all ground occupied by the Contractor in connection with the work of all rubbish, excess materials temporary structures and equipment, shall remove all graffiti and defacement of the work and all parts of the work and the worksite must be left in a neat and presentable condition to the satisfaction of the Engineer.

Final inspection will occur within ten working days after the Contractor notifies the Engineer in writing that all punchlist deficiencies remaining after the pre-final inspection have been completed and the Engineer concurs. If the Engineer determines that deficiencies still remain at the final inspection, the work will not be accepted and the Engineer will notify the Contractor, in writing, of the deficiencies which shall be corrected and the steps above repeated.

If the Contractor fails to correct the deficiencies and complete the work by the established or agreed date, the State may correct the deficiencies by whatever method it deems appropriate and deduct the cost from any payments due the Contractor.

108.14 Substantial Completion and Final Acceptance.

(A) Substantial Completion. When the Engineer finds that the Contractor has satisfactorily completed all work for the project in compliance with the contract, with the exception of the planting period and the plant establishment period, the Engineer will notify the Contractor, in writing, of the project's substantial completion, effective as of the date of the

final inspection. The substantial completion date shall determine end of contract time and relieve contractor of any additional accumulation of liquidated damages for failure to complete the punchlist.

(B) Final Acceptance. When the Engineer finds that the Contractor has satisfactorily completed all contract work in compliance with the contract including all plant establishment requirements, and all the materials have been accepted by the State, the Engineer will issue a Final Acceptance Letter. The Final Acceptance date shall determine the commencement of all guaranty periods subject to Subsection 108.16 – Contractor's Responsibility for Work; Risk of Loss or Damage.

108.15 Use of Structure or Improvement. The State has the right to use the structure, equipment, improvement, or any part thereof, at any time after it is considered by the Engineer as available. In the event that the structure, equipment or any part thereof is used by the State before final acceptance, the Contractor is not relieved of its responsibility to protect and preserve all the work until final acceptance.

108.16 Contractor's Responsibility for Work; Risk of Loss or Damage. Until the written notice of final acceptance has been received, the Contractor shall take every precaution against loss or damage to any part of the work by the action of the elements or from any other cause whatsoever, whether arising from the performance or from the non-performance of the work. The Contractor shall rebuild, repair, restore and make good all loss or damage to any portion of the work resulting from any cause before its receipt of the written notice of final acceptance and shall bear the risk and expense thereof.

The risk of loss or damage to the work from any hazard or occurrence that may or may not be covered by a builder's risk policy is that of the Contractor and Surety, unless such risk of loss is placed elsewhere by express language in the contract documents.

108.17 Guarantee of Work.

(1) Regardless of, and in addition to, any manufacturers' warranties, all work and equipment shall be guaranteed by the Contractor against defects in materials, equipment or workmanship for one year from the date of final acceptance or as otherwise specified in the contract documents.

(2) When the Engineer determines that repairs or replacements of any guaranteed work and equipment is necessary due to materials, equipment, or workmanship which are inferior, defective, or not in accordance with the terms of the contract, the Contractor shall, at no increase in contract price or contract time, and within five working days of receipt of written notice from the State, commence to all of the following:

(a) Correct all noted defects and make replacements, as directed by the Engineer, in the equipment and work.

(b) Repair or replace to new or pre-existing condition any damages resulting from such defective materials, equipment or installation thereof.

(3) The State will be entitled to the benefit of all manufacturers and installers warranties that extend beyond the terms of the Contractor's guaranty regardless of whether or not such extended warranty is required by the contract documents. The Contractor shall prepare and submit all documents required by the providers of such warranties to make them effective, and submit copies of such documents to the Engineer. If an available extended warranty cannot be transferred or assigned to the State as the ultimate user, the Contractor shall notify the Engineer who may direct that the warranted items be acquired in the name of the State as purchaser.

(4) If a defect is discovered during a guarantee period, all repairs and corrections to the defective items when corrected shall be guaranteed for a new duration equal to the original full guarantee period. The running of the guarantee period shall be suspended for all other work affected by any defect. The guarantee period for all other work affected by any such defect shall restart for its remaining duration upon confirmation by the Engineer that the deficiencies have been repaired or remedied.

(5) Nothing in this section is intended to limit or affect the State's rights and remedies arising from the discovery of latent defects in the work after the expiration of any guarantee period.

108.18 No Waiver of Legal Rights. The following will not operate or be considered as a waiver of any portion of the contract, or any power herein reserved, or any right to damages provided herein or by law:

(1) Any payment for, or acceptance of, the whole or any part of the work.

(2) Any extension of time.

(3) Any possession taken by the Engineer.

A waiver of any notice requirement or of any noncompliance with the contract will not be held to be a waiver of any other notice requirement or any other noncompliance with the contract.

108.19 Final Settlement of Contract.

(A) Closing Requirements. The contract will be considered settled after the project acceptance date and when the following items have been satisfactorily submitted, where applicable:

- (1)** All written guarantees required by the contract.
- (2)** Complete and certified weekly payrolls for the Contractor and its subcontractor's.
- (3)** Certificate of plumbing and electrical inspection.
- (4)** Certificate of building occupancy.
- (5)** Certificate for soil treatment and wood treatment.
- (6)** Certificate of water system chlorination.
- (7)** Certificate of elevator inspection, boiler and pressure pipe installation.
- (8)** Tax clearance.
- (9)** All other documents required by the Contract or by law.

(B) Failure to Meet Closing Requirements. The Contractor shall meet the applicable closing requirements within 60 days from the date of Project Acceptance or the agreed to Punchlist complete date. Should the Contractor fail to comply with these requirements, the Engineer may terminate the contract for cause."

END OF SECTION 108

1 **SECTION 109 – MEASUREMENT AND PAYMENT**

2
3 Make the following amendment to said Section:

4
5 **(I) Amend Subsection 109.05 Allowances for Overhead and Profit** by
6 revising lines 101 to 110 to read as follows:

7
8 **“(1) 20 percent of the direct cost for any work performed by the**
9 **Contractor’s own labor force.**

10
11 **(2) 20 percent of the direct cost for any work performed by each**
12 **subcontractor’s own labor force.**

13
14 **(3) For the Contractor or any subcontractor for work performed**
15 **by their respective subcontractor or tier subcontractor, 10 percent**
16 **of the amount due to the performing subcontractor or tier**
17 **subcontractor.”**

18
19 **(II) Amend Subsection 109.08(B) Payment for Material On Hand** by
20 revising lines 421 to 423 to read as follows:

21
22 **“(2) The materials shall be stored and handled in accordance**
23 **with Subsection 105.14 – Storage and Handling of Materials and**
24 **Equipment.”**

25
26
27 **(III) Amend Subsection 109.11 Final Payment** by revising lines 568 to 580
28 to read as follows:

29
30 **“(3) A current “Certificate of Vendor Compliance” issued by the**
31 **Hawaii Compliance Express (HCE). The Certificate of Vendor**
32 **Compliance is used to certify the Contractor’s compliance with**

33
34 **(a) Section 103D-328, HRS (for all contracts \$25,000 or**
35 **more) which requires a current tax clearance certificate**
36 **issued by the Hawaii State Department of Taxation and the**
37 **Internal Revenue Service;**

38
39 **(b) Chapters 383, 386, 392, and 393, HRS; and**

40
41 **(c) Subsection 103D-310(c), HRS. The State reserves**
42 **the right to verify that compliance is current prior to the**
43 **issuance of final payment. Contractors are advised that**
44 **non-compliance status will result in final payment being**
45 **withheld until compliance is attained.**
46

47 Sums necessary to meet the claims of any governmental agencies
48 may be withheld from the sums due the Contractor until said
49 claims have been fully and completely discharged or otherwise
50 satisfied.”

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END OF SECTION 109

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

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

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

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

(II) Amend **203.04 – Measurement** by revising lines 345 to 366 to read as follows:

(A) The Engineer will measure roadway excavation per cubic yard. The Engineer will compute quantities of roadway excavation by average end area method and centerline distances. Curvature correction will not be applied to quantities within roadway prism, as indicated in the contract documents. In computing excavation quantities from outside the roadway prism, where roadway centerline is used as a base, curvature correction will be applied when centerline radius is 1,000 feet or less.

(III) Amend 203.05 – Payment by revising lines 368 to 457 to read as follows:

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

	Pay Item	Pay Unit
(A)	Roadway Excavation	Cubic Yard

1/27/21

(1) 15 percent of the contract bid price upon completion of
obliterating old roadways and hauling.

(2) 30 percent of the contract bid price upon completion of
preparing subgrade.

(3) 40 percent of the contract bid price upon completion of placing
selected material in final position, rounding of slopes, and using water
for compaction.

(4) 15 percent of the contract bid price upon completion of
disposing of surplus excavation material.

The Engineer will pay for accepted quantities of subexcavation, as
roadway excavation at the contract unit price per cubic yard, when ordered by
the Engineer, for work prescribed in Subsection 203.03(A)(4) – Subexcavation.
Payment will be full compensation for the work prescribed therein and in the
contract documents.

The Engineer will not pay for stockpiling selected material, placing
selected material in final position, or placing selected material in windrows along
tops of roadway slopes for erosion control work, separately and will consider the
cost as included in the unit prices for the various excavation contract pay items.
The cost is for work prescribed in this section and the contract documents.

The Engineer will not pay for overhaul separately and will consider the
cost as included in the unit prices for the various excavation contract pay items.
The cost is for work prescribed in this section and the contract documents.

The Engineer will not pay for embankment separately and will consider the
cost as included in the unit price for roadway excavation. The cost is for work
prescribed in this section and the contract documents.”

END OF SECTION 203

Make the following amendments to said Section:

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(I) Amend 206.04 – Measurement by revising lines 142 to 143 to read as follows:

(II) Amend **206.05 – Payment** by revising lines 145 to 154 to read as follows:

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

END OF SECTION 206

1 Amend **Section 209 - TEMPORARY WATER POLLUTION, DUST, AND EROSION**
2 **CONTROL** to read as follows:

3
4
5 **“SECTION 209 - TEMPORARY WATER POLLUTION, DUST, AND EROSION**
6 **CONTROL**

7
8
9 **209.01 Description.** This section describes the following:

10
11 **(A)** Including detailed plans, diagrams, and written Site-Specific Best
12 Management Practices (BMP); constructing, maintaining, and repairing
13 temporary water pollution, dust, and erosion control measures at the project
14 site, including local material sources, work areas and haul roads; removing
15 and disposing hazardous wastes; control of fugitive dust (defined as
16 uncontrolled emission of solid airborne particulate matter from any source
17 other than combustion); and complying with applicable State and Federal
18 permit conditions.

19
20 **(B)** Work associated with construction stormwater, dewatering, and
21 hydrotesting activities and complying with conditions of the National Pollutant
22 Discharge Elimination System (NPDES) permit(s) authorizing discharges
23 associated with construction stormwater, dewatering, and hydrotesting
24 activities.

25
26 **(C)** Potential pollutant identification and mitigation measures are listed in
27 Appendix A for use in the development of the Contractor’s Site-Specific BMP.

28
29 Requirements of this section also apply to construction support activities
30 including concrete or asphalt batch plants, rock crushing plants, equipment
31 staging yards/areas, material storage areas, excavated material disposal
32 areas, and borrow areas located outside the State Right-of-Way. For areas
33 serving multiple construction projects, or operating beyond the completion of
34 the construction project in which it supports, the Contractor shall be
35 responsible for securing the necessary permits, clearances, and documents,
36 and following the conditions of the permits and clearances, at no cost to the
37 State.

38
39 **209.02 Materials.** Comply with applicable materials described in Chapters 2 and 3
40 of the current HDOT “Construction Best Management Practices Field Manual”. In
41 addition, the materials shall comply with the following:

42
43 **(A) Grass.** Grass shall be a quick growing species such as rye grass,
44 Italian rye grass, or cereal grasses. Grass shall be suitable to the area and
45 provide a temporary cover that will not compete later with permanent cover.
46 Alternative grasses are allowable if acceptable to the Engineer.

209.03

(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.

136 **12.** Concrete waste control.

137
138 **13.** Fueling and maintenance of vehicles and other
139 equipment.

140
141 **14.** Tracking of sediment offsite from project entries
142 and exits.

143
144 **15.** Litter management.

145
146 **16.** Toilet facilities.

147
148 **17.** Other factors that may cause water pollution, dust
149 and erosion control.

150
151 **(b)** Provide plans indicating location of water pollution, dust
152 and erosion control devices; provide plans and details of BMPs
153 to be installed or utilized; show areas of soil disturbance in cut
154 and fill, indicate areas used for construction staging and storage
155 including items (1) through (17) above, storage of aggregate
156 (indicate type of aggregate), asphalt cold mix, soil or solid waste,
157 equipment and vehicle parking, and show areas where
158 vegetative practices are to be implemented. Indicate intended
159 drainage pattern on plans. Include flow arrows. Include
160 separate drawing for each phase of construction that alters
161 drainage patterns. Indicate approximate date when device will
162 be installed and removed.

163
164 **(c)** Construction schedule.

165
166 **(d)** Name(s) of specific individual(s) designated responsible
167 for water pollution, dust, and erosion controls on the project site.
168 Include home, cellular, and business telephone numbers, fax
169 numbers, and e-mail addresses.

170
171 **(e)** Description of fill material to be used.

172
173 **(f)** For projects with an NPDES Permit for Construction
174 Activities, submit information to address all sections in the Storm
175 Water Pollution Prevention Plan (SWPPP).

176
177 **(g)** For projects with an NPDES Permit, information required
178 for compliance with the conditions of the Notice of General
179 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 gage 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

seven calendar days from the time of notification/Contractor discovery. Notify the Engineer and document why it is infeasible to complete the installation or repair within seven calendar days and complete the work as soon as practicable and as agreed to by the Engineer. Address Site-Specific BMP deficiencies discovered by the Contractor within the timeframe above. 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.

209.05

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

540 An estimated amount for force account is allocated in proposal schedule under
541 'Additional Water Pollution, Dust, and Erosion Control', but actual amount to be paid
542 will be the sum shown on accepted force account records, whether this sum be more
543 or less than estimated amount allocated in proposal schedule. The Engineer will pay
544 for BMP measures requested by the Engineer that are beyond scope of accepted
545 Site-Specific BMP on a force account basis.

546
547 No progress payment will be authorized until the Engineer accepts in writing
548 Site-Specific BMP or when the Contractor fails to maintain project site in accordance
549 with accepted BMP.

550
551 For all citations or fines received by the Department for non-compliance,
552 including compliance with NPDES Permit conditions, the Contractor shall reimburse
553 State within 30 calendar days for full amount of outstanding cost State has incurred,
554 or the Engineer will deduct cost from progress payment.

555
556 The Engineer will assess liquidated damages up to \$27,500 per day for non-
557 compliance of each BMP requirement and all other requirements in this section.
558

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.

Pollutant Source	Appropriate Site-Specific BMP to be Implemented	BMP Requirements
<i>Construction debris, green waste, general litter</i>	<ul style="list-style-type: none"> • <i>Separate contaminated clean up materials from construction and demolition (C&D) wastes.</i> • <i>Provide waste containers (e.g., dumpster or trash receptacle) of sufficient size and number to contain construction and domestic wastes.</i> • <i>Inspect construction waste and recycling areas regularly.</i> • <i>Schedule solid waste collection regularly.</i> • <i>Schedule recycling activities based on construction/demolition phases.</i> • <i>Empty waste containers weekly or when they are two-thirds full, whichever is sooner.</i> • <i>Do not allow containers to overflow. Clean up immediately if they do.</i> • <i>On work days, clean up and dispose of waste in designated waste containers.</i> • <i>See Solid Waste Management Section SM-6 for additional requirements.</i> • <i>Provide Storm Drain Inlet Protection and/or Perimeter Sediment Controls as applicable.</i> 	<i>See Solid Waste Management Section SM-6. Protect Storm Drain Inlets SC-2, and Perimeter Sediment Controls where applicable.</i>
<i>Materials associated with the operation and maintenance of equipment, such as oil, fuel, and hydraulic fluid leakage</i>	<ul style="list-style-type: none"> • <i>Use off-site wash racks, repair and maintenance facilities, and fueling sites when practical.</i> • <i>Designate bermed wash area if cleaning on site is necessary.</i> • <i>Place drip pans or drop cloths under vehicles and equipment to absorb spills or leaks.</i> • <i>Provide an ample supply of readily available spill cleanup materials.</i> • <i>Clean up spills immediately, using dry clean-up methods where possible, and dispose of used materials properly.</i> • <i>Do not clean surfaces or spills by hosing the area down.</i> • <i>Eliminate the source of the spill to prevent a discharge or a continuation of an ongoing discharge.</i> • <i>Inspect on-site vehicles and equipment regularly and immediately repair leaks.</i> • <i>Regularly inspect fueling areas and storage tanks.</i> 	<i>See Vehicle and Equipment Cleaning, Maintenance, and Refueling, Sections SM-11, SM-12, and SM-13, and Material Delivery, Storage and Material Use Sections SM-2 and SM-3, and Spill Prevention and Control SM-10.</i>

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Pollutant Source	Appropriate Site-Specific BMP to be Implemented	BMP Requirements
	<ul style="list-style-type: none">• <i>Train employees on proper maintenance and spill practices and procedures and fueling and cleanup procedures.</i>• <i>Store diesel fuel, oil, hydraulic fluid, or other petroleum products or other chemicals in water-tight containers and provide cover or secondary containment.</i>• <i>Do not remove original product labels and comply with manufacturer's labels for proper disposal.</i>• <i>Dispose of containers only after all the product has been used.</i>• <i>Dispose of or recycle oil or oily wastes according to Federal, State, and Local requirements.</i>• <i>Store soaps, detergents, or solvents under cover or other means to prevent contact with rainwater.</i>• <i>See Vehicle and Equipment Cleaning, Maintenance, and Refueling, Sections SM-11, SM-12, and SM-13 and Material Use Section SM-3 for additional requirements.</i>	

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Pollutant Source	Appropriate Site-Specific BMP to be Implemented	BMP Requirements
Soil erosion from the disturbed areas	<ul style="list-style-type: none"> • Provide Soil Stabilization, Slope Protection, Storm Drain Inlet Protection SC-2, Perimeter Controls and Sediment Barriers, Sediment Basins and Detention Ponds, Check Dams SC-9, Level Spreader SC-10, Paving Operations SM-19, Construction Road Stabilization EC-1, Controlling Storm Water Flowing Onto and Through the Project, Post-Construction BMPs, and Non-Structural BMPs (Employee Training SM-1, Scheduling SM-14, Location of Potential Sources of Sediment SM-15, Preservation of Existing Vegetation SM-16). • 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 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. 	<p>Soil Stabilization</p> <ol style="list-style-type: none"> 1. SM-21 Topsoil Management 2. EC-5 Seeding and Planting 3. EC-6 Mulching 4. EC-7 Geotextiles and Mats <p>Slope Protection</p> <ol style="list-style-type: none"> 1. EC-5 Seeding and Planting 2. EC-6 Mulching 3. EC-7 Geotextiles and Mats 4. EC-9 Slope Roughening, Terracing, and Rounding 5. SC-11 Slope Drains and Subsurface Drains 6. SC-12 Top and Toe of Slope Diversion Ditches and Berms <p>SC-2 Storm Drain Inlet Protection</p>

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Pollutant Source	Appropriate Site-Specific BMP to be Implemented	BMP Requirements
		<p><i>Perimeter Controls and Sediment Barriers</i></p> <p>1. SC-1 Silt Fence</p> <p>2. SC-5 Vegetated Filter Strips and Buffers</p> <p>3. SC-8 Compost Filter Berm</p> <p>4. SC-13 Sandbag Barrier</p> <p>5. SC-14 Brush or Rock Filter</p> <p><i>Sediment Basins and Detention Ponds</i></p> <p>1. SC-15 Sediment Trap</p> <p>2. SC-16 Sediment Basin</p> <p>SC-9 Check Dams</p> <p>SC-10 Level Spreader</p> <p>SM-19 Paving Operations</p> <p>EC-1 Construction Road Stabilization</p>

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Pollutant Source	Appropriate Site-Specific BMP to be Implemented	BMP Requirements
		<p><i>Controlling Storm Water Flowing onto and Through the Project</i></p> <p>1. EC-8 <i>Run-On Diversion</i></p> <p>2. SC-6 <i>Earth Dike</i></p> <p>3. SC-7 <i>Temporary Drains and Swales</i></p> <p><i>Post Construction BMPs</i></p> <p>1. EC-4 <i>Flared Culvert End Sections</i></p> <p>2. SC-3 <i>Rip-Rap and Gabion Inflow Protection</i></p> <p>3. SC-4 <i>Outlet Protection and Velocity Dissipation Devices</i></p> <p>4. SM-21 <i>Topsoil Management</i></p>

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Pollutant Source	Appropriate Site-Specific BMP to be Implemented	BMP Requirements
		<i>Non-Structural BMPs</i> 1. SM-1 <i>Employee Training</i> 2. SM-14 <i>Scheduling</i> 3. SM-15 <i>Location of Potential Sources of Sediment</i> 4. SM-16 <i>Preservation of Existing Vegetation</i>

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Pollutant Source	Appropriate Site-Specific BMP to be Implemented	BMP Requirements
<i>Sediment from soil stockpiles</i>	<ul style="list-style-type: none"> • <i>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.</i> • <i>Place bagged materials on pallets and under cover.</i> • <i>Provide physical diversion to protect stockpiles from concentrated runoff.</i> • <i>Cover stockpiles with plastic or comparable material when practicable.</i> • <i>Place silt fence, fiber filtration tubes, or straw wattles around stockpiles.</i> • <i>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.</i> • <i>Unless infeasible, contain and securely protect stockpiles from the wind.</i> • <i>Provide Storm Drain Inlet Protection and/or Perimeter Sediment Controls as applicable.</i> • <i>See Protection of Stockpiles Section SM-4 for additional requirements.</i> 	<i>See Protection of Stockpiles Section SM-4. Protect Storm Drain Inlets SC-2, and Perimeter Sediment Controls where applicable.</i>
<i>Emulsified asphalt or prime/tack coat</i>	<ul style="list-style-type: none"> • <i>Provide training for employees and contractors on proper material delivery and storage practices and procedures.</i> • <i>Restrict paving operations during wet weather to prevent paving materials from being discharged.</i> • <i>Use asphalt emulsions such as prime coat when possible.</i> • <i>Protect drain inlet structures and manholes during application of tack coat, seal coat, slurry seal, and fog seal.</i> • <i>Keep ample supplies of drip pans and absorbent materials on site.</i> • <i>Inspect inlet protection devices.</i> • <i>See Material Delivery and Storage Section SM-2 and Paving Operations Section SM-19 for additional requirements.</i> • <i>Provide Storm Drain Inlet Protection and/or Perimeter Sediment Controls as applicable.</i> 	<i>See Material Delivery and Storage Section SM-2 and Material Use Section SM-3, Paving Operations Section SM-19, Protect Storm Drain Inlets SC-2, and Perimeter Sediment Controls where applicable.</i>

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Pollutant Source	Appropriate Site-Specific BMP to be Implemented	BMP Requirements
Materials associated with painting, such as paint and paint wash solvent	<ul style="list-style-type: none"> • 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 Delivery and Storage Section SM-2, Material Use SM-3, Waste Management, Hazardous Waste Management Section SM-9, Waste Management, Spill Prevention and Control Section SM-10, and Structure Construction and Painting Section SM-20 for additional requirements. • Provide Storm Drain Inlet Protection and/or Perimeter Sediment Controls as applicable. 	See Material Delivery and Storage Section SM-2, Material Use Section SM-3, Hazardous Waste Management Section SM-9, Waste Management, Spill Prevention and Control Section SM-10, and Structure Construction and Painting Section SM-20, Protect Storm Drain Inlets SC-2, and Perimeter Sediment Controls where applicable.

Pollutant Source	Appropriate Site-Specific BMP to be Implemented	BMP Requirements
<i>Industrial chemicals, fertilizers, and/or pesticides</i>	<ul style="list-style-type: none"> <i>Hazardous chemicals shall be well-labeled and stored in original containers.</i> <i>Keep ample supply of cleanup materials on site.</i> <i>Clean up spills immediately, using dry clean-up methods where possible, and dispose of used materials properly.</i> <i>Do not clean surfaces or spills by hosing the area down.</i> <i>Eliminate the source of the spill to prevent a discharge or a furtherance of an ongoing discharge.</i> <i>Dispose container only after all of the product has been used.</i> <i>Retain a complete set of material safety data sheets on site.</i> <i>Store industrial chemicals in water-tight containers and provide either cover or secondary containment.</i> <i>Provide cover when storing fertilizers or pesticides to prevent these chemicals from coming into contact with rainwater.</i> <i>Restrict amount of pesticide prepared to quantity necessary for the current application.</i> <i>Do not apply fertilizers or pesticides during or just before a rain event.</i> <i>Do not apply to stormwater conveyance channels with flowing water.</i> <i>Comply with fertilizer and pesticide manufacturer's recommended usage instructions.</i> <i>Follow federal, state, and local laws regarding fertilizer application.</i> <i>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.</i> <i>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.</i> <i>See Material Delivery and Storage Section SM2, Material Use SM-3, and Waste Management, Hazardous Waste Management Section SM-9 for additional requirements.</i> 	<p><i>See Material Delivery and Storage Section SM-2, Material Use Section SM-3, and Hazardous Waste Management Section SM-9, and Spill Prevention and Control SM-10</i></p>

Pollutant Source	Appropriate Site-Specific BMP to be Implemented	BMP Requirements
<p><i>Hazardous waste (Batteries, Solvents, Treated Lumber, etc.)</i></p>	<ul style="list-style-type: none"> • <i>Do not dispose of toxic materials in dumpsters allocated for construction debris.</i> • <i>Ensure collection, removal, and disposal of hazardous waste complies with regulations.</i> • <i>Hazardous waste that cannot be reused or recycled shall be disposed of by a licensed hazardous waste hauler.</i> • <i>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.</i> • <i>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.</i> • <i>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.</i> • <i>Clean up spills immediately, using dry clean-up methods where possible, and dispose of used materials properly.</i> • <i>Do not clean surfaces or spills by hosing the area down.</i> • <i>Eliminate the source of the spill to prevent a discharge or a continuation of an ongoing discharge.</i> • <i>Ensure collection, removal, and disposal of hazardous waste complies with manufacturer's recommendations and is in compliance with federal, state, and local requirements.</i> • <i>See Hazardous Waste Management Section SM-9 and Vehicle and Equipment Management, Vehicle and Equipment Maintenance SM-12 for additional requirements.</i> 	<p><i>See Hazardous Waste Management Section SM-9 and Vehicle and Equipment Maintenance SM-12</i></p>

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Pollutant Source	Appropriate Site-Specific BMP to be Implemented	BMP Requirements
<i>Metals and Building Materials</i>	<ul style="list-style-type: none"> • <i>Inspect construction waste and recycling areas regularly.</i> • <i>Schedule solid waste collection regularly.</i> • <i>If building materials or metals are stored on site (such as rebar or galvanized poles) store under cover under tarps or in containers.</i> • <i>Minimize the amount of material stored on site.</i> • <i>Do not stockpile uncovered metals or other building materials in close proximity to discharge points.</i> • <i>See Solid Waste Management Section SM-6 for additional requirements.</i> 	<i>See Solid Waste Management Section SM-6</i>
<i>Contaminated Soil</i>	<ul style="list-style-type: none"> • <i>See Waste Management, Contaminated Soil Management Section SM-8 and/or Hazardous Waste Management Section SM-9 for additional requirements.</i> • <i>At minimum contain contaminated material soil by surrounding with impermeable lined berms or cover exposed contaminated material with plastic sheets.</i> 	<i>See Waste Management, Contaminated Soil Management Section SM-8 and/or Hazardous Waste Management Section SM-9</i>
<i>Dust Control Water</i>	<ul style="list-style-type: none"> • <i>Do not over spray water for dust control purposes which will result in runoff from the area.</i> • <i>Apply water as conditions require.</i> • <i>Washing down of debris or dirt into drainage, sewage systems, or State waters is not allowed.</i> • <i>See Dust Control Section SM-18 for additional requirements.</i> 	<i>See Dust Control Section SM-18</i>
<i>Concrete Truck Wash Water</i>	<ul style="list-style-type: none"> • <i>Disposal of concrete truck wash water via percolation is prohibited.</i> • <i>Wash concrete-coated vehicles or equipment off-site or in the designated wash area.</i> • <i>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.</i> • <i>Runoff from the on-site concrete wash area shall be contained in a temporary pit or level bermed area where the concrete can set.</i> • <i>Design the area so that no overflow can occur due to inadequate wash area sizing or precipitation.</i> 	<i>See Waste Management, Concrete Waste Management Section SM-5</i>

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Pollutant Source	Appropriate Site-Specific BMP to be Implemented	BMP Requirements
	<ul style="list-style-type: none"> • 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 Waste Management Section SM-5 for additional requirements. 	
Sediment Track-Out	<ul style="list-style-type: none"> • 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 which remove sediment prior to exit when minimum dimensions can not be met. • See Stabilized Construction Entrance Section EC-2 for additional requirements. 	See Stabilized Construction Entrance Section EC-2

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Pollutant Source	Appropriate Site-Specific BMP to be Implemented	BMP Requirements
<i>Irrigation Water</i>	<ul style="list-style-type: none"> • 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-5 and California Stormwater BMP Handbook SD-12 Efficient Irrigation at http://www.stormwaterhawaii.com/resources/contractors-and-consultants/storm-water-pollution-prevention-plan-swppp/ under Irrigation Water for additional requirements. 	<i>See Seeding and Planting Section EC-5 and California Stormwater BMP Handbook SD-12 Efficient Irrigation</i>
<i>Hydrotesting Effluent</i>	<ul style="list-style-type: none"> • 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. 	<i>Site-Specific BMPs will be included in the NOI/NPDES Permit Form F submittal.</i>
<i>Dewatering Effluent</i>	<ul style="list-style-type: none"> • 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-17 for additional requirements. 	<i>See Dewatering Operations SM-17. Site-Specific BMPs will be included in the NOI/NPDES Permit Form G submittal.</i>

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Pollutant Source	Appropriate Site-Specific BMP to be Implemented	BMP Requirements
<i>Saw-cutting Slurry</i>	<ul style="list-style-type: none"> • Saw cut slurry shall be removed from the site by vacuuming. • Provide storm drain protection during saw cutting. See Paving Operations Section SM-19 for additional requirements. • Provide Storm Drain Inlet Protection and/or Perimeter Sediment Controls as applicable. 	<i>See Paving Operations Section SM-19, Storm Drain Inlet Protection SC-2, Perimeter sediment controls where applicable</i>
<i>Concrete Curing Water</i>	<ul style="list-style-type: none"> • 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 at http://www.stormwaterhawaii.com/resources/contractors-and-consultants/storm-water-pollution-prevention-plan-swppp/ under Concrete Curing for additional requirements. 	<i>See California Stormwater BMP Handbook NS-12 Concrete Curing</i>
<i>Plaster Waste Water</i>	<ul style="list-style-type: none"> • 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 Delivery and Storage Section SM-2, Material Use SM-3, and Hazardous Waste Management Section SM-9 for additional requirements. 	<i>See Material Delivery and Storage Section SM-2, Material Use Section SM-3, and Hazardous Waste Management Section SM-9</i>

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Pollutant Source	Appropriate Site-Specific BMP to be Implemented	BMP Requirements
<i>Water-Jet Wash Water</i>	<ul style="list-style-type: none"> • <i>For Water-Jet Wash Water used to clean vehicles, use off site wash racks or commercial washing facilities when practical.</i> • <i>See Vehicle and Equipment Cleaning Section SM-11 for additional information.</i> • <i>For Water-Jet Wash Water used to clean impervious surfaces, the runoff shall not be allowed to flow into drainage structures or State Waters.</i> 	<i>See Vehicle and Equipment Cleaning Section SM-11</i>
<i>Sanitary/Septic Waste</i>	<ul style="list-style-type: none"> • <i>Locate Sanitary facilities in a convenient place away from drainage facilities.</i> • <i>Position sanitary facilities so they are secure and will not be tipped over or knocked down.</i> • <i>Wastewater shall not be discharged to the ground or buried.</i> • <i>A licensed service provider shall maintain sanitary/septic facilities in good working order.</i> • <i>Schedule regular waste collection by a licensed transporter.</i> • <i>See Sanitary/Septic Waste Section SM-7 for additional requirements.</i> 	<i>See Sanitary/Septic Waste Section SM-7.</i>

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END OF SECTION 209

1 **SECTION 301 – HOT MIX ASPHALT BASE COURSE**

2
3 Make the following amendments to said Sections:

4
5 **(I) Amend Section 301.03(B) Compaction** by revising the second
6 paragraph from lines 84 to 87 to read as follows:

7
8 “Compact mixture immediately upon completion of spreading
9 operations to density of not less than 92.0 percent of maximum theoretical
10 specific gravity in accordance with AASHTO T 209, modified by deletion of
11 Supplemental Procedure for Mixtures Containing Porous Aggregate.”
12

13
14 **(II) Amend Section 301.04 Measurement** from lines 98 to 100 to read as
15 follows:

16
17 **“301.04 Measurement.**

18
19 **(A)** The Engineer will measure HMAB course per ton in accordance
20 with contract documents.”
21

22
23 **(III) Amend Section 301.05 Payment,** from lines 102 to 111 to read as
24 follows:

25
26 **“301.05 Payment.** The Engineer will pay for the accepted pay items
27 listed below at the contract price per pay unit, as shown in the proposal schedule.
28 Payment will be full compensation for the work prescribed in this section and the
29 contract documents.
30

31 The Engineer will pay for one of the following pay items when included in
32 the proposal schedule:

33

Pay Item	Pay Unit
Hot Mix Asphalt Base Course	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.	

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The Engineer may, in lieu of requiring removal and replacement, use the sliding scale factor to accept HMA 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 to less than 92.0	80
<90.0	Removal

END OF SECTION 301

1 **SECTION 304 – AGGREGATE BASE COURSE**
2

3 Make the following amendments to said Section:
4

5 **(I)** Amend **304.04 – Measurement** by revising lines 54 to 55 to read as
6 follows:
7

8 **“304.04 Measurement.**
9

10 **(A)** Aggregate base will be considered incidental to the concrete
11 installation. Measurement for payment will not apply.
12

13 **(II)** Amend **304.05 – Payment** by revising lines 57 to 66 to read as follows:
14

15 **“304.05 Payment.** Aggregate base course shall not be paid separately but
16 shall be considered incidental to the concrete installation, in the Proposal
17 Schedule.”
18
19
20
21

22 **END OF SECTION 304**

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

“SECTION 401 - HOT MIX ASPHALT (HMA) PAVEMENT

401.01 Description. This section describes furnishing and placing HMA pavement on a prepared surface.

401.02 Materials.

Asphalt Cement (Mix IV) (PG 64-16) 702.01

Asphalt Cement (PMA Mix) (PG 64E-22) 702.01

Performance Graded (PG) Binder. Performance graded binder shall conform to Performance Graded Asphalt Binder Specifications, 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.

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.

Grade PG binder using AASHTO MP 19 Performance Graded Asphalt Binder Using Multiple Stress Creep Recovery (MSCR) Test. Submit MSCR grading report accompanied by substantiating test data.

PERFORMANCE GRADED BINDERS FOR SPECIFIC MIXES (Performance Graded Mixes)	
MIX	BINDER*
Asphalt Cement for Surface Course (Mix IV)	PG 64-16
Asphalt Cement for Surface Course (PMA Mix)	PG 64E-22
*Neat asphalt with elastomer polymer modification shall be used to achieve the specified performance grading.	

Emulsified Asphalt 702.04

Warm Mix Asphalt Additive 702.06

35
36 Aggregate for Hot Mix Asphalt Pavement 703.09

37
38 Filler 703.15

39
40 Hydrated Lime 712.03

41
42 **(A) General.** HMA pavement shall be plant mixed and shall include
43 mixture of aggregate and asphalt cement and may include reclaimed asphalt
44 pavement (RAP) or filler, or both.

45
46 The manufacture of HMA may include warm mix asphalt (WMA)
47 processes in accordance with these specifications. WMA processes include
48 combinations of organic additives, chemical additives, and foaming.

49
50 HMA pavement shall include surface course and may include one or
51 more binder courses, depending on HMA pavement thickness indicated in
52 the contract documents.

53
54 RAP is defined as removed or reprocessed pavement materials
55 containing asphalt and aggregates. Process RAP by crushing until 100
56 percent of RAP passes 3/4-inch sieve. Size, grade uniformly, and combine
57 materials such that blend of RAP and aggregate material conforms to grading
58 requirements of Subsection 703.09 - Aggregate for Hot Mix Asphalt
59 Pavement.

60
61 In surface and binder courses, aggregate for HMA may include RAP
62 quantities up to 20 percent of total mix weight. RAP shall not be used in
63 stone matrix asphalt pavement.

64
65 Quantity of filler material to correct deficiencies in aggregate gradation
66 passing the No. 200 sieve shall not exceed 3 percent by weight of fine
67 aggregates.

68
69 **(B) Job-Mix Formula and Tests.** Design job-mix formula in accordance
70 with procedures contained in current edition of Asphalt Institute's *Mix Design*
71 *Methods for Asphalt Concrete and Other Hot Mix Types*, Manual Series No.
72 2 (MS-2) for either Marshall Method or Hveem Method of Mix Design.

73
74 Limit compacted lift thickness and asphalt content of job-mix formula
75 as specified in Table 401.02-1 - Limits of Compacted Lift Thickness and
76 Asphalt Content.

TABLE 401.02-1 - LIMITS OF COMPACTED LIFT THICKNESS AND ASPHALT CONTENT

MIX NO.	II	III	IV, PMA	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.

Limit the re-refined engine oil bottoms (REOB) content to a maximum of 5 percent in all asphalt binders.

Meet job-mix formula design criteria specified in Table 401.02-2 - Job-Mix Design Criteria for Performance Graded Binders or Table 401.02-2A - Job-Mix Formula Design Criteria For Non-Performance Graded Binder HMA based on the type of binder require by the Contract Documents or as directed by the Engineer and MTRB.

TABLE 401-02 JOB-MIX DESIGN CRITERIA FOR PERFORMANCE GRADED BINDERS

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)	14.0% 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%
Stabilizer (by weight of total mix)	0.2 - 0.4 %

TABLE 401.02-2A - JOB-MIX FORMULA DESIGN CRITERIA FOR NON-PERFORMANCE GRADED BINDER HMA	
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, Chapter 4.					

(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 production. Job mix shall include the following applicable information:

- 104 (1) Design percent of aggregate passing each required sieve size.
105
106 (2) Design percent of asphalt content or PG binder material
107 (type determined by type of mix) added to the aggregate
108 (expressed as% by weight of total mix),
109
110 (3) Design proportion of processed RAP.
111
112 (4) Design temperature of mixture at point of discharge at paver or
113 MTV.
114
115 (5) Source of aggregate.
116
117 (6) Grade of asphalt cement or PG binder.
118
119 (7) Type and percentage of stabilizer, or fiber
120
121 (8) Test data used to develop job-mix formula.
122

123 Except for item (4) in this subsection, if design requirements are
124 modified after the Engineer accepts job-mix formula, submit new job-mix
125 formula before using HMA produced from modified mix design. Submit any
126 changes to the design temperature of mixture at point of discharge for
127 acceptance by the Engineer.
128

129 Submit a certificate of compliance for the asphalt cement or PG binder,
130 accompanied by substantiating test data from a certified testing laboratory.
131

132 The Contractor may use WMA processes in the production of HMA.
133 Submit to the Engineer for acceptance, the proposed process and how it will
134 be used in the manufacture of HMA. The process submittal shall include the
135 temperature range of the WMA.”
136

137 **(D) Range of Tolerances for HMA.** Provide HMA within allowable
138 tolerances of accepted job-mix formula as specified in Table 401.02-4 -
139 Range of Tolerances for Performance Graded Binders and Table 401.02-4A
140 – Range of Tolerances for Non-Performance Graded Binder HMA. These
141 tolerances are not to be used for the design of the job mix, they are solely to
142 be used during the testing of the production field sample of the HMA mix and
143 its comparison with laboratory mix design.
144

145

TABLE 401-02-4 – RANGE OF TOLERANCES FOR PERFORMANCE GRADED BINDERS	
Passing 3/8 inch and larger sieves	±5.0
Passing No. 4 to No. 16 sieves (inclusive)	±4.0
Passing No. 30 to No. 100 sieves (inclusive)	±3.0
Passing No. 200 sieve	±2.0
Binder Content (expressed as% by weight of total mix)	±0.4
Temperature of Mixture	± 20
Voids, total mix	± 1.0

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TABLE 401.02-4A - RANGE OF TOLERANCES FOR NON-PERFORMANCE GRADED BINDER 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

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401.03 Construction.

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(A) Weather Limitations. Placement of HMA will not be allowed under the following conditions:

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(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 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 thereby aiding in keeping the mix unexposed to ambient air and aid in keeping the mix hot.

(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 than 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 unless otherwise indicated in the Contract Documents. 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.

337 **(b) Pneumatic-Tired Rollers.** Pneumatic-tired rollers shall
338 be oscillating-type, equipped with smooth-tread pneumatic tires
339 of equal size and diameter. Maintain tire pressure within 5
340 pounds per square inch of designated operational pressure
341 when hot. Space tires so that gaps between adjacent tires are
342 covered by following set of tires.
343

344 Pneumatic-tired rollers used for breakdown or
345 intermediate roller passes shall have a ballast capable of
346 establishing an operating weight per tire of not less than 3,000
347 pounds. Equip rollers with tires having minimum 20-inch wheel
348 diameter with tires inflated to 70 to 75 pounds per square inch
349 pressure when cold and 90 pounds per square inch when hot.
350 Equip rollers with skirt-type devices to maintain temperature of
351 tires during rolling operations.
352

353 Pneumatic-tired rollers used for kneading finished
354 asphalt surfaces shall have a ballast capable of establishing an
355 operating weight per tire of not less than 1,500 pounds. Equip
356 rollers with tires having minimum 15-inch wheel diameter with
357 tires inflated to 50 to 60 pounds per square inch pressure.
358 Equip rollers with skirt-type devices to maintain temperature of
359 tires during rolling operations.
360

361 Pneumatic-tired rollers and rubber-tired equipment shall
362 not be used on stone matrix asphalt pavement.
363

364 **(c) Vibratory Rollers.** Vibratory rollers shall be steel-tired
365 tandem rollers having minimum total weight of 3 tons. Equip
366 vibratory rollers with amplitude and frequency controls and
367 speedometer. Operate vibratory roller in accordance with
368 manufacturer's recommendations. For very thin lifts, 1 inch or
369 less in thickness, vibratory rollers shall not be used in the
370 vibratory mode. Instead, operate the unit in the static mode.
371

372 **(5) Hand Tools.** Keep hand tools used in production, hauling, and
373 placement of HMA clean and free of contaminants. Diesel or mineral
374 spirits or other cleaning material that is potentially deleterious to HMA
375 may be used to clean hand tools providing:

376 **(a)** It does not contaminate HMA with cleaning material.
377

378 **(b)** Clean hand tools over catch pan with capacity to hold all
379 the cleaning material.
380
381

382 (c) Remove all diesel or mineral spirits or other cleaning
383 material that is potentially deleterious to HMA from hand tools
384 before using with HMA.
385

386 Hand tools used shall be in a condition such that it meets the
387 requirements that it was manufactured for, e.g., a straightedge shall
388 meet the straightness requirement of the manufacturer.
389

390 **(6) Material Transfer Vehicle (MTV).**
391

392 (a) **Usage.** MTV usage applies to surface courses of paving
393 projects on all Islands except Lanai, unless otherwise indicated
394 in the Contract Documents. When placing HMA surface use
395 MTV to independently deliver mixtures from hauling equipment
396 to paving equipment. MTV usage will not be required for the
397 following:
398

- 399 1. Projects with less than 1,000 tons of HMA.
- 400
- 401 2. Temporary pavements.
- 402
- 403 3. Bridge deck approaches.
- 404
- 405 4. Shoulders.
- 406
- 407 5. Tapers.
- 408
- 409 6. Turning lanes.
- 410
- 411 7. Driveways.
- 412
- 413 8. Areas with low overhead clearances.
- 414

415 (b) **Equipment.** When using MTV, install minimum 10-ton-
416 capacity hopper insert in conventional paver hopper. Provide
417 the following equipment:
418

- 419 1. High-capacity truck unloading system in MTV
420 capable of receiving HMA from hauling equipment.
- 421
- 422 2. MTV storage bin with minimum 15-ton capacity.
- 423
- 424 3. An auger mixing system in one of the following:
425 the MTV storage bin, or paver hopper insert, or paver
426 hopper to continuously mix HMA prior to discharging to
427 the paver's conveyor system.

Avoid stop-and-go operations by coordinating plant production rate, number of haul units, and MTV and paver speeds to provide a continuous, uniform, segregation-free material flow and smooth HMA pavement. Maintain uniform paver speed to produce smooth pavements.

(c) Performance Evaluation. Evaluate the performance of MTV and mixing equipment by measuring mat temperature profile immediately behind paver screed on first day of paving and when it feels the need to do so due to perceived changes in performance or as directed by the Engineer.

Use a hand-held temperature device that has been calibrated within the past 12 months. It shall be an infrared temperature gun is capable of measuring in one degree or finer increments between the temperatures of 80 degrees to 400 degrees F with a laser to indicate where the temperature reading is being taken. Six temperature profile measurements shall be taken of mat surface using infrared temperature gun at 50-foot intervals behind paver. Each temperature profile shall consist of three surface temperature measurements taken transversely across the mat in approximately a straight line from screed while paver is operating. For each profile, temperatures shall be measured approximately 1 foot from each edge and in middle of mat. The difference between maximum and minimum temperature measurements for each temperature profile shall not exceed 10 degrees F. If any two or more temperature profiles exceeds the allowable 10-degree F temperature differential, halt paving operation and adjust MTV or mixing equipment to ensure that material placed by paver meets specified temperature requirements. Redo the measuring of mat temperature profile until adjustment of the MTV or mixing equipment is adequate. Submit all temperature profiles to the Engineer by next business day. Information on the report shall show location and temperature readings and time test was performed. Enough information shall be given, so the Engineer will be able to easily locate the test site of the individual measurement.

When requested temperature profile measurements shall be done in the presence of the Engineer.

Once adjustments are made, repeat measurement procedure for the next two placements to verify that material placed by paver meets specified temperature requirements. Terminate paving if temperature profile requirements are not met during repeated measurement procedure. If equipment fails to meet requirements after measurement procedure is repeated once, replace equipment before conducting any further temperature profile measurements

The Engineer may perform surface temperature profile measurements at any time during project. The Engineer may in lieu of a hand-held infrared temperature device use an infrared camera or device that is capable of measuring temperatures to locate cold spots. If such cold spots exist, the Engineer may require adjustments to the MTV.

If bleeding or fat spots occur in the pavement adjust means and methods to eliminate such pavement defects and perform remedial repair to pavement acceptable to the Engineer. Bleeding is defined as excess binder occurring on the surface of the pavement. It may create a shiny, glass-like, reflective appearance and may be tacky to the touch. Fat spots are localized bleeding.

(d) Transport.

1. Trailered MTV. Transport MTV by means of truck-tractor/trailer combination in accordance with Chapter 104 of Title 19, Department of Transportation, entitled "The Movement by Permit of Oversize and Overweight Vehicles on State Highways".

2. Crossing Bridges for Self-Powered MTV. When self-powered MTV exceeds legal axle or total weight limits for vehicles under the HRS, Chapter 291, conform to the following when crossing bridges within project limits unless otherwise indicated in the Contract Documents:

- a. Completely remove mix from MTV.
- b. Move MTV at relatively constant speed not exceeding 5 miles per hour. MTV will not be allowed to stop on bridge.

c. No other vehicle or equipment will be allowed on bridge.

d. The MTV shall not attempt to cross a bridge where the posted load limit is less than or equal to the weight of the MTV empty. Permission to cross the bridge shall be obtained from the Engineer and HWY-DB in writing.

(C) Preparation of Surface. Clean existing pavement in accordance with Section 310 - Brooming Off. Apply tack coat in accordance with Section 407 - Tack Coat.

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 to the Contract Documents' requirements, 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 Cement. Uniformly heat asphalt cement and provide continuous supply of heated asphalt cement from storage to mixer. Do not heat asphalt cement above 350 degrees F.

(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 cement.

(3) Mixing. Measure aggregate and asphalt; or aggregate, RAP, and asphalt into mixer in accordance with accepted job-mix formula. Mix until components are completely mixed and adequately coated with asphalt 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 next to plant that is acceptable to the Engineer. Provide space, utilities, and equipment required by the Engineer for performing specified tests. Do not start production of the project's HMA mix until the testing laboratory is acceptable to the Engineer. If the tests the Engineer needs to perform are not able to be done the mix shall not be used on the project unless the Engineer provides a waiver to this requirement.

(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. Measure 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. Use asphalt pavers to distribute mixture.

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. Every effort should be made to not locate the longitudinal joint under the longitudinal lane lines. Make a paving plan drawing showing how the longitudinal joint will not 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 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 addition 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 and will reliably function during the placement of HMA and has been demonstrated as being fully operational to the Engineer. 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 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 3 inches. Also, using a 48:1 slope provide 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 cement 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 place 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 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. The Engineer may allow a waiver to the Contract Documents by allowing the compaction of the HMA at the longitudinal joints to be no lower 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. The air voids at the longitudinal joints shall not exceed 5 percent. Verify the compaction of the longitudinal joints meets the Contract Documents' requirements by using non-destructive testing methods during paving and submit the results on the daily quality control test reports.

Overband all longitudinal joints within the entire lot the non-compliant core represented with PG binder seal coat or other type of joint enrichment accepted by the Engineer when the longitudinal joints are found to have less than 93.0 percent but is no less than 90 percent of the maximum specific gravity or has an air void that exceeds 5 percent. The overband shall not decrease the skid resistance of the pavement under any ambient weather condition. Submit overband material's catalog cuts, test results and application procedure for review and acceptance by the Engineer before use. Center the overband over the longitudinal joint. The overband shall be placed in a uniform width and horizontal alignment. The overband shall have no holidays or streaking in its placement. The width of the overband shall be based on how the longitudinal joint was constructed or as directed by the Engineer. If a butt joint is used, the overband width shall be a minimum of 12-inches. For 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 90 percent of the maximum specific gravity; removal may be required by the Engineer instead of overbanding the non-compliant joint. The Engineer will solely decide if removal or overbanding is required.

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 90 percent or less.

(3) The maximum air void requirement exceeds 5 percent.

Test for compaction and density regardless of layer thickness. Compaction and density shall be determined by using six-inch diameter or larger cores instead of four-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 butt 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 of every 250 feet of longitudinal joint and any fraction of that length for each day of paving with a minimum of three cores taken for each longitudinal joint per day. Cores taken for the testing of the longitudinal joint may be used to determine pavement thickness.

Compaction results for longitudinal joints until January 1, 2023 will not be included in any Sliding Scale Pay Factor for Compaction payment calculation. After, January 1, 2023 it will be included.

(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. Turn cores over to Engineer immediately after cores have been taken. Before cores are taken inform Engineer so that the work may be observed by the Engineer and cores turned over to the Engineer at that time.

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 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. 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 pavement joint cement 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 and Compact. 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. Cores taken in SMA pavement may be filled with HMA material other than SMA when accepted by the Engineer.

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.

The Engineer will measure thickness of pavement by cores obtained by the Contractor in accordance with HDOT TM 09-19 Field Sampling Bituminous Material after Compaction (Obtaining Cores). The Engineer will measure cores in accordance with HDOT TM 09-19, except that measurement will be taken to nearest one thousandth of an inch; and average of such measurements will be taken to nearest one hundredth of an inch.

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.

(L) Protection of SMA Pavement. No rubber-tired equipment or vehicles shall be allowed on SMA on the day of placement and while the binder can be picked up by the tires.

(M) 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) Entire wall and bottom of sample core holes in HMA pavement.

(e) 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.

(f) Entire frame or face of a utility facility or similar feature that is to be imbedded in the asphalt pavement, e.g., manholes, pullboxes, handholes, survey monuments, valve boxes, 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 during each shift from the application wand during the first 20 minutes of placing sealant from each melter on the Project in the presence of the Engineer.

Each sample shall consist of two aluminum or steel sample containers with the capacity to hold five pounds of sealant each. The two sampling containers 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. Each container shall be numbered one of two, or two of two. 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.

1. Document the locations where the material came from, each lot number of sealant that is placed and submit the document to the Engineer within 2 working days of placement.

2. If a field sample fails to meet any of the requirements in Table 401.03-1 - Asphalt Joint Adhesive Specifications; the work completed using the material from the lot that the field sample represents, shall be subject to a five percent reduction in the contract price of the lift of the HMA pavement it was used on; for example, if two lanes are paved and the longitudinal joint between the two lanes uses material not meeting the

contract requirements both of the lanes' asphalt pavement used for both lanes will be subject to a price reduction. If the joint was between an existing pavement and a new the price reduction will be based on the new pavement.

3. Overband with PG binder seal coat or other type of joint enrichment material over the entire length of the joint where the use of non-compliant material occurred.

4. Width of the overband shall follow the criteria used for low density longitudinal joints. In areas where the joint was formed with a curb or gutter use a joint sealer acceptable to the Engineer.

(O) 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 Contract Document's surface profile smoothness requirement. Make every effort to perform surface tests before opening pavement to the public. Test the pavement surface for smoothness with a 12-foot-long straightedge, a 12-foot-long rolling straightedge, or a California Type Profilograph as required by this Section.

All submittals shall be sent directly to MTRB.

The finished pavement shall comply to all the following requirements:

(a) Definitions. The following definitions shall be used for this Section and related areas of work. It is meant to work in conjunction with Subsection 101 - Definitions. Should a conflict arise Subsection 105.05 - Interpretations of the Contract Documents; Conflicts and Ambiguity shall apply.

Blanking Band -- A band of uniform height with its longitudinal center positioned optimally between the highs and lows of the surface record depicting at least 0.10 mile of pavement.

Deficiency – An area that exceeds the required profile index or exceeds the requirement for a manual or rolling straightedge, a scallop or spike or bump or dip in the pavement.

Profile Index – Inches per mile in excess of the blanking band. This determines the pavement or road smoothness.

Profile index scale - Transparent plastic scale 1.70 inch x 21.12 inch representing a scaled pavement length of 0.10 mile. The center of the

scale shall be a 0.2-inch opaque 'blinking' band that extends the length of the scale. On both sides of this band are lines scribed 0.1 inch apart, parallel to the centerline of the scale, serving as a scale to measure deviations of the profilogram above and below the blanking band.

Profilogram - Scaled with 1 inch equal to 25 ft. longitudinally and 1 inch equal to 1 inch vertically.

Profilograph - California-type, constructed with a metal frame with approximately 25-feet between the front and rear wheel assembly supports. It shall allow field calibration using vertical deflection standards. Each wheel assembly consists of six averaging rubber-tired wheels arranged so the center of the frame represents the mean evaluation of the road surface between the wheel assemblies. For consistent graph recording, maintain air pressure in the profile wheel to the manufacturer's specification. Propulsion power may be manual, or a small propulsion unit attached to assembly may be used.

1. Example of commercially available profilographs

- 1) Cox Automated Profilograph
- 2) Ames Automated Profilograph
- 3) McCracken Automated Profilograph.

Scallop - A vertical projection above or below the blanking band.

Spike - A scallop with a width of less than 0.08 inch on the profilogram. (about 2 feet on the roadway).

(b) Surface Test Using 12-Foot Manual Straightedge. At locations determined by the Engineer and Contract Documents use a 12-foot manual straightedge. When the straightedge is laid on finished pavement in direction parallel or normal to centerline as determined by the Engineer, the 12-foot manual straightedge surface shall not vary more than 1/8 inch from lower edge in any direction. Perform the profiling in lines at a distance determined by the Engineer, but at not less than one foot on center or more than a four foot on center spacing. Profiling shall extend across the transverse joints when they are located within testing area. The Engineer may decrease the spacing of the surface test to verify the limits of an irregularity of a surface determined by the Contactor. Check the following with a 12-foot Straightedge:

1. Construction joints where a day's paving ended and another day's began.

2. Longitudinal profiling parallel to centerline, when within 15 feet of a bridge approach or existing pavement (pavement not constructed under the current project) which is being joined.

3. Transverse profiling of cross slopes, approaches, and as otherwise directed with respect to the requirements below:

a) Lay the straightedge in a direction perpendicular to the centerline.

b) 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.

c) Short pavement sections up to 250 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.

d) 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.

e) 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.

f) As otherwise directed by the Engineer.

4. The Engineer may confine the checking of through traffic lanes with the straightedge to joints and obvious irregularities or chose to use it at locations not specifically stated in this Section.

(c) Surface Test Using 12-Foot Rolling Straightedge. In lieu of using a 12-foot manual straightedge the Contractor may use a 12-foot rolling straightedge, California-type profilograph or other roadway profiling device upon acceptance by the Engineer. The Engineer however, is under no obligation to provide such a waiver and

may place limitations to their use if accepted or rescind the waiver at any time at no additional cost or increase in contract time.

(d) Surface Test Using California-type Profilograph. In all areas not listed to be measured by the 12-foot manual straightedge a California-type profilograph shall be used unless otherwise directed by the Engineer. To determine the profile for each lane of pavement surface use the California-type profilograph in accordance with HDOT TM 6 and these specifications.

1. HDOT TM 6 shall be modified in the following way:
 - a) Electronic recorder shall be used. The electronic recorder shall:
 - 1) Collect data by means of a digital response resulting from the vertical movement of the profile wheel.
 - 2) Record the data digitally and shall be able to produce a hard copy profilogram on a scale of 1 in. = 25 ft longitudinally and 1 in. = 1 in. vertically (full scale).
 - b) The profilograph shall have a software program capable of generating a computerized profile trace based on the collected data. The computer software shall be set with the following data filter settings.
 - 1) Filter Type: 3rd Order Butterworth
 - 2) Filter Length: 2.0 feet
 - 3) Filter Grain: 1.00
 - 4) Blanking Band: 0.2
 - 5) Bump Locator: On
 - 6) Bump Checkbox: Check
 - 7) Dip Checkbox: Check
 - 8) Bottom Bump: Off

c) Movement of the profilograph may be provided by manually propelling the profilograph.

d) A golf cart or other similar type lightweight vehicles may be used to provide propulsion. It shall operate at the slow rate of speed required, be able to maintain a constant speed and it shall not adversely affect the operation or function of the profilograph in any manner.

1) The propulsion unit shall not be used to push the profilograph from behind.

2) The propulsion unit shall be use at a speed not to exceed 3 miles per hour or walking speed. Reduce speed if speed adversely affects the operation or function of the profilograph in any manner.

3) Use the profilograph manufacturer's recommendation for attaching propulsion unit to profilograph.

e) Provide the use of the propulsion unit with operator to the Engineer for its profile check.

(e) Alternative Profile Measuring Machines.

1. Around January 1, 2023 or when it is specified in the Contract Documents, all HDOT projects being bid on requiring profiling of pavement shall use an inertial profiler. Both inertial profiler and the technicians using it as well as those technicians processing the data obtained shall be certified by a certifying entity accepted by the Engineer. Submit certifications for review and acceptance by the Engineer.

2. Until January 1, 2023, or when it is specified in the Contract Documents, if the Contractor chooses to use an inertial profiler it may do so, providing it meets the requirements of TxDOT's TEX-1001-S unless the portion is overridden by these Contract Documents.

a) TxDOT's TEX-1001-S requires the use of TxDOT's RIDE QUALITY software. It is available at <http://apps2.dot.state.tx.us/apps/rideqc>.

b) The Engineer may waive portions of TEX-1001-S if it solely chooses to do so unilaterally or upon application by the Contractor.

1) The following modifications shall be applied to TEX-1001-S:

a. Paragraph 4.3.4 does not apply.

b. Paragraph 5.9 and 5.10 does not apply.

2) Subsection 6 Test Data Description and Format does not apply, Contractor shall supply an acceptable substitute to the Engineer.

3) Paragraph 8.3.2.3 does not apply. The Department will not supply or designate test sections. Contractor shall provide a proposed section meeting the criteria listed in TEX-1001-S or as directed by the Engineer or MTRB.

c) Submit all IRI test data to the Engineer to the Engineer in a format acceptable to the Engineer within 48 hours after completion of the test. If the deadline falls on a non-work day for the Engineer, submit by noon of the next work day after the non-working day.

d) ProVAL Software may be used in lieu of TxDOT's RIDE QUALITY software providing that the analysis provides acceptable results equal to TxDOT's RIDE QUALITY. ProVAL is an engineering software application that allows users to view and analyze pavement profiles in many ways. It is available at <http://www.roadprofile.com/proval-software/> at no cost.

(f) Submission of Profile Reports.

1. Submit the daily reports and analysis of the day's profiling within three working days of the profile test.

a) Profilograms that report smoothness that fails to meet the Contact Document's requirements shall be highlighted and noted as such on the transmittal cover sheet.

b) The cause for the contractually non-compliant profile and remedial action, e.g., change of construction method, grinding of pavement, shall be included in the submittal as a separate report and shall be noted and highlighted on the cover sheet.

c) Submit all data files of the final pavement surface profile to the Engineer upon completion of all profile testing in a format, form and on storage media determined by the Engineer in one complete submittal before requesting a pre-final inspection.

d) If the Contractor is using a device that produces IRI results, submission of that data in that form will be acceptable. However, the Engineer is not obligated to accept those results as a definitive result to base acceptance or payment. Since conversion between IRI and PI is not exact, HDOT's profile test may result in finding the pavement having a non-compliant smoothness. Only profiles based on a profilograph are acceptable, and profiles done with an inertial profiler will not be considered an acceptable basis for a dispute until the Engineer's road profile is based on a reading by an inertial profiler.

2. Until HDOT requires profiling to be done by an inertial profiler, incentive payments will be determined by a California-type profilograph. An incentive payment adjustment schedule in IRI is provided as a non-binding reference only. The PI incentive payment adjustment schedule is the only payment adjustment schedule that will be used to calculate incentive adjustments unless a waiver to this requirement is granted by the Engineer.

(P) Location of Profile Testing. Take a minimum of two profiles per lane, one profile in each of the two-wheel paths which is located parallel to and three feet from each lane's edge.

The profiles shall be taken in the direction of traffic only.

When the final permanent markings have not been installed at the time of the Department's profile test, mark the pavement so that the location of the wheel paths can be determined and laid out. This should also be done before the Contractor does its profile test so that the same approximate area is measured.

Take profiles 3 feet from and parallel to each pavement edge in shoulder, median areas or areas with an edge that is not a travel lane.

If an inertial profiler is used to take a profile perform three runs in each wheel path. 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.

(Q) Required Road Profile. The profile index using a California-type profilograph shall not exceed 7.0.

Where the 12-foot manual straightedge is required to be used the surface shall not vary more than 1/8 inch from the lower edge of a straightedge.

Any pavement with a profile index more than 7.0 or has a surface vary more than 1/8 inch from the lower edge of a straightedge as determined by the Contractor's profile test shall be removed or have a remedial repair performed on it that is acceptable to the Engineer.

No payment for the non-compliant, pavement will be made or if it has been made, in full or partial amounts, the entire payment for the area will be deducted from the monthly payment, unless the area is made compliant with the Contract Document requirements as determined by the Contractor's profile retest before the deduction is made.

If the monthly payment is insufficient to cover the deduction the Engineer will request from the Contractor a refund for the amount paid. The Contractor shall pay the refund within 30 days or interest payments equal to those paid by the Department for late payments shall be charged.

No pre-final inspection, final inspection, substantial completion granted, or payment made for the work will be made until the pavement meets the profile index requirement of 7.0 or manual straightedge requirement and other Contract Document requirements and all required profile reports are submitted to the Engineer and MTRB and are accepted.

(R) Request for Acceptance Profile Testing by the Department.

When the pavement surface is determined by the Contractor to meet the road profile requirements of the Contract Documents, the Contractor may submit a written request to the Engineer to perform an acceptance profile test.

The request shall be made at least 60 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, and the Contractor's profile test results of the area to be tested.

If the Contractor has not profiled the proposed test area at the time of request it may delay the submittal of the profile testing data to no later than 14 days before the date of testing.

No acceptance testing will be made without the submittal of the Contractor pavement profile test results and required drawing. Failure to submit the pavement profile results and required drawing by the stated deadline or by an Engineer accepted deadline date will be considered a cancellation of the acceptance test and the Contractor shall request another profile test date. 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.

(S) Department Requirements for Acceptance 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 28 days following concrete placement and 14 days for HMA.

Provide labor, equipment and material, including manuals for the machine that will be used for the profiling of the pavement surface when requested by the Engineer or MTRB or both. The Engineer or MTRB or both may request in addition to what was initially supplied additional labor, equipment and material, etc. at no additional cost or increase in contract time.

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.

(T) Cost of Acceptance Profile Testing by The Department. The Engineer or MTRB or both will perform one initial profile test, at no cost to the Contractor for each area to be tested.

Based on the Engineer's or MTRB's profilogram or an inertial profiler pavement profile, it will be determined 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 profile index, 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 and an additional \$3,500 per six-hour day if airline travel or traveling of 25 miles or more is required when Department personnel is used

(b) If HDOT equipment is allowed to be used by the Engineer or MTRB or both an additional cost for mobilization of \$4,500 will be charged for each time HDOT's equipment is required to be shipped to the test location on a different island.

(c) \$750 will be charged for each time equipment is required to be transported to the project location on the same island. HDOT is under no obligation to allow its equipment to be used for the measuring of the pavement profile and the Contractor shall allow for the required equipment to be available for its and HDOT's use. Any delay due to the Contractor not having acceptable equipment available will be considered a Contractor caused delay.

(d) Should the additional testing not require airline travel or traveling of 25 miles or more a charge of \$2,000 per six-hour day will be made after the initial test for any retesting and \$2,500 for each additional test.

(e) When a third-party testing entity performs the test, the Contractor will be charged the invoice charges plus any other incurred costs related to the test, e.g., supplies additional equipment, travel, housing, meals plus an additional 10% charge.

(2) Equipment for Acceptance Profile Testing. Provide the profilograph machine and labor and other equipment needed to operate it or collect profile data, e.g., generator, lights, follow vehicle.

Profile testing will be under the supervision of the Engineer and the previously mentioned items shall be for the exclusive use of the Engineer or MTRB or both during the acceptance testing unless otherwise allowed by the Engineer.

(a) California-Type Profilograph. The Contractor's California-type profilograph machine shall be in a condition, type and have features that are acceptable to the Engineer or MTRB or both before it can be used for acceptance profiling.

1) Submit catalog cuts of the contractor's California-type profilograph machine.

2) Submit a current calibration certificate from an entity acceptable to the Engineer for the profilograph to be used. The certification shall not be more than 12 months old at the time of the test.

When the profilograph machine is found acceptable by the Engineer no equipment mobilization charges will be made for additional tests.

(b) Inertial Profiler. When acceptable to the Engineer and MTRB or required by the Contract Documents an inertial profiler may be provided in lieu of a profilograph. Submit the same documents as required for the profilograph as well as an inertial profiler and technician certification from an entity acceptable to the Engineer.

Cancellation of a Department acceptance profile test within 14 days of the requested or agreed to test date will be counted as the initial test of the area and all profile testing for that area shall be at additional cost to the Contractor.

(U) Pavement Profiling Testing.

(1) During the initial paving operations or after a long break from placing pavement perform a profile test when the newly placed pavement has cured or cooled sufficiently to allow profile testing. Test pavement surface using California-type profilograph, to calculate profile index or other accepted measuring device. Test pavement surface once pavements are old enough. Pavement profiles may be taken earlier than previously mention to check the quality of work, but it shall be understood that the earlier pavement profiles may not be the same when taken at a later date.

(2) Use profile testing results to aid in evaluating the paving method's and equipment's ability to produce pavement meeting the Contract Documents' requirements.

(3) Submit all profile test results with the average profile index to the Engineer or MTRB. Provide other information when requested.

(4) When average profile index exceeds 10 inches per mile, suspend paving operations.

a) Resumption of paving operations shall not occur until corrective action to the paving plan, which may include a revised paving method, is submitted to the Engineer or MTRB and accepted.

b) Profile test area where corrective action to the paving plan has taken place. Verify that area is in accordance with Contract Document requirements. If the area has a profile index that still exceeds 10 inches per mile, suspend paving operations and revise the corrective paving plan.

c) Repair curing membrane on concrete pavement if damaged during surface remediation and testing operations if curing is still required.

d) Repair surface on HMA pavement if damaged during surface remediation. A pavement shall be considered damaged if the surface is gouged or made more permeable or susceptible to "birdbaths" forming or other deleterious physical characteristics.

e) Maintain slopes as shown in the Contract Documents. Slopes not meeting the slopes in the Contract Documents or the accepted road profiles will be considered a deficiency. Remove non-compliant area or submit for review and acceptance by the Engineer a remedial work plan to correct the deficiency.

(V) Furnish, Operate and Maintain the Straightedge.

(1) **Manual straightedge.** Manual straightedges shall be constructed of aluminum or other lightweight metal and shall have blades of box or box-girder cross section with a flat bottom reinforced to ensure rigidity and accuracy. They shall be used for all types of paving and the checking of cold-milled surfaces.

1611
1612 (a) The manual straightedge should be 12 feet \pm 2 inches in
1613 length, rigid and in good working order.

1614
1615 (b) When suspended at the end points its measurement
1616 edge shall not deviate from a true plane by more than 0.02 inch
1617 at any point above or below the true plane. The manual
1618 straightedge shall be rigid enough not to deform or sag when
1619 suspended at the ends.

1620
1621 (c) The manual straightedge shall also be straight along its
1622 length and shall not deviate from straight horizontal axis down
1623 the middle of the straight edge by more than 0.06 inch.

1624
1625 (d) Manual Straightedges shall have handles to facilitate
1626 movement on pavement or other methods to facilitate
1627 movement.

1628
1629 (e) Screeds are not acceptable as a manual straightedge.

1630
1631 (f) Provide and operate a 12-foot manual straightedge of a
1632 design acceptable to the Engineer, that can accurately
1633 measure surface irregularities that exceed 1/8 inch in the
1634 12-foot effective length of the straightedge.

1635
1636 (2) **Rolling straightedge.** The rolling straightedge should be 12
1637 feet \pm 2 inches in length measured from center-to-center of the wheel
1638 axles and in a proper working order giving accurate repeatable results.

1639
1640 (a) The rolling straightedge shall have a read-out gauge
1641 with low and high reading marks in 1/16-inch increments
1642 measuring a maximum of 1/4 inch deviation in the pavement.

1643
1644 (b) Provide and operate a 12-foot rolling straightedge of a
1645 design acceptable to the Engineer, able to accurately measure
1646 surface irregularities that exceed 1/8 inch in the 12-foot
1647 effective length of the straightedge.

1648
1649 **(W) Calibration of Straightedges.**

1650
1651 **(1) Manual Straightedges.**

1652
1653 (a) Check the manual straightedge with a string line, using
1654 a line that does not sag when pulled taut, e.g., piano wire, for
1655 accuracy. Testing of the straightedge shall be done at a

1656 minimum on a weekly basis or more frequently if it is suspected
1657 that the straightedge may be damaged.

1658
1659 1) A laser could be acceptable providing it could
1660 equal the ability to determine the straightness of the
1661 straightedge to the same degree as piano wire.

1662
1663 (b) The edge of the manual straightedge that contacts the
1664 pavement shall not have any vertical deviation more than 0.02
1665 inch.

1666
1667 **(2) Rolling Straightedges.**

1668
1669 (a) Verify the calibration of the rolling straightedge each day
1670 before the rolling straightedge is used. The following steps
1671 should be used to verify the calibration:

1672
1673 1) Before the beginning of the verification, make
1674 sure the center wheel moves up and down freely. Make
1675 sure all wheels are free of deposits and contamination
1676 and rotate freely.

1677 2) When tested with a straightedge, ensure that the
1678 finished pavement profile provides a uniform surface
1679 with no deviation greater than 1/8 inch in a 12-foot
1680 length.

1681
1682 3) Locate a flat area with the manual straightedge.
1683 A flat area is an area where the entire length of the
1684 bottom of the manual straightedge is in full contact with
1685 the surface of the flat area, there shall be no gaps for the
1686 entire length. The length of the flat area shall be at a
1687 minimum of 20 feet and the width three times the width
1688 of the rolling straight edge or five feet whichever is
1689 greater. Place the rolling straightedge next to the
1690 manual straight edge on the flat area and read the
1691 gauge. The gauge should read zero on both sides of the
1692 gauge.

1693
1694 4) Place a 3/16-inch shim under the center wheel.
1695 The gauge should read 3/16 inches high on both sides
1696 of the gauge.

1697
1698 5) Remove the 3/16-inch shim and place the
1699 3/8-inch shim under the center wheel. The gauge
1700 should read 3/8 inches high on both sides of the gauge.
1701

1702 6) Remove the 3/8-inch shim and place a 3/16-inch
1703 shim under each outside wheel. The gauge should read
1704 3/16 inches low on both sides of the gauge.
1705

1706 7) Remove each 3/16-inch shim and place a
1707 3/8-inch shim under each outside wheel. The gauge
1708 should read 3/8 inches low on both sides of the gauge.
1709

1710 8) If any of the readings are incorrect, the rolling
1711 straightedge shall be adjusted according to the
1712 manufacturer's specifications and the calibration
1713 rechecked before profile testing begins.
1714

1715 **(X) Procedure.**
1716

1717 **(1)** Always maintain proper traffic management and safety
1718 precautions as required in the Contract Documents and the laws of
1719 the land. The pavement shall be cleaned just prior to performing
1720 straightedging operations. Remove all obstructions as required
1721 previously in this Section. The rolling straightedge shall be propelled
1722 at a speed of 3 mph or less.

1723 **(2)** During rolling straightedging operations, mark the pavement at
1724 the center wheel where the needle initially shows a deficiency and
1725 where the deficiency ends. A deficiency is defined according to the
1726 specifications. All rolling and manual straightedging shall be
1727 conducted in the wheel path or as defined in the specifications.
1728

1729 **(3)** At the first transverse joint of the project, place a 12-foot manual
1730 straightedge on the new pavement while overlapping the transverse
1731 joint at the beginning of the project by one inch. Mark the pavement
1732 at any location that shows a deficiency.
1733

1734 **(4)** Locate the back wheel of the rolling straightedge at the
1735 transverse joint at the beginning of the project. If continuing
1736 straightedging operations from a previous stopping point (such as the
1737 end of a day's production), then place the rolling straightedge at the
1738 same location where straightedging was previously stopped. Pull the
1739 rolling straightedge along the wheel path toward the new pavement to
1740 be tested. Perform the profiling in lines parallel to the centerline, at
1741 not more than a 4-foot transversal spacing and extending across the
1742 transverse joints.
1743

1744 **(5)** Stop the front wheel of the rolling straightedge at the transverse
1745 joint at the end of the area being tested. At the transverse joint at the
1746 end of the test area place a 12-foot manual straightedge on the new
1747 pavement while overlapping the transverse joint at the end of the test

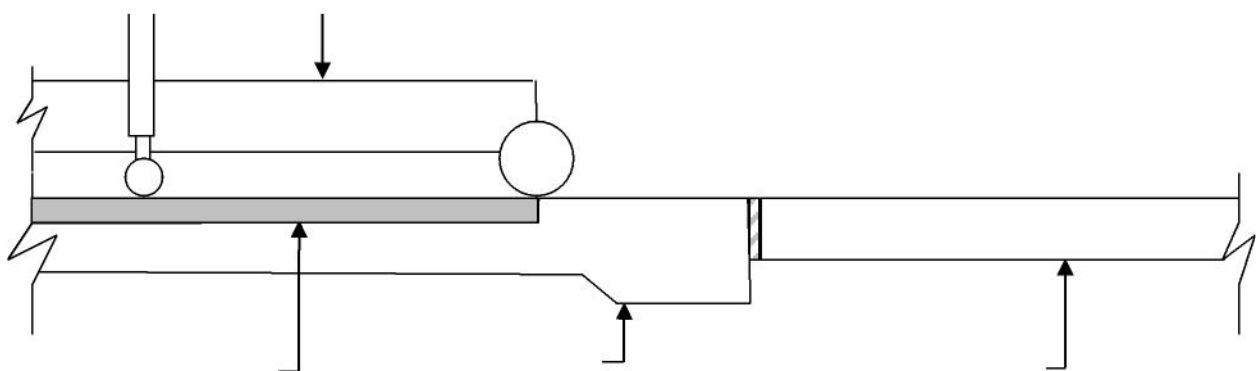
area by one inch. Mark the pavement at any location that shows a deficiency.

(6) For bridge approaches, place the rolling straightedge on the new pavement and start the rolling straightedge at the same location from the previous straightedging operation. Pull the rolling straightedge toward the joint until the front wheel reaches the end of the HMA or concrete pavement layer (see Figure 1 - 12-foot Rolling Straightedge at Approach Slab). Mark any deficiencies up to that point, as described in paragraph (B). Place a 12-foot manual straightedge in the same location while overlapping the approach slab by one inch (see Figure 2 - 12-foot Manual Straightedge at Approach Slab). Mark the pavement at any location that shows a deficiency.

(7) For bridge departures, place a 12-foot manual straightedge at the joint of the bridge departure slab and HMA or concrete pavement layer, while overlapping the departure slab by one inch. Mark the pavement at any location that shows a deficiency. Place the rolling straightedge on the new pavement with the back wheel at the joint of the bridge departure slab and HMA or concrete pavement layer. Pull the rolling straightedge away from the joint toward the new pavement to be tested. Mark any deficiencies, as described in paragraph (B).

(8) Areas measured with the manual straightedge or rolling straightedge will not be included in the incentive price adjustment. These areas shall meet the Contract Document requirement of not exceeding 1/8 inch in 12-foot length. Perform remedial work to the pavement surface until it does not exceed 1/8 inch in 12-foot length.

12-foot Rolling Straightedge



HMA or concrete Layer

Approach Slab

Bridge Deck

Figure 1 – 12-foot Rolling Straightedge at Approach Slab

12-foot Manual Straightedge 1-inch overlap

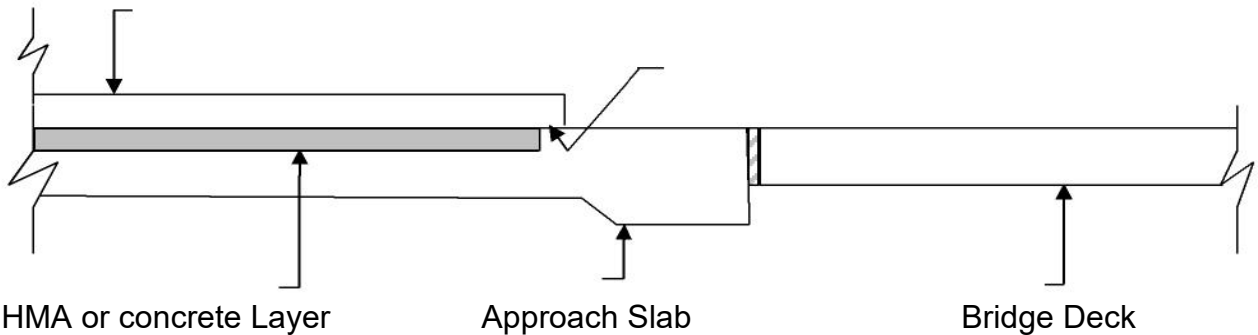


Figure 2 – 12-foot Manual Straightedge at Approach Slab

(Y) Remedial Work for Pavements.

(1) Reduce individual high points over 0.3 inch, as determined by profilograph measurements in accordance with HDOT TM 6, by using the remedial repair methods accepted by the Engineer until such high points shown by profilograph reruns do not exceed 0.3 inch.

(2) After completing remedial repairs of high points, perform additional remedial repairs as necessary to reduce the profile index to meet the smoothness requirements of a PI equal to 7 or less or 1/8 inch in 12-foot length at areas where method is required.

(3) Perform additional remedial repairs as necessary so that lateral limits of the remedial repair area are at constant offset from and parallel to nearest lane line or pavement edge.

(4) Perform additional remedial repairs, as necessary, to extend remedial repair area within any one surface area, in each longitudinal direction so that the remedial repair area begins and ends at straight transverse lines normal to pavement centerline.

(5) Remedial repair areas shall be neat, rectangular areas having a uniform surface appearance.

(6) For concrete pavements, unless otherwise indicated in the Contract Documents, grinding shall provide a line-type texture that contains parallel, longitudinal corrugations with ridge peaks approximately 1/16 inch higher than groove bottoms; and with approximately 55 to 60 evenly spaced grooves per foot.

(a) If grinding is used for an HMA pavement, the surface shall have nearly invisible grinding marks to passing motorist.

Coat surface with a coating acceptable to the Engineer or MTRB to restore original impermeability level.

(7) The finished repaired pavement surface shall leave no ridges or valleys or fins of pavement other than those allowed below.

(8) Remedial repairs shall not leave any drainage structures' inlets higher than the surrounding pavement or alter the Contract Document's drainage pattern.

(9) 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 1/8 inch in elevation difference. Submit to the Engineer remedial repair method to correct these conditions for acceptance.

(10) Do not grind pavement to smooth or polished finish, i.e., do not decrease the friction coefficient of the pavement.

(a) When the Engineer determines that the ground pavement surface is smooth or has a polished finish; i.e., has the appearance to the Engineer that the roadway surface's coefficient of friction has decreased, submit remedial repair method to correct the condition.

(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 it 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) The collection effectiveness of the method being used to pick up residue shall be at a level that when vehicles drive across the ground surface there is no visible tracking of residue or dust. No dust shall be "kicked up" by passing vehicles.

(f) Dispose of all material that is the result of the remedial repair operation, e.g., concrete or HMA residue, waste water, dust at a legal facility.

(12) For concrete pavement, the following apply:

(a) Profile grinding to obtain surface smoothness is not a substitute for diamond grinding grooves for texture or artificial turf drag and tining.

(b) Diamond grinding grooves into the concrete surface for texture shall be performed separately and, in a pattern, acceptable to the Engineer.

(c) No curing compound shall be sprayed on top of the residue.

(d) Curing compound shall be applied at the required rate on top of the ground surface immediately after grinding is complete and residue is picked up unless the pavement is 28 days or older.

(13) Use of bush hammers and other impact devices shall not be used for pavement surface remediation.

(14) Complete corrective work before determining pavement thickness for HMA pavements in accordance with Subsection 401.03(I) – HMA Pavement Thickness Tolerances or for portland concrete pavements with Subsection 411.03(T) - Pavement Thickness.

(15) 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 in to the next lane the that 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.

1916 Submit means and methods of the coating and type of coating to the
1917 Engineer or MTRB for review and acceptance. Do not proceed with
1918 the coating without acceptance from the Engineer.
1919

1920 **(16)** Recompacting cold HMA, i.e., HMA that has reached ambient
1921 temperature is not an acceptable remedial repair method.
1922

1923 **(17)** Replace all pavement markings damaged or discolored by
1924 remedial repairs.
1925

1926 **(18)** Hot mix asphalt base course (HMAB) will not be required to
1927 have a profilograph profile test run on it. However, the smoothness of
1928 the HMAB does contribute to the smoothness of the final wearing
1929 course so the HMAB's surface tolerances shall be checked in the
1930 following manner:
1931

1932 **(a)** When an HMA pavement is to be placed on a HMAB,
1933 the final surface course of the HMAB shall not deviate at any
1934 point more than 1/4 inch from the bottom of a 12-foot
1935 straightedge laid in any direction on the surface on either side
1936 of the pavement crown.
1937

1938 **(b)** When a portland cement concrete pavement is to be
1939 placed on a HMAB, the surface tolerance of the HMAB shall be
1940 such that no elevation lies more than 0.05 feet below above the
1941 plan grade minus the specified plan depth of portland cement
1942 concrete pavement. The HMAB's elevation shall not exceed
1943 the plan grade minus the specified plan depth of portland
1944 cement concrete pavement.
1945

1946 **(c)** When the HMAB is the wearing course it shall meet the
1947 smoothness requirements of an HMA pavement.
1948

1949 **(d)** Submit report of the week's grade checks to the
1950 Engineer and MTRB denoting at the minimum, date, time,
1951 location. Submit results of the grade checks to the Engineer
1952 and MTRB at a minimum of 24 hours before the weekly meeting
1953 after the week the grade check was performed so if needed it
1954 could be discussed.
1955

1956 **(e)** Perform remedial repairs if work failed to meet the
1957 surface tolerances of this section. Remedial repairs shall be
1958 performed until the required surface tolerances are achieved.
1959 Suspend paving in the areas of non-compliance, until the
1960 surface meets the required surface tolerances. The Engineer
1961 will decide the limits of the area of non-compliance, and where

paving is being suspended. Achieve acceptance of the remedial repair method from the Engineer and MTRB prior to its use.

(Z) Third-party Profile Testing.

(1) The Engineer may choose to have a third-party testing entity do the pavement profile and to process the data into a recommendation for acceptance or rejection of the pavement's smoothness.

(2) The third-party testing entity will be chosen by agreement and acceptance by the HDOT's Highway Materials Testing Research Branch (MTRB), and the Engineer. If no agreement can be reached the MTRB will choose the third-party testing entity as its sole recognizance.

(3) The third-party testing entity will be paid by the Department by deducting the Allowance amount from the Contractor's payment.

(a) The Allowance amount will cover the third-party testing entity's cost to do the project's pavement profile, e.g., fees, transportation, lodging, additional equipment, training and supplies, plus a 10-percent processing fee for the Department. This includes all the initial acceptance profile testing. All surplus material will be turned over to the MTRB at the end of the pavement profile testing including all data and reports generated by the third-party testing entity or items requested by the MTRB. Surplus material, data, reports, etc. will be in the sole custody of the Department for its use and reference.

(b) If retesting of the pavement profile is done by the third-party testing entity it will be paid based on the submitted invoices and receipts plus a 10-percent processing fee for HDOT. This testing is retesting required due to the Contractor's failure to meet the Contract Document's requirements and not the profile testing done for the dispute resolution process.

(AA) Dispute Resolution Procedures.

(1) If the Contractor has determined that its pavement profile has met the Contract Document requirements, but the Engineer's pavement profile has found the pavement profile does not meet the Contract Documents requirements it may dispute the Engineer's findings if it is so inclined. It shall follow the Pavement Smoothness Dispute Resolution Procedure.

2008 (2) The Pavement Smoothness Dispute Resolution Procedure is
2009 as follows:
2010

2011 (a) Submit with the resubmittal of the pavement profile and
2012 data of the disputed area, a notice informing the Engineer that
2013 the results of the Engineer's pavement profile are being
2014 disputed and request a copy of the Engineer's pavement profile
2015 and data.
2016

2017 (b) If after receiving the Engineer's pavement profile and
2018 data and doing a detail analysis of the documents, the
2019 Contractor still feels that the Engineer's pavement profile is in
2020 error submit a document notifying the Engineer of that fact
2021 along with the detailed analysis of the Engineer's pavement
2022 profile and data showing where the errors were made and if
2023 corrected the pavement profile would meet the Contract
2024 Document requirements.
2025

2026 (c) The Engineer upon receiving the Contractor's pavement
2027 profile documents will do a detailed analysis of the document
2028 to find any errors that may have caused the Contractor to
2029 believe the pavement profile was acceptable.
2030

2031 (d) If either party discovers their position was in error notify
2032 the other party of the change in position and take appropriate
2033 action.
2034

2035 (e) If both parties maintain that their positions are correct,
2036 then both parties shall meet to discuss and present their
2037 positions. If the Department used a third-party testing entity it
2038 shall also attend. Both the Department and the Contractor shall
2039 and will bring a copy of their submittal to the meeting. Parties
2040 involved shall be allowed to inspect the other party's
2041 documents to verify that it had been presented to them before.
2042 Before the meeting starting, the submittals are to be placed in
2043 a box and sealed and given to a Materials Testing Research
2044 Branch (MTRB) personnel. The MTRB is an HDOT entity,
2045 however in this instance it shall be regarded as a neutral party.
2046 It is mandatory that during the meeting all parties are to be
2047 transparent and have an open discussion with the goal being
2048 reaching an agreement. If after the following has occurred:
2049

2050 (f) If after meeting or after having several meetings with all
2051 parties and having performed their due diligence in meeting the
2052 above meeting's requirements the Department and the

Contractor agree that they have come to an impasse in discussions i.e., further discussions would be futile.

(3) An impasse will be declared, and no further meeting shall be suspended. If an impasse cannot be agreed to then one more meeting shall be held with both parties attending giving their due diligence in the goal of coming to an agreement. Within 48 hours after the last meeting a third-party pavement profile testing entity will be chosen to evaluate the Department's and Contractor's submittals or run a new smoothness profile or both.

(4) The third-party pavement profile testing entity shall evaluate the documents being held in the sealed box by the MTRB.

(5) No additional documents shall be added by the Contractor or the Department unless it was presented during the meetings. If additional documents were used during the meetings the following shall be done.

(a) Both HDOT and the Contractor will meet to put the documents presented during the meetings into a box, then seal it and turn it over to MTRB.

(b) Parties involved shall be allowed to inspect the other party's documents to verify that it had been presented during the meetings.

(c) If it should feel that this is new material the document can be marked as such. The document then will be put into the box and sealed.

(d) The party that feels it discovered a new document is required to submit a document listing the document it feels was previously not presented and any additional information related to it. It shall not be used to submit additional information or arguments not previously discussed. This submittal shall be submitted to the other party and the third-party pavement profile testing entity through the MTRB.

(7) The third-party pavement profile testing entity after analyzing all the data it gathered and was given shall make a report and provide a recommendation. It shall meet with all parties at one time, discuss the recommendations and show where the errors occurred causing the erroneous position.

(8) The Department or the Contractor may reject the third-party pavement profile testing entity's recommendation. Notification of the

rejection shall be within three working days after the meeting. The Contractor shall perform any additional work required if the recommendation is not favorable to it. The Contractor shall pay the third-party pavement profile testing entity invoice for its work done regardless of recommendation. The Contractor may file a claim if it still feels it is correct. The Contractor shall comply with the requirements in Subsection 107.16 Disputes and Claims. The Contractor's claim shall be regarded as a new claim and the Engineer will regard it as such. Since all documents have been evaluated the Engineer will expedite the claim process after it initial claim requirements are met to Subsection 107.16(G) Appeal of the Engineer's Decision to obtain the Director's decision.

(9) Payment for the total cost of the third-party pavement profile testing entity's dispute resolution work is the responsibility of the party that its recommendation found was in error. If the recommendation finds the Department the erroneous party the Department will reimburse the Contractor in the amount of the third-party pavement profile testing entity's invoice with no additional overhead or profit added. If portions of the profile testing were correct in some areas and erroneous in others the cost of the third-party pavement profile testing entity's dispute resolution work shall be split in proportion to the erroneous area verses the total area reviewed.

(AB) Pavement Smoothness and Acceptance.

(1) Price and payment in various paving sections, e.g., 401 (Hot Mix Asphalt Pavement), 411 (Portland Cement Concrete Pavement), will be full compensation for all work and materials specified in those 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, 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.

PAVEMENT SMOOTHNESS INCENTIVE: CONTRACT UNIT PRICE ADJUSTMENT TABLE		
Average Profile Index (inches/mile) per 0.1-mile Section		Contract Unit Price Adjustments Percent Multiplier of Pavement Unit Bid Price
Curvature Radius ≥2,000 ft	1,000 ft ≤ Curvature Radius < 2,000 ft	
PI ≤ 2	PI ≤ 2	103
2 < PI ≤ 3	2 < PI ≤ 3	102
3 < PI ≤ 4	3 < PI ≤ 4	101
4 < PI ≤ 7	4 < PI ≤ 7	100
PI > 7	PI > 7	Corrective work required

(3) Pay Price Adjustments for Incentives and disincentives will be based on the initial measured average Profile Index, prior to any corrective work for the 0.10-mile section.

(a) The adjusted Unit Price will be computed using the plan surface area of pavement shown in the Contract Documents. This adjusted Unit Bid Price will apply to the total area of the 0.10-mile section for the lane width represented by the profilograms for the average Profile Index. 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.

(b) There will be no disincentive price adjustments to the contract prices since a remedial repair is required in lieu of a reduction of contract prices since pavement smoothness and ride quality is of utmost importance. Acceptable pavement smoothness will be a PI of 7.0 or less.

(c) Localized Roughness. The Engineer will determine areas of localized roughness using the average profile from both wheel paths. 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 12-ft. straightedge the area around that manhole or other similar appurtenance shall not have more than 1/8-in. variation between any 2 contacts on the straightedge.

1) Corrective Action. Use an Engineer accepted method to remove localized roughness. For asphalt concrete pavements, fog-seal the aggregate exposed from diamond grinding.

2) Reprofile the corrected area and provide the Engineer the results that show the corrective action, i.e., remedial repairs were successful.

(d) Incentives will not apply to areas where payment deductions or remedial repairs could be made or 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. All areas where corrective work was performed shall be tested again to ensure the smoothness requirements are met. Corrective work shall be repeated until it meets the smoothness requirement of the Contract Documents and any other Contract Documents' requirement. Removal of non-compliant work will be tested for compliance until it is determined by the Engineer to be compliant to the requirements of the Contract Documents.

(e) 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.

(f) For contracts using lump sum the method described in Subsection 104.08 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.

IRI PAY FACTOR REFERENCE TABLE (For Comparative Information Only Not to Be Used for Payment or Acceptance)		
Average IRI (inches/mile) per 0.10-mile Section		Possible Contract Unit Price Adjustments Percent Multiplier of Pavement Unit Bid Price
Curvature Radius ≥2,000 ft	1,000 ft ≤ Curvature Radius < 2,000 ft	
IRI ≤ 32	IRI ≤ 32	103
32 < IRI ≤ 47	32 < IRI ≤ 47	102
47 < IRI ≤ 65	47 < IRI ≤ 65	101
65 < IRI ≤ 110	65 < IRI ≤ 110	100
IRI greater than 110	IRI greater than 110	Corrective work required

(4) IRI Pay Factor Reference Table provided as reference ONLY and will not be used by the Engineer to calculate incentives disincentives for project or used for acceptance criteria. The Engineer may waive this requirement if it is mutually agreeable with the Contractor and is done at no impact to the project, e.g., at no additional cost or increase in contract time.

401.04 Measurement and Payment.

The Engineer will measure and pay for HMA pavement under Section 406 Stone Matrix Asphalt (SMA) Pavement.

END OF SECTION 401

Make the following Section a part of the Standard Specifications:

“SECTION 406 — STONE MATRIX ASPHALT (SMA) PAVEMENT

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) Performance Graded (PG) Binder. Performance graded binder shall conform to Performance Graded Asphalt Binder Specifications, AASHTO M 332 and meet the following requirement:

AASHTO T 315 Determining the Rheological Properties of Asphalt Binder Using a Dynamic Shear Rheometer (DSR).

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.

Grade PG binder using AASHTO M 332 Performance Graded Asphalt Binder Using Multiple Stress Creep Recovery (MSCR) Test. Submit MSCR grading report accompanied by substantiating testdata.

PERFORMANCE GRADED BINDERS FOR SPECIFIC MIXES	
MIX	BINDER*
Stone Matrix Asphalt (SMA) for Surface Course	PG 64E-22
* Neat asphalt with elastomer polymer modification shall be used to achieve the specified performance grading.	

(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.**

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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

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(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

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(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	
Ninitial, Ndesign, Nmax	8, 100, 160
Air Voids at Ndesign	4%
Voids in Mineral Aggregate (VMA) at Ndesign (for 1/2 inch Nominal Maximum Particle Size)	17.0% Minimum
Voids in Coarse Aggregate (VCA)	Less than VCADRC
Density at Ninitial (% of Theoretical Maximum Specific Gravity)	Not more than 89.0 %
Density at Ndesign (% of Theoretical Maximum Specific Gravity)	96.0 %
Density at Nmax (% 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**).

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 laying thicknesses for the SMA mixture shall be two inch minimum thickness and three fourths 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.

Engineer will deduct from the Contractor's monthly estimate the amount necessary to pay for the services of a third-party pavement profile testing entity plus the additions specified in the Contract documents. Payment will be full compensation for work prescribed in this section, required by the Engineer and Contract Documents. No payment for the Contractor's pavement profile work required in this section will be made it will be considered incidental to the various paving items unless stated otherwise.

The Engineer will pay for incentives or assess pavement roughness disincentives in accordance with the pay schedule below.

Pay Item	Pay Unit
SMA Pavement	Ton
Third-Party Profile Testing and Equipment	Allowance
Third-Party Dispute Resolution Profile Testing	Allowance
<p>(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.</p>	
<p>(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.</p>	
<p>(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.</p>	
<p>(4) The Engineer may, at its sole discretion, in lieu of requiring removal and replacement, use the sliding scale factor to accept HMA pavements compacted below 92.0 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 91.9.</p>	
<p>(5) In compliance with Subsection 105.12 – Removal of Non-Conforming and Unauthorized Work remove and replace HMA compacted below 90.0 percent.</p>	
<p>(6) The Engineer will solely decide if the noncompliant work would be acceptable if a reduced payment for the noncompliant work is made. The Engineer is not obligated to allow noncompliant work to remain in place and may at any time choose not to use a sliding scale factor method of payment as a method of resolution. Instead, utilize the remedy allowed in Subsection 105.12 – Removal of Non-Conforming</p>	

and Unauthorized Work and require removal of the noncompliant pavement.

(7) Such a reduced payment, if made and accepted by the Contractor, shall be a mutually agreeable resolution to the noncompliant work being addressed. If it is not mutually acceptable, the noncompliant work shall be removed. If the reduced payment is acceptable; the Engineer will make the reduced payments for the noncompliant work in accordance with Table 401.05-2 – Sliding Scale Pay Factor for Compaction. The amount of tonnage to be reduced will be determined by the Engineer by using the initial cores taken on the mat. 398 No additional cores shall be taken to determine the limits of the non-compliant area unless requested by the Engineer.

(8) In order to determine the reduced tonnage for noncompliant work, the Engineer will assume the level of compaction is linear and will proportion the compaction level from the last core that indicated an acceptable compaction level to the nearest core indicating a noncompliant compaction level to determine the calculated limit of acceptable compaction. The length will be the linear distance between the cores measured along the baseline. If there is no core that was taken for the shift's or day's work that was compliant then the limit will be the end or start of the day's or shift's work. The width will be the nominal paving width. Use the day's specific gravity of the mix to determine tonnage. The thickness will be the nominal paving thickness.

(9) The total reduced noncompliant tonnage to be paid will be determined by multiplying the applicable percent of reduction by the computed tonnage of the noncompliant work. The Engineer will make payment for the material in that production day at a reduced price arrived at by multiplying the unadjusted contract unit price by the pay factor shown in Table 406-4 – Sliding Scale Pay Factor for Compaction.

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Table 406-4 – Sliding Scale Pay Factor for Compaction	
Percent Compaction	Percentage Payment
Greater than 98.0	Removal
Greater than 97.0 - 98.0	95
Greater than 93.9 - 97.0	100
Greater than 91.9 - 93.9	95
90.0 - 91.9	80
Less than 90.0	Removal

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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
Greater than 6	90
Greater than 5 but less than 6	95
3-5	100
2 or greater but less than 3	95
less than 2	90

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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 and grates for drainage structures shown in the proposal schedule in accordance with and under Section 604 — Manholes, Inlets and Catch Basins.

The Engineer will pay for adjusting existing frames and covers and existing valve boxes not shown in the proposal in accordance with and under Section 604 — Manholes, Inlets and Catch Basins.

END OF SECTION 406''

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(I) Amend 503.04 – Measurement by revising lines 1201 to 1205 to read as follows:

The Engineer will not measure concrete when contracted on a lump sum basis.

The Engineer will consider the wingwalls to be a part of the structure.”

“503.05 Payment. The Engineer will pay for the accepted quantities of concrete complete in place at the contract unit price per cubic yard, per square yard or at the contract lump sum price for the pay items listed below and contained in the proposal.

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

Pay Item	Pay Unit
Concrete for	Cubic Yard

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49 Retaining Structures and Section 206 – Excavation and Backfill for Drainage
50 Facilities.”

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END OF SECTION 503

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 will be measured by the pound, based on the theoretical number of pounds complete in place as shown on the plans or placed as ordered as specified in the proposal.

The Engineer will not measure reinforcing steel when contracted on a lump sum basis.

The Engineer will base the weights calculated upon Table 602.04-1 – Bar Designation, Weight and Area.

TABLE 602.04-1 – BAR DESIGNATION, WEIGHT AND AREA		
Bar No.	Weight Per Linear Foot (Pounds)	Area (Square Inches)
3	0.376	0.11
4	0.668	0.20
5	1.043	0.31
6	1.502	0.44
7	2.044	0.60
8	2.670	0.79
9	3.400	1.00
10	4.303	1.27
11	5.313	1.56
14	7.650	2.25
18	13.600	4.00

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 at the contract unit price per pound or at the contract lump sum price for the contract items specified in the proposal.

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

Pay Item	Pay Unit
Reinforcing Steel for _____	Pound”

END OF SECTION 602

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(I) Amend **604.05 Payment** by adding the following after line 237:

Type 1211214P Steel Frame and Grate Each"

END OF SECTION 604

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

The Engineer will measure gates per each as complete units of the size and type specified in the proposal, complete in place.”

“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
_____ - Feet, Chain Link Fence	Linear Foot
Chain Link Gate, Feet High and Feet Wide	Each"

END OF SECTION 607

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

2
3 Make the following amendments to said Section:

4
5 **(I)** Amend Subsection **622.04** to read as follows:

6
7 **“622.04 Measurement.**

8
9 **(A)** The Engineer will measure the highway lighting standard, highway
10 lighting luminaire, bracket arm highway lighting pullbox and remove wood
11 pole/highway lighting luminaire per each.

12
13 **(B)** The Engineer will measure the highway lighting ductline and
14 highway lighting conductors per linear foot.

15
16 **(II)** Amend Subsection **622.05** to read as follows:

17
18 **“622.05 Basis of Payment.** The Engineer will pay for the accepted highway
19 lighting standard on a contract unit price per each. The price includes full
20 compensation for submitting the equipment list and drawing; furnishing and
21 installing the highway light pole, bracket arm, LED luminaire, lighting control
22 node, and concrete foundation; furnishing and installing street light tags and
23 fused connectors; excavation and backfill; restoring pavements and
24 appurtenances damaged or destroyed during construction; making required
25 tests; furnishing labor, materials, equipment, tools, and incidentals necessary to
26 complete the work.

27
28 The Engineer will pay for the accepted highway lighting luminaire and
29 bracket arm on a contract unit price per each. The price includes full
30 compensation for submitting the equipment list and drawing; furnishing and
31 installing the highway lighting bracket arm, LED luminaire, lighting control node;
32 removing the existing highway lighting luminaire and bracket arm; furnishing and
33 installing street light tags and fused connectors; restoring pavements and
34 appurtenances damaged or destroyed during construction; making required
35 tests; furnishing labor, materials, equipment, tools, and incidentals necessary to
36 complete the work.

37
38 The Engineer will pay for the accepted highway lighting pullbox on a
39 contract unit price per each. The price includes full compensation for submitting
40 the equipment list and drawing; furnishing and installing the pullbox, frame and
41 cover; intercepting existing ductlines; excavation and backfill; restoring
42 pavements and appurtenances damaged or destroyed during construction;
43 making required tests; furnishing labor, materials, equipment, tools, and
44 incidentals necessary to complete the work.

45
46 The Engineer will pay for the accepted remove wood pole/highway lighting
47 luminaire on a contract unit price per each. The price includes full compensation

for removing the street lighting luminaire and bracket arm; coordinating with HECO where required; removing pole risers; removing aerial highway lighting conductors; backfilling; restoring pavements and appurtenances damaged or destroyed during construction; making required tests; furnishing labor, materials, equipment, tools, and incidentals necessary to complete the work.

The Engineer will pay for the accepted highway lighting ductline on a contract unit price per linear foot. The price includes full compensation for furnishing and installing the ductline, excavating, pouring concrete, backfilling, furnishing and installing conduit, making required handhole penetrations, constructing required pole risers; placing aggregate subbase, asphalt concrete base, paving asphalt concrete pavement, restoring sidewalks, salvaging existing materials, making required tests and furnishing labor, materials, equipment, tools, and incidentals necessary to complete the work.

The Engineer will pay for the accepted highway lighting conductors on a contract unit price per linear foot. The price includes full compensation for furnishing and installing the highway lighting conductors; making required connections and splices; salvaging existing materials, making required tests and furnishing labor, materials, equipment, tools, and incidentals necessary to complete the work.

The Engineer will consider additional materials and labor, needed to complete the installation of the system and not shown in the contract included in the bid price of the various contract items.

The Engineer will pay for hauling and stockpiling of salvaged materials and equipment off the right-of-way as ordered by the Engineer in accordance with Subsection 104.02 – Changes.

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

Pay Item	Pay Unit
Highway Lighting Standard _____	Each
Highway Lighting Luminaire and Bracket Arm	Each
Highway Lighting Pullbox _____	Each
Remove Wood Pole/Highway Lighting Luminaire	Each
Highway Lighting Ductline _____	L.F..
Highway Lighting Conductors _____	L.F.”

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END OF SECTION 622

SECTION 623 – TRAFFIC SIGNAL SYSTEM

Make the following amendments to said Section:

(I) Amend Subsection **623.04** to read as follows:

“622.04 Measurement.

(A) The Engineer will measure the traffic signal standard, traffic signal head, traffic signal pullbox and loop detector sensing unit per each.

(B) The Engineer will measure the traffic signal ductline and traffic signal cables per linear foot.

(II) Amend Subsection **623.05** to read as follows:

“623.05 Basis of Payment. The Engineer will pay for the accepted traffic signal standard on a contract unit price per each. The price includes full compensation for submitting the equipment list and drawing; furnishing and installing the traffic signal standard and concrete foundation; making required connections; removing existing traffic signal standards; excavation and backfill; restoring pavements and appurtenances damaged or destroyed during construction; making required tests; furnishing labor, materials, equipment, tools, and incidentals necessary to complete the work.

The Engineer will pay for the accepted traffic signal head on a contract unit price per each. The price includes full compensation for submitting the equipment list and drawing; furnishing and installing the traffic signal head; providing the backplate with retroreflective border; making required connections; removing existing traffic signal heads; restoring pavements and appurtenances damaged or destroyed during construction; making required tests; furnishing labor, materials, equipment, tools, and incidentals necessary to complete the work.

The Engineer will pay for the accepted traffic signal pullbox on a contract unit price per each. The price includes full compensation for submitting the equipment list and drawing; furnishing and installing the pullbox, frame and cover; intercepting existing ductlines; excavation and backfill; restoring pavements and appurtenances damaged or destroyed during construction; making required tests; furnishing labor, materials, equipment, tools, and incidentals necessary to complete the work.

The Engineer will pay for the accepted loop detector sensing unit on a contract unit price per each. The price includes full compensation for submitting the equipment list and drawing; furnishing and installing the loop detector cables; making required sawcuts; furnishing and installing epoxy sealant, hot applied rubberized sealant and urethane sealants; excavation and backfill; restoring

pavements and appurtenances damaged or destroyed during construction; making required tests; furnishing labor, materials, equipment, tools, and incidentals necessary to complete the work.

The Engineer will pay for the accepted traffic signal ductline on a contract unit price per linear foot. The price includes full compensation for furnishing and installing the ductline, excavating, pouring concrete, backfilling, furnishing and installing conduit, making required handhole penetrations, constructing required pole risers; removing existing conduit and ductline; placing aggregate subbase, asphalt concrete base, paving asphalt concrete pavement, restoring sidewalks, salvaging existing materials, making required tests and furnishing labor, materials, equipment, tools, and incidentals necessary to complete the work.

The Engineer will pay for the accepted traffic signal cables on a contract unit price per linear foot. The price includes full compensation for furnishing and installing the cables; making required connections and splices; salvaging existing materials, making required tests and furnishing labor, materials, equipment, tools, and incidentals necessary to complete the work.

The Engineer will consider additional materials and labor, needed to complete the installation of the system and not shown in the contract included in the bid price of the various contract items.

The Engineer will pay for hauling and stockpiling of salvaged materials and equipment off the right-of-way as ordered by the Engineer in accordance with Subsection 104.02 – Changes.

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

Pay Item	Pay Unit
Traffic Signal Standard _____	Each
Traffic Signal Head _____	Each
Traffic Signal Pullbox _____	Each
Loop Detector Sensing Unit _____	Each
Traffic Signal Ductline _____	L.F.
Traffic Signal Cable _____	L.F.”

END OF SECTION 623

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(I) Amend Subsection **624.04** to read as follows:

(A) Water laterals on a contract price per unit basis.

(II) Amend Subsection **624.05** to read as follows:

The Engineer will pay for the fire hydrants and fire hydrant laterals on a contract price per unit basis. The price will be full compensation for constructing the fire hydrants and fire hydrant laterals; all connections; valves and valve boxes pavement restoration; fittings; concrete thrust blocks and reinforced concrete jackets; tests; and furnishing labor, materials, equipment, tools, and incidentals to complete the work in place.

Pay Item	Pay Unit
Water Laterals	Each
Fire Hydrants and Fire Hydrant Laterals	Each"

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SECTION 629 - PAVEMENT MARKINGS

Make the following amendments to said Section:

(I) Amend **Subsection 629.03(B) – Temporary Pavement Markings** by revising the third paragraph from line 62 to 63 to read:

“Maintain and replace temporary pavement markings, flexible delineators, and barricades. ”

(II) Amend **Table 629.03 – 1 – Temporary Pavement Markings** to read as follows:

“TABLE 629.03-1 TEMPORARY PAVEMENT MARKINGS	
TYPE	PAVEMENT MARKINGS
Passing Permitted - Both Sides	Single 4-inch yellow stripe 5 feet in length spaced 20 feet on center with Type D markers spaced 40 feet on center and located on center of 5-foot length of stripe.
Passing Prohibited - Both Sides	Double solid 4-inch yellow stripes with Type D markers placed 20 feet on center on one of 4-inch yellow stripes selected by the Engineer.
Passing Permitted - One Side Only	Single continuous 4-inch yellow stripe with Type D markers placed on stripe 20 feet on center on no-passing side and single 4-inch yellow stripes 5 feet in length spaced 20 feet on center on passing side.
Lane Lines - Lane Changing Permitted	Single 4-inch yellow or white stripe 5 feet in length spaced 20 feet on center with Type C or Type D markers spaced 40 feet on center.
Lane Lines - Lane Changing Prohibited	Double solid 4-inch white stripes with Type C markers placed 20 feet on center on one of the 4-inch white stripes selected by the Engineer.
Crosswalk	Two 12-inch white transverse lines spaced 8 feet on center or as ordered by the Engineer.
Stop Line	Single 12-inch white transverse line.
Note: Paint may be used for temporary markings in areas where final paving is not complete.”	

(III) Amend Subsection **629.04** to read as follows:

19 **"629.04 Measurement.** Pavement striping, pavement marker, pavement
20 arrow, pavement word, and pavement symbol will be paid on a contract price per
21 unit basis."

22
23 **(IV)** Amend Subsection **629.05** to read as follows:

24
25 **"629.05 Payment.** The Engineer will pay for the accepted pay items listed
26 below at the contract price per pay unit as shown in the proposal schedule.
27 Payment will be full compensation for the work prescribed in this section and the
28 contract documents.

29
30 The Engineer will pay for each of the following pay items when included in
31 the proposal schedule.

32	33 Pay Item	34 Pay Unit
35	_____ -Inch Pavement Striping (Thermoplastic Extrusion)	Linear Foot
36		
37	Pavement Arrow (Thermoplastic Extrusion)	Each
38		
39	Pavement Word (Thermoplastic Extrusion)	Each
40		
41	Pavement Symbol (Thermoplastic Extrusion)	Each
42		
43	Type _____ Pavement Marker	Each"
44		

45
46 **END OF SECTION 629**

1 **SECTION 630 – TRAFFIC CONTROL GUIDE SIGNS**
2

3 Make the following amendment to said Section:
4

5 **(I)** Amend **Section 630.02 Materials**, by replacing lines 28 to 29 to read:
6

7 “Retroreflective sheeting shall conform to criteria listed in ASTM D 4956
8 for the applicable type and class, or as amended in accordance with Subsection
9 750.01 - Signs.”
10

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12
13
14 **END OF SECTION 630**
15

1 **SECTION 631 – TRAFFIC CONTROL, REGULATORY, WARNING, AND**
2 **MISCELLANEOUS SIGNS**

3
4 Make the following amendment to said Section:

5
6 **(I)** Amend Section 631.03(C) Labeling of Signs, from lines 42 to 51 to read:

7
8 **“(C) Labeling of Signs.** Label back of each sign with sign stickers as
9 directed by the State. Sign stickers will be provided by the State.”

10
11 **(II)** Amend Subsection **631.04** to read as follows:

12
13 **“631.04 Measurement.** Regulatory, warning, miscellaneous signs; and
14 relocation of existing regulatory, warning, and miscellaneous signs will be
15 measured on a contract price per unit basis.”

16
17 **(III)** Amend Subsection **631.05** to read as follows:

18
19 **“631.05 Payment.** The Engineer will pay for the accepted pay items listed
20 below at the contract price per pay unit. Payment will be full compensation for
21 the work prescribed in this section and the contract documents.

22
23 The Engineer will pay for each of the pay items when included in the
24 proposal schedule:

25

Pay Item	Pay Unit
Regulatory Sign	Each

26
27
28
29

30 The Engineer will not pay for removing and delivering of existing signs that
31 will not be incorporated in the completed project; labeling of new signs; removing,
32 salvaging or storing of existing posts; and removing, cleaning, stacking and
33 delivering the existing signs and posts that are not incorporated in the completed
34 project separately and will consider the cost as included in the lump sum prices
35 for the various traffic control, regulatory, warning, and miscellaneous sign
36 Contract pay items. The cost is for the work prescribed in this section and the
37 contract documents.

38
39 Sign supports, including posts, foundations, and mounting, will not be
40 measured or paid for separately, but shall be considered incidental to the various
41 contract items.

42
43
44 **END OF SECTION 631**

1 Make the following Section a part of the Standard Specifications:

2
3 **“SECTION 635 – E-CONSTRUCTION**
4

5
6 **635.01 Description.** This section is for furnishing e-construction software for the
7 Project.

8
9 **635.02 General Requirements.** The Contractor shall:

10
11 (A) Provide licenses for the E-Construction platform designated by HDOT.
12

13 **635.03 Not used.**
14

15 **635.04 Measurement.** The Engineer will measure the fee for the license(s)
16 associated with the “E-Construction Program” on a force account basis in
17 accordance with Subsection 109.06 – Force Account Provisions and Compensation.
18

19 **635.05 Payment.** The Engineer will pay for the fee for the license for the E-
20 construction Program on a force account basis in accordance with Subsection
21 109.06 – Force Account Provisions and Compensation. Payment will be full
22 compensation for the “E-Construction” licensing fee as prescribed in this section
23 and contract documents. The actual amount to be paid will be the sum shown on
24 the accepted force account records whether this sum be more or less than the
25 estimated amount allocated in the proposal schedule.”

26
27 **Pay Item** **Pay Unit**
28
29 E-Construction license Force Account
30

31
32
33
34 **END SECTION**

1 **SECTION 638 – PORTLAND CEMENT CONCRETE CURB AND GUTTER**

2
3 Make the following amendments to said Section:

4
5 **(I)** Amend **638.04 – Measurement** by revising lines 130 to 131 to read as
6 follows:

7
8 **“638.04 Measurement.** The Engineer will measure curb and/or gutter, both
9 new and reset, by the linear foot. The Engineer will measure along the front face
10 of the curb at the finished grade elevation. If the Engineer measures gutter
11 separately, the Engineer will measure gutter along the front face of the gutter.
12 The Engineer will not make deduction in gutter length for drainage
13 appurtenances installed such as catch basins and drop inlets.
14

15 The Engineer will not measure curb and/or gutter both new and reset
16 when contracted on a lump sum basis.

17
18 The Engineer will measure curb and/or gutter transition for payment as
19 follows:
20

From	To	Measurement for Payment
Cast-in-place Curb or Precast Curb	Cast-in-place Curb and Gutter	Cast-in-place Curb and Gutter
Cast-in-place Curb and Gutter	Precast Curb and Cast-in-place Gutter	Cast-in-place Curb and Gutter
Cast-in-place Curb and Gutter Type _____	Cast-in-place Curb and Gutter Type _____	Cast-in-place Curb and Gutter 1/2 of Transition to each type
Cast-in-place Curb Type _____	Cast-in-place Curb Type _____	Cast-in-place Curb 1/2 of Transition to each type

21
22 The Engineer will measure precast concrete drop curb and driveway curb
23 or cast-in-place integral driveway curb and gutter under the adjacent normal curb
24 and/or gutter.”
25

26 **(II)** Amend **638.05 – Payment** by revising lines 133 to 148 to read as follows:
27

28 **"638.05 Payment.** The Engineer will pay for the accepted quantities of curb
29 and/or gutter at the contract unit price per linear foot for each type of curb and/or
30 gutter specified.

31
32 Payment will be full compensation for work prescribed in this section and
33 contract documents.

34
35 The Engineer will pay for each of the following pay items when included in
36 proposal schedule:

37	38 Pay Item	39 Pay Unit
40	Curb, Type _____	Linear Foot

41
42
43 **END OF SECTION 638**

1 **SECTION 645 – WORK ZONE TRAFFIC CONTROL**
2
3

4 Make the following amendments to said Section:
5

6 **(I)** Amend 645.03(C)(1) General by revising the first paragraph from lines 173 to
7 174 to read as follows:
8

9 **“(1) General.** Provide, erect, and maintain necessary barricades,
10 including pinned and unpinned concrete barriers, suitable for protection of
11 work and safety of the public. All work zone devices shall be MASH
12 compliant, except for portable concrete barriers that were constructed before
13 2020; those barriers may be compliant to NCHRP 350.”
14

15 **END OF SECTION 645**
16

1 **SECTION 648 – FIELD-POSTED DRAWINGS**

2
3 Make the following amendments to said Section:

4
5 **(I)** Amend **648.03 – Construction Requirements** by revising lines 8 to 12 as
6 follows:

7
8 **“648.03 Construction Requirements** The Engineer will provide
9 electronic sets of plans for the Contractor’s use in noting all changes to the work.
10 Use red markings to note the changes. Use blue markings to add any additional
11 notes that will be helpful for the State to post the field-posted drawings.”

12
13 **END OF SECTION 648**

1 Make the following section a part of the Standard Specifications:

2
3 **"SECTION 651 - ELECTRIC AND TELECOMMUNICATIONS UTILITIES**

4
5 **651.01 Description.** This work includes constructing electric and
6 telecommunications utility underground structures and facilities, and ductlines
7 required for the construction of Hawaiian Electric Company (HECO) and
8 Hawaiian Telcom (HT) facilities according to the contract or as specified by the
9 Engineer. HECO and HT will furnish, install, connect and test all proposed
10 overhead and underground wire and cable as may be required, including guy
11 wires. HECO will also remove and/or install utility poles and anchors.

12
13 **651.02 Materials.** Furnish all materials for the pullboxes and ductlines unless
14 otherwise indicated. Materials shall conform to the following:

15
16 Structure Backfill Material 703.20

17
18 Trench Backfill Material 703.21

19
20 Concrete shall conform to Section 601 – Structural Concrete. The
21 maximum size of coarse aggregates shall be three-quarter inch in lieu of the one
22 inch to No. 4 specified. Concrete duct banks shall be Class A concrete.

23
24 Underground conduit and fittings shall be rigid polyvinylchloride (PVC),
25 Schedule 40. Conduit risers shall be zinc-coated rigid steel. Schedule 40 rigid
26 PVC conduit shall be extruded standard wall electrical conduit and each length
27 shall bear the label of Underwriter's Laboratory, Inc. Adhere to the requirements
28 of U.S. Department of Commerce, Commercial Standard CS207-60.

29
30 **651.03 Construction Requirements.**

31
32 **(A) General.** Avoid disturbing existing facilities. Remove and dispose
33 of all demolished or excess material from the job site.

34
35 Notify HECO and HT inspection divisions at least 48 hours in
36 advance of intent to commence concreting operations for duct lines.

37
38 Construction of HECO's underground facilities shall be in
39 accordance with the latest revisions of HECO Specifications CS7001,
40 CS7003, CS7202, CS9301, CS9401 and applicable HECO standards.
41 Refer to the plans for additional requirements relating to HECO facilities.

42
43 Construction of HT underground facilities shall be in accordance
44 with HT's "Standard Specifications for Placing Underground Systems,"
45 dated January 2007, and all subsequent amendments and additions.

47 **(B) Existing Utilities.** Existing utilities and utility facilities shown on
48 the plans are approximate locations. Utility facilities to be constructed are
49 shown on the plans in approximate locations for the convenience of the
50 Contractor.

51
52 It shall be the Contractor's responsibility to ascertain the location of
53 all existing utilities which may be subject to damage by reason of its
54 operations. The Contractor shall be responsible for and shall pay for all
55 damages to existing utilities of all types.

56
57 The Contractor shall:

58
59 **(1)** Support and/or protect as required all facilities during
60 construction,

61
62 **(2)** Notify the Engineer immediately of any damage to any
63 facility caused by construction under this Contract, and

64
65 **(3)** Reconstruct damaged portions of any utility system
66 according to the contract and as specified by the Engineer at no
67 cost to the State.

68
69 **(C) Access.** Provide HECO and HT with 24 hour access to all existing
70 HECO and HT facilities that are to remain, or until they are removed, and
71 to all new HECO and HT facilities after they are installed. The Contractor
72 shall be responsible for any delays in company work due to its failure to
73 provide access to company facilities. All existing HECO and HT facilities
74 shall remain in place until after completing and energizing the proposed
75 permanent and/or temporary facilities, unless otherwise noted on the
76 plans. Any cost of temporary relocations arising during construction for
77 the Contractor's benefit shall be at no cost to the State, HECO and HT.

78
79 Electrical equipment or conductors, whether electrically energized
80 or not, shall remain in place at all times during construction unless
81 otherwise indicated. HECO and HT shall perform the handling and
82 moving of electrical equipment or conductors, when required by the
83 Engineer. Work by the Contractor in areas with energized electrical
84 equipment or conductors shall be performed with extreme caution to
85 prevent accidents and to avoid disturbing or damaging the equipment or
86 conductors or any temporary supports or protective guards that are
87 constructed. Unless otherwise permitted by HECO and HT, all work by
88 the Contractor in areas with energized equipment or conductors shall be
89 performed in the presence of a company inspector and/or standby man.
90 The Contractor shall have the sole responsibility for maintaining safe and
91 efficient working conditions and procedures in these areas.

HECO and HT shall replace any existing or new company facilities, including equipment or conductors damaged by the Contractor during construction, at the Contractor's expense.

The Contractor shall give HECO and HT 60 calendar days advance notice for any work to be done by HECO and HT on its facilities. Unless otherwise indicated on the plans or otherwise directed by the Engineer, the utility companies, will:

(1) Remove the concrete envelope from existing underground ducts containing electrical cables.

(2) Construct temporary supports and protective barriers for bare duct and electrical cables immediately after removal of the concrete envelope is completed.

(3) Remove temporary supports and protective barriers constructed under (2) above.

(4) Remove existing joint utility poles and anchors and install new joint utility poles and anchors.

(D) Excavation and Backfill. All excavation and backfill for electric underground structures and trenches shall conform to Section 204 – Excavation and Backfill for Miscellaneous Facilities, modified as follows:

(1) Excavation.

(a) The width of trenches for duct banks shall not be less than the width of the encasement nor more than that required to properly and safely execute the work.

(b) Excavate the trenches at least 40 feet ahead of duct placement so that any obstruction to the duct line can be avoided through gradual alignment. The Engineer may adjust the profile grade to increase or decrease the excavation depth (up to 3 feet) as a result of unforeseen obstruction at no additional cost.

(c) Excavation for each handhole, plus 50 feet of trenching for all ducts connected to these structures shall be complete before starting construction on these structures. Backfill all cuts in excess of depths required with compacted bed course material at no cost to the State and utility companies.

(d) All excavation shall be inspected by the Engineer and respective utility companies before placing any ducts or conduits or before constructing any structures and foundations.

(e) Widen the trenches at handholes to permit proper entry of the ducts and conduits.

(f) Do not excavate for handholes and ductlines until after staking out and verifying the locations for these structures correctly by the utility companies through the Engineer.

(2) **Backfill.** Do not place backfill until after verifying the duct and conduit installations by the utility companies through the Engineer.

Trench backfill material placed below a horizontal plane 12 inches above the top of the duct bank shall conform to Subsection 703.21 (A) – Trench Backfill Material A.

Backfill the remainder of the trench with structure backfill material according to Section 703.20 with structure backfill material B or with trench backfill material according to Subsection 703.21(B) – Trench Backfill Material B.

(E) **Installation of Ducts Encased in Concrete Jacket.** Install all plastic ducts installed with concrete jacket or cover unless otherwise indicated. All joints shall be watertight.

(1) **Plastic Conduit Storage and Transportation.**

(a) Conduits that are to be stored for more than 2 weeks shall be covered.

(b) Provide support for the full length of the conduit when transporting or storing long lengths. The Engineer will not permit unsupported overhang.

(c) **Plastic Conduit Installation.**

(i) Conduit shall be square cut with a fine tooth wood saw. Remove all burrs.

(ii) Wipe all foreign matter off the sockets of the fittings and the edges of the conduit with a clean cloth.

(2) Plastic Conduit Solvent-Cemented Joints.

(a) The cement for PVC conduits should be obtained from the conduit manufacturer. Use a clean paper paint pot for containing the cement during use. The Engineer will not permit adding of thinners to the cement.

(b) Apply a liberal and uniform coat of cement to the conduit for a length equal to the depth of the socket. Also apply sufficient cement to set the socket of the fitting. Avoid excess cement on the fitting as it is wiped into the joint and tends to weaken the pipe. Do not use plastic bristle brushes. The brush size shall be approximately equal to joint depth, for example, a two- inch brush for a four- inch conduit.

(c) Slip the conduit into the socket of the fitting with a slight twist until the conduit bottoms.

Hold the joint for 15 seconds so the conduit does not push out of the fitting. Do not twist or drive the pipe after the insertion is complete.

(d) Cure the joined members for at least five minutes before disturbing or applying stress to the joint. After this initial cure, do not twist or pull the joint. In damp weather, increase this interval to allow for slower evaporation of the solvent. Assemble all conduits above ground and allow the conduit to lie undisturbed while curing before lowering it into the trench or installing on bridges.

(e) Wipe off excess cement left on the outer shoulder of the fitting.

(f) Another fitting or section of conduit may be added to the opposite end within two or three minutes if care is exercised in handling so that strain is not placed on the previous assembly.

(g) Return the brush to the cement pot after covering the joint surfaces. When stopping work, place the brush in a solvent; pour unused cement back in the can and cover

tightly. When re-using the brush, shake out the excess solvent before dipping it into the cement.

(h) Assemble any joint, included in a section of conduit to be bent, above ground and allow to lie undisturbed for at least two hours before installation in a trench. In cases where a plastic connection is made with the union under stress due to misalignment or other factors, stake out the union to relieve stress on the joint until after backfilling or encasing the conduit.

(i) Cover all open trenches at the end of each work day to minimize accidental mechanical damage to conduits.

(3) Plastic Conduit Temperature.

(a) All conduits shall be cool prior to placing in trenches and when the concrete jacket is being poured.

(b) Due to expansion and contraction of the plastic conduit of 1-1/2 inches per 100 feet for every 20°F change in the temperature, allow extra conduit footage at each tie-in for contraction when the conduit temperature is higher than that of the earth; or extra room for expansion if the converse condition exists.

(4) Plastic Conduit Spacers.

(a) Place spacers for plastic conduit along the length of the conduit at a maximum spacing of six feet on center.

(b) The terminated ends of the conduit in an underground structure shall be free of support for a distance of at least 10 feet from the structure. Align and support the conduit inside the structure with proper spacing and cut to length after the concrete envelope has cured.

(c) Seal the ends of the conduit with a plastic cap or plug at the end of each day's work, when work on duct installation has to be interrupted, where ducts may be submerged in water, or in stub-outs.

(d) Test, in the presence of utility company inspectors, the completed ducts provided for utility company use by passing a bullet shaped test mandrel about 12 inches long with a diameter 1/2 inch less than the inside diameter of the

ducts through the length of each duct run. Scars in the mandrel deeper than 1/32 inch, other than that caused by normal abrasion between the duct line and bottom of mandrel are an indication of the presence of burrs and/or obstructions in the duct run. Remove such burrs and/or obstructions, after which the test mandrel will be passed through again. Repeat the process until approved by the respective utility inspector.

(e) After testing, furnish and install muletape in all ducts in accordance with the respective utility company standard and plug both ends of each duct with plastic plugs.

651.04 Restoration of Existing Streets and Other Improvements. Restore streets, sidewalks, driveways, walkways, curbs, gutters, walls, fences, buildings and all other improvements inside and outside of the right-of-way, publicly or privately owned, which are damaged by the Contractor's operations to their original condition, or better, at no cost to the State and utility companies. Materials and workmanship shall conform to the applicable sections in these specifications.

651.05 Method of Measurement.

(A) The Engineer will measure the HECO and HT pullbox per each.

(B) The Engineer will measure the HECO and HT per linear foot.

(C) Utility Company services charges will be paid on a force account basis. Measurement for payment will not apply.

651.06 Basis of Payment. The Engineer will pay for the accepted HECO and HT pullbox on a contract unit price per each. The price includes full compensation for submitting the equipment list and drawing; furnishing and installing the pullbox, frame and cover; excavation and backfill; restoring pavements and appurtenances damaged or destroyed during construction; making required tests; furnishing labor, materials, equipment, tools, and incidentals necessary to complete the work.

The Engineer will pay for the accepted HECO and HT ductline on a contract unit price per linear foot. The price includes full compensation for furnishing and installing the ductline; furnishing and installing pullstring and muletape; excavating; pouring concrete; backfilling; furnishing and installing conduit; pole riser; placing aggregate subbase, asphalt concrete base, paving asphalt concrete pavement; restoring sidewalks; salvaging existing materials; making required tests and furnishing labor, materials, equipment, tools, and incidentals necessary to complete the work.

The Engineer will pay for the accepted utility company service charges on a force account basis. Payment will be full compensation of the exact amount as quoted by the utility company. The amounts indicated in the proposal schedule are approximate only. No Contractor's markup will be allowed for this item.

The Engineer will consider additional materials and labor, needed to complete the installation of the system and not shown in the contract as included in the bid price of the various contract items.

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

Pay Item	Pay Unit
HECO Pullbox _____	Each
HT Pullbox _____	Each
HECO Ductline _____	L.F.
HT Ductline _____	L.F.
Utility Company Service Charges	Force Account"

END OF SECTION 651

1 Make the following section a part of the Standard Specifications:
2
3

4 **“SECTION 657 – CARPENTRY**
5
6

7 **657.01 General Conditions.**
8

9 **(A)** The General Conditions, the Special Provisions, and all other
10 applicable documents preceding these specifications shall govern all work
11 specified hereinafter in all Divisions and Sections.
12

13 **657.02 Summary.**
14

15 **(A)** Provide all finish carpentry work, complete, including, but not
16 limited to, the following items.
17

18 **(1)** All finish carpentry work, blocking, etc.
19

20 **(2)** Casework.
21

22 **(3)** Concealed wood nailers, blocking, etc.
23

24 **(4)** Rough hardware.
25

26 **(5)** Install finish hardware and any other items specified to be
27 installed under this section but furnished under other sections of
28 these specifications.
29

30 **(B)** All lumber shall be treated as specified in Section 658 – Wood
31 Treatment.
32

33 **(C)** All finished casework shall be painted and back-primed as specified
34 in Section 670 – Painting.
35

36 **(D)** Section 502- Timber Structure is not applicable for this project.
37

38 **657.03 Quality Assurance.**
39

40 **(A) Grading Marks.** Factory mark each piece of lumber and plywood
41 with: type, grade, mill, and grading agency identification. Certificate of
42 inspection and grading by Western Wood Products Association (WWPA)
43 may be submitted with each shipment in lieu of factory marking, at
44 Contractor's option.
45
46

657.04 Submittals.**(A) Submit in accordance with Section 105.02 – Submittals.**

(1) Shop Drawings. Submit shop drawings to the Engineer showing location of each item, dimensioned plans and elevations, large scale details, attachment devices and other components. Submit shop drawings for the following:

(a) Casework**657.05 Product Delivery, Storage and Handling.**

(A) Protect finish carpentry materials during transit, delivery, storage and handling to prevent damage, soiling and deterioration.

(B) Do not deliver finish carpentry materials, until painting, wet work, grinding and similar operations which could damage, soil or deteriorate woodwork have been completed in installation areas. If, due to unforeseen circumstances, finish carpentry materials must be stored in other than installation areas, store only in areas meeting requirements specified for installation areas.

657.06 Materials.**(A) General.**

(1) Nominal sizes are indicated, except as shown by detailed dimensions. Provide dressed or worked and dressed lumber, as applicable, manufactured to the actual sizes as required by PS 20 or to actual sizes and pattern as shown, unless otherwise indicated.

(2) Moisture Content of Softwood Lumber. Provide kiln-dried lumber having a moisture content from time of manufacture until time of installation not greater than values required by the applicable grading rules of the respective grading and inspecting agency for the species and product indicated.

(3) Moisture content of Hardwood Lumber. Provide kiln-dried lumber having a moisture content from time of manufacture until time of installation within a range of 8% to 13% for individual pieces, and an average of 11% for the entire lot.

(4) Lumber for Transparent Finish. Use pieces made of solid lumber stock.

(B) Interior Finish Carpentry (including casework).

(1) Solid Wood Trim. Douglas Fir, B or better for opaque finish.

(2) Plywood for Casework. A-C Douglas Fir plywood for exterior laminate finish. Edging shall be of matching laminate. Interior face may be white melamine or vinyl veneer.

(3) Plastic Laminate. Unless noted otherwise, sheet plastic shall be .049" \pm thick plastic laminate, General Purpose Grade.

(a) Sheet plastics shall be standard finish, solid color grade, high pressure plastic laminate. Sheet plastic shall be in colors as scheduled or selected by the Engineer from the manufacturer's catalogs or sample colors.

(b) Backing sheet shall be high pressure laminate, minimum thickness of .020" for unsupported areas exceeding 4 s.f. Core shall be not less than 3/4".

(c) Adhesives shall be waterproof as recommended by manufacturer for substrate material. Installation shall be in strict accordance with the manufacturer's written directions.

(d) Sheet plastic shall be as manufactured by Nevamar, Formica, Wilson Art, or an approved equal.

(e) Decorative Edge profile shall be Crescent Profile (SE) BY Wilsonart or an approved equal.

(C) Rough Carpentry for Nailers, Blocking, Etc.

(1) Concealed Lumber. Douglas Fir "Construction Grade", S4S, selected for straightness and minimal warping.

(D) Post-Formed Countertops. Where indicated on the drawings, provide post-formed countertops with integral coved backsplash and drip-resistant radius nosing. Fabricate with 3/4" plywood with high pressure laminate as indicated in paragraph 2.04.C. Fabricate using waterproof adhesives.

(E) **Miscellaneous Materials.**

(1) **Dampproofing.** Apply a continuous strip of 40-pound asphalt saturated felt under wood members bearing on concrete or masonry and 15 pounds in other non-bearing concrete areas.

(2) **Fasteners and Anchorages.** Provide nails, screws and other anchoring devices of the proper type, size, material, and finish for application indicated to provide secure attachment and concealed where possible.

(a) Provide all fasteners and anchorages with a hot-dipped zinc coating (ASTM A 153).

657.07 Wood Product Quality Standards.

(A) **Softwood Lumber Standards.** Comply with PS 20 and with applicable grading rules of the respective grading and inspection agency for the species and product indicated.

(B) **Plywood Standards.** Comply with PS 1 for softwood plywood; PS 51 for hardwood plywood.

(C) **Hardwood Lumber Standards.** Comply with National Hardwood Lumber Association (NHLA) rules.

657.08 Wood Treatment for Millwork and Casework.

(A) **Preservative Treatment.** Following basic fabrication, provide a dip treatment of finish carpentry items in accordance with Section 658 – Wood Treatment. Apply brush coat on surfaces cut after treatment. Allow preservative treatment to fully cure prior to application of any finishes or adhesives.

657.09 Fabrication.

(A) Millwork and casework shall be fabricated at the mill in accordance with detailed drawings, in as large units as practicable for shipment and introduction into permanent position in an orderly arrangement for neat and rigid field assembly. All units when erected in place shall be straight, square, plumb, level and free from damage and tool marks; all units shall be belt-sanded at mill and hand-sanded smooth immediately following installation in place. All joints shall be made up with waterproof glue. Nails and screws shall be placed in concealed surfaces to the maximum extent possible.

(B) Wood casework with plastic laminate finish shall be as follows:

(1) **Cabinet Construction.** 3/4" plywood throughout unless noted otherwise. Flush overlay type construction; laminate finish with laminate edges. Conform with AWI Custom grade construction standards.

(2) **Cabinet Doors and Exposed Cabinet Sides.** Plastic laminate on plywood with laminate edges.

(3) Cabinet Trim shall be hardwood, where indicated.

(4) Shelves shall be 3/4" white laminate, melamine or vinyl on plywood, with laminate edges banded all sides.

(5) Drawers shall 3/4" hardwood plastic laminate plywood face with laminate edges. Drawer boxes shall be 5/8" melamine, white, sides and 1/4" melamine, white, bottom.

(C) Plastic laminate finished countertops shall be as follows.

(1) **Exposed Surfaces.** Provide high pressure laminate in grades indicated for the following types of surfaces:

(a) **Horizontal and Vertical Surfaces.** GP-50 (0.049" nominal thickness).

(D) All Casework.

(1) Visible plywood edges banded with plastic laminate. No visible nails.

(2) Division and end panels shall be dadoed to receive bottoms, web frames and stretchers.

(3) **Drawers.** Sides blind dovetail dadoed and securely glued into fronts. Sides multiple dovetailed or lock jointed and nailed, or dadoed and nailed to backs. Sides and front plowed to receive bottom.

(4) **Measurements.** Before proceeding with fabrication of casework required to be fitted to other construction, obtain measurements and verify dimensions and shop drawing details as required for accurate fit.

(a) Where sequence of measuring substrates before fabrication would delay the project, proceed with fabrication (without field measurements) and provide ample borders and edges to allow for subsequent scribing and trimming of woodwork for accurate fit.

(5) **Cabinet Drawer and Door Tolerances.** Clearance gap between adjoining doors or drawers shall be 1/8" maximum, with a 1/32" maximum allowable variation in gap width.

(6) Maximum warp or twist allowed in any surface shall be 1/32" per lineal foot.

657.10 Cabinet Hardware.

(A) **General.** Cabinet hardware is furnished under Section 675 – Finish Hardware. Verify quantities, locations and installation requirements for complete and functional operations.

657.11 Installation.

(A) Discard units of material which are unsound, warped, bowed, twisted, improperly treated, not adequately seasoned or too small to fabricate work with minimum of joints or optimum jointing arrangements, or which are of defective manufacture with respect to surfaces, sizes or patterns.

(B) Install the work plumb, level, true and straight with no distortions. Shim as required using concealed shims. Install to a tolerance of 1/8" in 8'-0" for plumb and level countertops; and with 1/16" maximum offset in flush adjoining 1/8" maximum offsets in revealed adjoining surfaces.

(C) Scribe and cut work to fit adjoining work and refinish cut surfaces or repair damaged finish at cuts.

(D) **Standing and Running Trim.** Install with minimum number of joints possible, using full-length pieces (from maximum lengths of lumber available) to the greatest extent possible. Stagger joints in adjacent and related members. Cope at returns, miter at corners, to product tight fitting joints with full surface contact through-out length of joint. Use scarf joints for end-to-end joints.

(1) Make exterior joints water-resistant by careful fitting.

(E) Anchor finish carpentry work to anchorage devices or blocking built-in or directly attached to substrates. Secure to grounds, stripping and

blocking with countersunk, concealed fasteners and where prefinished matching fastener heads as required, use fine finishing nail for exposed nailings, countersunk and filled flush with finished surface, and matching final finish where transparent is indicated.

657.12 Adjustment, Cleaning, Finishing and Protection.

(A) Clean hardware, lubricate and make final adjustments for complete and proper operation.

(B) **Protection.** Installer of architectural casework shall advise Contractor of procedures required to protect architectural casework during remainder of construction period to ensure that work will be without damage or deterioration at time of acceptance.

657.13 Measurement and Payment.

(A) Carpentry work shall not be paid separately but shall be considered incidental to the construction of the Truck Weigh Station, in the Proposal Schedule.

END OF SECTION 657"

1 Make the following section a part of the Standard Specifications:
2
3

4 **“SECTION 658 – WOOD TREATMENT**
5

6 **658.01 General Conditions.**
7

8 (A) The General Conditions, the Special Provisions, and all other
9 applicable documents preceding these specifications shall govern all work
10 specified hereinafter in all Divisions and Sections.
11

12 **658.02 Summary.**
13

14 (A) Treat all lumber and other wood products by pressure and/or dip
15 methods as specified herein.
16

17 (B) Field treatment of field cut or drilled lumber.
18

19 **658.03 Related Sections.**
20

21 (A) Section 657 – Carpentry.
22

23 **658.04 References.**
24

25 (A) **American Wood-Preservers' Association.**
26

27 (1) **AWPA C2-00.** Lumber, Timber, Bridge Ties and Mine Ties-
28 Preservative Treatment by Pressure Processes.
29

30 (2) **AWPA C9-00.** Plywood-Preservative Treatment by
31 Pressure Processes.
32

33 (3) **AWPA C31-00.** Lumber Used out of Contact with the
34 Ground and Continuously Protected from Liquid Water-Treatment
35 by Pressure Processes.
36

37 (4) **AWPA M4-01.** Care of Preservative-Treated Wood
38 Products.
39

40 (5) **AWPA N1-01.** All millwork, Preservative Treatment by Non-
41 Pressure Process.
42

43 (6) **AWPA N2-00.** Composite Wood Products, Preservative
44 Treatment by Non-Pressure Process.
45

46 **658.05 Submittals.**

47
48 **(A) Submit in accordance with Section 105.02 – Submittals.**

49
50 **(1) Product Data.** Provide data on all treatment products,
51 including field application instructions if applicable.

52
53 **(a)** Provide manufacturer's Material Safety Data Sheets
54 on all products, and hazardous materials.

55
56 **(b)** Provide ICBO approvals for treatment solutions used.

57
58 **(2) Preserver Certifications.**

59
60 **(a)** Provide a Certificate of Treatment showing
61 compliance with these specifications for the following:

62
63 **(i)** Kiln drying

64
65 **(ii)** Method of treatment performed, including dip
66 treatment.

67
68 **(3) Contractor's Certification.** Provide a certification letter
69 stating that all wood used on this job including cuts and penetration
70 were treated and coated with preservatives in compliance with
71 requirements of this contract.

72
73 **(4) Guarantee.** Guarantee form for written guarantee.

74
75 **658.06 Regulatory Requirements.**

76
77 **(A)** Comply with State OSHL (Occupancy Safety and Health Law) and
78 pollution controls regulations of the State Department of Health and EPA.

79
80 **658.07 Delivery, Storage and Handling.**

81
82 **(A)** Protect AWPAC31 inorganic boron treated wood from contact with
83 the ground, rain or other sources of liquid water until permanent
84 installation of covering construction.

85
86 **658.08 Guarantee.**

87
88 **(A)** Provide a two-year guaranty to replace all treated wood which is
89 attacked by subterranean termites up to a total cost of \$20,000.00 over

the guaranty period (as verified by General Conditions Force Account Method cost accounting).

(B) Provide a five-year guaranty to replace all treated wood which is attacked by dry wood termites or deteriorates due to dry rot.

658.09 General.

(A) Mill lumber to finish size and shape prior to treating and treat before assembly. Plywood may be treated in regular panel sizes.

(B) Mark each treated item with the treatment quality mark of an inspection agency approved by the American Lumber Standards Committee Board of Review.

(1) For exposed lumber indicated to receive a stained or natural finish, provide certificates of treatment compliance issued by inspection agency.

658.10 Pressure Treatment with Water-Borne Preservatives.

(A) Treating solutions.

(1) Copper azole, Type A (CBA-A).

(2) Inorganic boron (SBX).

(B) Treatment Methods.

(1) General.

(a) All water-borne treatment methods require incising of lumber of nominal 2-inch thickness (1-1/2 inches actual dimension).

(b) Choice of treatment method and conditions of use of each treating solution shall conform to the treatment schedule contained in 658.14 Schedule of Treatments.

(2) **CBA-A.** Treatment methods, depth of penetration and treating solution retention shall conform to AWPA C2 for lumber and C9 for plywood.

(3) **SBX.** Treatment method shall conform to AWWA C31. Treating solution retention shall be a minimum of 0.28 pounds per cubic foot (equivalent to 0.42 DOT).

(C) **Drying.**

(1) **Before Treatment.**

(a) **CBA-A Treatment.** Wood shall be air dried or kiln-dried before treatment to an average moisture content of 28 percent or less per AWWA standards.

(b) **SBX Treatment.** Wood having a moisture content higher than 28% is acceptable when treating with SBX.

(2) **After Treatment.**

(a) All 1 inch and 2 inch lumber and all plywood shall be dried to a moisture content of 19 percent or less after treatment.

658.11 Pressure Treatment with Oil-Borne Preservatives.

(A) **Treating Solution.**

(1) 0.50 percent by weight chlorpyrifos, 0.75 percent by weight 3-iodo-2-propynyl butyl carbamate (IPBC). The solvent used in formulating the preservative solution shall meet the requirements of AWWA hydrocarbon solvent Type C, Standard P9, Paragraph 3.1.

(B) **Treatment Methods.**

(1) Treated wood shall attain the following net retention requirements: 0.0175 pounds of Chlorpyrifos per cubic foot of wood, 0.035 pound of 3-iodo-2 propynyl butyl carbamate per cubic foot of wood.

(C) **Drying.**

(1) **Before Treatment.** All wood treated with oil-borne preservatives shall be kiln-dried to an average moisture content of 12% to 15% per AWWA standards.

(2) **After Treatment.** Wood shall be thoroughly dried and virtually odor-free prior to installation.

178
179 **658.12 Preservation by Dip Treatment.**

180
181 **(A) Treating Solution.**

182
183 (1) Any of the Oil-Borne Preservatives listed above.

184
185 (2) A solution of 1 quart chlopyrifos in 55 gallons of a 0.50
186 percent IPBC solution.

187
188 **(B) Treatment Methods.**

189
190 (1) Immersion treat for a minimum period of 15 minutes. Hollow-
191 core flush wood doors shall be immersion treated for a period of 5
192 minutes.

193
194 (2) Do not incise lumber scheduled to be left unpainted or
195 receive a clear finish.

196
197 **(C) Drying.**

198
199 (1) **After Treatment.** Wood shall be thoroughly dried and
200 virtually odor-free prior to installation.

201
202 **658.13 Field Treatment.**

203
204 **(A) Treatment Method.**

205
206 (1) Treat in accordance with AWPAs Standard M4-98 using two
207 heavy brush coats of a treating solution.

208
209 **658.14 Schedule of Treatments.**

210
211 **(A) Species.**

212
213 (1) Treat all wood species except all-heart redwood.

214
215 (2) All water-borne and oil-borne treatment solutions are
216 applicable to douglas-fir and hem-fir species except for CBA-A
217 treatment which is acceptable for hem-fir species only.

(B) Application.

(1) Pressure Treatment.

(a) General. Unless otherwise stipulated, all lumber and plywood shall be pressure treated.

(b) Hardwood flooring and exposed lumber 1-1/2" (net thickness) and over that will be unpainted or receive a clear finish shall be and pressure treated with oil-borne preservative. Do not incise lumber.

(c) SBX treated wood shall not be used in areas exposed to direct precipitation (e.g. exposed decking, trellises, fencing, etc.) unless painted or covered with a finish material.

(2) Dip Treatment. All finish lumber under 1-1/2-inch net thickness (except hardwood flooring); doors (solid wood and solid-core flush wood doors); finish plywood; and mill work items, such as for cabinet work, shelving and similar wood work that will be exposed to view in the finished work.

(3) Field Cuts. Treat end cuts, notches and penetrations into treated lumber or plywood. Exception: Cuts and penetrations made in SBX treated wood 2 inches or less in nominal thickness need not be field treated.

658.15 Measurement and Payment.

(A) Wood Treatment work shall not be paid separately but shall be considered incidental to the construction of the Truck Weigh Station, in the Proposal Schedule.

END OF SECTION 658"

1 Make the following section a part of the Standard Specifications:
2
3

4 **“SECTION 659 – BATT INSULATION**
5

6 **659.01 General Conditions.**
7

8 (A) The General Conditions, the Special Provisions, and all other
9 applicable documents preceding these specifications shall govern all work
10 specified hereinafter in all Divisions and Sections.
11

12 **659.02 Summary.**
13

14 (A) Provide batt and semi-rigid insulation as indicated on drawings and
15 as specified herein.
16

17 **659.03 Submittals.**
18

19 (A) **Submit in accordance with Section 105.02 – Submittals.**
20

21 (1) Manufacturer's certificates of conformance.
22

23 (2) Manufacturer's descriptive data.
24

25 **659.04 Delivery and Storage.**
26

27 (A) Deliver materials to the site in the original sealed wrapping bearing
28 manufacturer's name and brand designation, specification number, type,
29 grade, R-value, and class. Store and handle to protect materials from
30 damage. Do not allow insulation materials to become wet or soiled.
31 Comply with manufacturer's recommendations for handling, storage, and
32 protection during installation.
33

34 **659.05 Materials.**
35

36 (A) **Batt Insulation (Walls).** ASTM C-665, Type I, ASTM E119, ASTM
37 E136, unfaced fiberglass sound attenuation batt insulation, having a flame
38 spread rating of 50 or less and smoke developed rating of 50, as tested
39 per ASTM E84. Insulation shall be approximately 3-1/2" thick in width to
40 friction fit between studs and/or framing members. Where larger studs are
41 used, thicker insulation may be used. Insulation should not be
42 compressed tightly into the wall cavity. Thermal resistance value (R
43 Value): 13
44

(B) **Semi-rigid Fiberglass Insulation.** (Underside of concrete roof slab): Owens Corning Type 703, semi-rigid, unfaced fiberglass insulation or pre-approved equal. Insulation shall be 3 ½" thick as indicated on drawings.

(C) **Insulation Anchors.** All aluminum, 2" x 2" perforated base with spindle, spaced at 16" o.c., as manufactured by J.R. Products, Inc. or equal. Furnish with self-locking washers and hanger adhesive.

659.06 Preparation of Surfaces.

(A) Surfaces shall be clean, dry, and free of any projections.

659.07 Between wall studs.

(A) Size insulation to the width of stud spacing. Install insulation between the studs as recommended by the insulation manufacturer to friction fit. Insulation shall be installed to resist sagging. Should sagging occur, the Contractor shall be required to provide alternative installation method acceptable and at no additional cost to the State.

659.08 Underside of concrete roof slab.

(A) Size insulation to install flat to underside of concrete ceiling as indicated and secure using insulation anchors spaced 16" o.c. Install spindle anchors with hanger adhesive per manufacturer's recommendations. Neatly impale insulation onto spindles and anchor with self-locking washers.

659.09 Measurement and Payment.

(A) Batt Insulation work shall not be paid separately but shall be considered incidental to the construction of the Truck Weigh Station, in the Proposal Schedule.

END OF SECTION 659"

1 Make the following section a part of the Standard Specifications:
2
3

4 **“SECTION 660 – FLUID APPLIED ROOFING SYSTEM**
5

6 **660.01 General Conditions.**
7

8 **(A)** The General Conditions, the Special Provisions, and all other
9 applicable documents preceding these specifications shall govern all work
10 specified hereinafter in all Divisions and Sections.
11

12 **660.02 Summary.**
13

14 **(A)** Provide fluid applied roofing system as indicated on the drawings and
15 as specified herein.
16

17 **660.03 References.**
18

19 **(A)** The latest publications are listed below form a part of this specification
20 to the extent referenced. The publications are referred to in the text by the
21 basic designation only.
22

23 **(1) American Society for Testing and Materials (ASTM)**
24

25 **(a) ASTM B 117.** Test Method of Salt Spray(Fog)
26 Testing
27

28 **(b) ASTM D412.** Standard Test Method for Rubber
29 Properties in Tension
30

31 **(c) ASTM D638.** Standard Test for Elongation
32

33 **(d) ASTM D1653.** Water Vapor Transmission Materials.
34

35 **(e) ASTM D6083.** Standard Specification for Liquid
36 Applied Acrylic Coatings used in Roofing.
37

38 **(f) ASTM E108.** Test Method for Fire Test of Roof
39 Coverings.
40

41 **(g) ASTM E903.** Test Method for Hemispherical Spectral
42 Reflectance.
43

44 **(h) ASTM E406.** Test Method for Total Emittance
45

(i) **ASTM G26.** Practice for Operating Light- and Water Exposure Apparatus (Xenon Arc Type) for Exposure of Non-metallic Materials.

(j) **ASTM G29.** Test Methods for Algae Resistance.

(k) **FMRC.** 4470 Class I Roof System.

(2) **IBC.** International Building Code, 2006 Edition.

660.04 General Requirements.

(A) System Description.

(1) Fluid applied flexible acrylic and polyester fabric reinforced roofing system over pitch pocket curb post flashing and existing mod-bit roofing system where indicated.

(B) **Applicator Qualifications.** See 660.05(A)(3) – Contractor’s and Installer’s Certification..

(C) The Contractor shall notify the local authorized representative of the manufacturer whose fluid applied flexible acrylic roofing system he proposes to use and shall arrange for the latter to visit the site to inspect the existing roof surfaces receiving the acrylic system before application, at least once during application and at job completion.

660.05 Submittals.

(A) Submit in accordance with Section 105.02 – Submittals.

(1) **Shop Drawings.** Provide the following details:

(a) Conditions of interface with other materials.

(2) **Manufacturer’s Instruction.** Submit manufacturer’s installation instructions, and special precautions requirements.

(3) **Contractor’s and Installer’s Certification.** Submit a signed certificate from the proposed roofing manufacturer showing that the Contractor is an approved installer of the Manufacturer’s complete Roofing System and that each member of the installation crew has been trained in the system’s proper installation and certified by the Manufacturer’s Technical Representative. The names of the certified installers shall be submitted to the O.I.C. and only employees that are certified installers shall be allowed to perform work on this project.

(4) **Technical Representative Certification.** Submit a signed certificate from the Manufacturer designating its Technical Representative for the Project and attesting that this person is both qualified and authorized to act on behalf of the Manufacturer.

(5) **Certificates.** Submit certificates of compliance for materials specified.

(6) **Product Data.** Provide data for material description, physical properties, recommended storage conditions, shelf life, precautions, and joint crack sealants, with temperature range for application of waterproofing membrane.

660.06 Product Handling.

(A) **Delivery of Materials.** All materials shall be delivered to the site in the original unbroken manufacturer's wrapping material and containers with the original label thereon intact.

(1) Name of manufacturer.

(2) Name of contents and products code.

(3) Net volume of contents.

(4) Lot or batch no.

(5) Storage temperature limits.

(6) Shelf life expiration date.

(7) Mixing instructions and proportions contents.

(8) Safety information and instructions.

(B) **Storage of Materials at Job Site.**

(1) Store and protect materials from damage and weather in accordance with manufacturer's instructions.

(2) Store materials at temperatures between 50 and 90 degrees F. Keep out of direct sunlight.

660.07 Protection and Cleaning.

(A) Protection.

(1) Any work or materials damaged during roofing installation shall be restored to their original (undamaged) condition or replaced.

(2) Protective coverings shall be installed necessary to prevent the marring of existing surfaces.

660.08 Warranty.

(A) Submit manufacturer's 15-year warranty for the acrylic roofing system. In no event shall the warranty system be less than 15 years from the date of the final acceptance of the work, roofing system applicator's or manufacturer's unpaid invoices for installation, supplies, or service. The warranty shall state that:

(1) When within the warranty period, the acrylic roofing system separates at the seams because of defective materials or workmanship, the repair or replacement of effective materials shall be the responsibility of the manufacturer.

(2) When the manufacturer or the manufacturer's approved applicator fails to perform repairs within 72 hours of written notification, emergency repairs performed by others will not void the warranty; and

(a) The first and second years of this warranty shall be covered under the Contract Bond. The third through fifteenth years of this warranty will not be binding against the provider of the Contract Bond.

(b) Roofing system components, where possible and feasible, should be supplied by the same manufacturer.

(c) The Surety shall not be held liable beyond two (2) years, from the Project Acceptance date.

660.09 Products.

(A) Fluid Applied Flexible Acrylic Roofing System.

(1) **Materials.** Three-stage, fabric-reinforced, flexible acrylic roofing, liquid applied in successive stages to form one continuous, seamless watertight membrane, 55 mil minimums cured total system thickness; comprised of the following:

(a) **Foundation and Saturation Coats.** Highly flexible water based 100% pure acrylic polymer resin coatings as recommended by acrylic coating manufacturer.

(b) **Fabric.** Polyester, non-woven, stitch-bonded, and heat-set fabric.

(c) **Finish Coat.** Ultraviolet light resistant, blend of highly flexible water based 100% pure acrylic polymer resin coating; color as selected from manufacturer's standard colors.

(d) **Reinforcing Fabric.** This material shall be non-woven stitch-bonded, and heat-set fabric.

(i) **Weight.** 3 oz. per square yard

(ii) **Tensile strength.** 57.1 lbs. PSI per ASTM 1682

(iii) **Elongation.** 61.65% per ASTM D1682

(iv) **Mulein Burst.** 176.8 lbs. per ASTM 3786

(v) **Trapezoid.** 16.1 lbs. per ASTM D117

(B) Cured Membrane Characteristic.

<u>Property</u>	<u>Test</u>	<u>Result</u>
Susceptability to Leakage	FM4470	Passed test including
air pressure test		
Algae Resistance	ASTM G29	No growth supported
Cured System Tensile Strength	ASTM D412	> 2200 PSI
Elongation of Base Coat System	ASTM D638	> 53%
Elongation of Finish Coat	ASTM D638	> 300%
Fire Rating	ASTM E108	Class A
Emittance	ASTM E406	94%
Hemispherical Spectral Reflectance	ASTM E906	78.1%
Moisture Vapor	ASTM D1653	3 Perms
Salt Spray Test	ASTM B117	No Effect
Severe Hail Test	FM 4470	No Separation or rupture
Volume Solids	ASTM G26	No effect after 300 hrs.
Weight Solids	ASTM D6083	> 65%
Wind Uplift	FM 4470	Meets Class 1- 90
Foot Traffic	FM 4470	Passed Test

(C) Roofing System shall meet or exceed the Standard Factory Mutual Class I 4470 test for roofing membranes with direct application of the reinforced coating and fabric to the concrete substrate.

(D) Roofing System shall meet or exceed the Standard Factory Mutual Class I 4470 for Fire Rating and susceptibility to leakage.

(E) **Surface Primer.** Cementitious waterproofing sealer for structural concrete. (This shall be part of the FM 4470 system.)

(F) **Mildewcide.** Shall be equally integrated in all layers.

(G) **Tapered Polyisocyanurate Board Insulation.** ASTM C1289, Type II, fibrous felt or glass mat membrane both sides, except minimum compressive strength shall be 20 pounds per square inch (psi). Thickness shall be 1 1/2 inch thick minimum, slope 1/2 inch per foot minimum.

(H) **Recovery Board.** Glas Mat Gypsum Roof Board, ASTM C1177/C1177M, 0 Flame Spread and 0 Smoke Developed when tested in accordance with ASTM E84, 500 psi, Class A, non-combustible, 1/2-inch-thick, 4 feet by 8 feet board size.

(I) **Insulation Adhesive.** Shall be OlyBond 500 insulation adhesive as manufactured by OMG or pre-approved equal. Insulation adhesive shall be dual-component polyurethane to adhere insulation board to concrete substrate, insulation board to insulation board, and recovery board to insulation board.

(J) **Precast Curb and Sealant System.** Shall be ChemCurb System, as manufactured by Chem Link, Inc., Weather-Tite Lockin' Pocket Inter-Locking Pitch Pocket System by WTT Systems or pre-approved equal. Curb and sealant system shall include pre-manufactured curb, structural bonding adhesive and pourable sealant. Products shall be as manufactured by single manufacturer and fully compatible with roofing system to be installed on and encapsulated with.

660.10 Examination.

(A) Coordinate work with that of other trades to ensure that components which are to be incorporated into the roofing system, are available to prevent delays or interruptions as the work progresses. Verify existing conditions in advance.

(B) Examine substrates to which the fluid applied roofing system is to be applied to ensure that their condition is satisfactory for its application. Substrates shall be dry and free of oil, dirt, grease, sharp edges, and debris. Inspect substrate, and correct defects before application.

660.11 Special Precautions.

(A) Do not apply waterproofing to surfaces unacceptable to manufacturer.

(B) Do not allow contact between various materials through application equipment.

(C) Do not use equipment containing the remains of previous material.

660.12 Preparation.

(A) Protect adjacent surfaces not designated to receive Roofing System.

(B) Clean and prepare surfaces to receive roofing system by removing all loose and flaking particles, grease and laitance.

(C) Correct defects and inaccuracies in roof deck surface to eliminate poor drainage and hollow or low spots and perform the following:

(1) Install wood nailers the same thickness as insulation at eaves, edges, curbs, and roof openings for securing flashing flanges.

(D) Seal cracks and joints with sealant materials using depth to width ratio as recommended by sealant manufacturer.

660.13 Application.

(A) Apply insulation in two layers with staggered joints when the total required thickness of insulation exceeds ½ inch. Lay insulation so that continuous longitudinal joints are perpendicular to direction of roofing, as specified herein, and end joints of each course are staggered with those of adjoining courses. When using multiple layers of insulation, joints of each succeeding layer shall be parallel and offset in both directions with respect to layer below. Keep insulation ½ inch clear of vertical surfaces penetration and projecting from roof surfaces.

(B) Install ½ inch recovery board over top surface of foam board insulation. Stagger joints of recovery board with respect to foam board insulation below.

(C) Apply foundation and saturation coats at a total coverage rate not to exceed 40 sq. ft./gal. or per manufacturer's instructions.

(D) Apply foundation coat to the prepared area embedded fabric directly into the coating while still wet. Overlap adjacent runs of fabric 4 inches minimum. Immediately follow with saturation coat to cover fabric and allow to dry.

(E) Using a 12" flashing fabric, continue roofing material up vertical surface 6 inches in each direction.

(F) Apply 4 coats of finish coat at a combined total rate of 35 sq. ft./gal. or per manufacturer's instructions over entire horizontal area being treated. The first 2 coats shall be tinted a different color from the foundation coat and the second 2 finish coats. The minimum total dry mil thickness of the finish coat shall be 24 mils.

(G) Apply roofing system to a total thickness of 52 mils total cured thickness.

660.14 Cleaning.

(A) Immediately clean roofing system from unscheduled surfaces in accordance with the manufacturer's recommendations.

660.15 Measurement and Payment.

(A) Fluid Applied Roofing System work shall not be paid separately but shall be considered incidental to the construction of the Truck Weigh Station, in the Proposal Schedule.

END OF SECTION 660"

1 Make the following section a part of the Standard Specifications:
2
3

4 **“SECTION 661 – FLASHING AND SHEET METAL**
5

6 **661.01 General Conditions.**
7

8 (A) The General Conditions, the Special Provisions, and all other
9 applicable documents preceding these specifications shall govern all work
10 specified hereinafter in all Divisions and Sections.
11

12 **661.02 Summary.**
13

14 (A) Provide all labor, materials and equipment necessary to fabricate
15 and install flashing, and other related work as shown on the drawings and
16 as specified herein.
17

18 (B) **Related Work Described Elsewhere.**
19

20 (1) Coordinate installation of sheet metal work with Section 660
21 – Fluid Applied Roofing.
22

23 **661.03 Submittals.**
24

25 (A) **Submit in accordance with Section 105.02 – Submittals.**
26

27 (1) **Shop Drawings.** Submit shop drawings to the Engineer for
28 approval prior to fabrication. Shop drawings shall show all
29 fasteners and relationship to adjacent work. No fabrication will be
30 permitted before approval is secured.
31

32 **661.04 Quality Assurance.**
33

34 (A) All sheet metal fabrications shall conform to State and local codes,
35 SMACNA (latest edition) and industry standards).
36

37 (B) All roof penetrations shall be installed weathertight in such a
38 manner to maintain integrity of the roofing.
39

661.05 Guarantee.

(A) The Contractor shall issue a written guarantee to the Engineer that all work executed under this Section shall be free from defects of materials and workmanship for a period of two (2) years from Project Acceptance Date. The following types of failure will be adjudged as defective work:

(1) Leaking, failure to stay in place, undue expansion, lifting, deformation, loosening, splitting of seams.

(2) The guarantee shall provide the following at no additional cost to the State:

(a) Repair of flashing as necessary to seal leaks which are attributable to faulty materials and/or workmanship.

(b) Repair and replacement of damage to the building and/or its finishes, equipment and/or furniture when occasioned by such leaks, and

(B) The guarantee shall be signed jointly by the Sheet Metal Subcontractor and the General Contractor.

661.06 Storage and Handling.

(A) All materials shall be stored in such a manner as to afford adequate protection. Damaged materials shall not be used and shall be removed from the site.

661.07 Materials.

(A) **Asbestos Prohibition.** No asbestos containing materials shall be used under this section. The contractor shall insure that all materials incorporated in the project are asbestos-free.

(B) **Exposed flashing, and metal edging.** 24-gauge, Type 316 stainless steel.

(C) **Plastic cement.** Shall conform to F.S. SS-C-153, Type I.

(D) **Nails and Fasteners.** Shall be manufacturer's non-corrosive type, Series 304 or 316 stainless steel, with self-sealing neoprene gasketed heads.

- (E) **Gutters.** 24 gauge, Type 316 stainless steel.
- (F) **Gutter Brackets.** 1/8 - inch x 1-1/2 - inch, type 316 stainless steel.
- (G) **Solder.** 50% virgin lead and 50% pure block tin, conforming to ASTM B32.
- (H) **Flux.** Non-corrosive resin type.
- (I) **Bituminous Paint.** Type best suited to prevent galvanic action between non-compatible metals.
- (J) **Downspout.** Schedule 40 polyvinylchloride (PVC) downspout, size as indicated on the drawings. Hangers shall be 1/8-inch x 1-1/2-inch Type 316 steel. Paint downspout and hangers to match adjacent surface color.
- (K) **Downspout Straps.** 1/8 - inch x 1-1/2 - inch, type 316 stainless steel.
- (L) **Flashing Tape.** Shall be self-sticking rubberized asphalt with and aluminum foil facing for application with vent flashings to seal pipe penetrations and/or where indicated on the drawings.

661.08 Installation and Workmanship.

- (A) Surface to which sheet metal is to be applied shall be even, smooth, sound, thoroughly clean and dry, and free from defects that might affect the application. Report any unsatisfactory surfaces to the Engineer. In the absence of such a report, the Contractor shall be held responsible for the finished product.
- (B) All accessories or other items essential for the completeness of the sheet metal installation, though not specifically indicated on the drawings or specified, shall be provided. All such items unless otherwise indicated on the drawings or specified, shall be of the same material as the item to be applied. Nails, screws and bolts shall be of the type best suited for the purpose intended and shall be of a composition that is compatible with the metal to which it will contact.
- (C) Except as otherwise indicated on the drawing or specified, the workmanship of sheet metal work, method of forming joints, anchoring, cleating, provisions for expansion, etc., shall conform to the standard details and recommendations of the Sheet Metal and Air Conditioning Contractors National Association's "Architectural Sheet Metal Manual", and shall be subject to the approval of the Engineer. Exposed edges shall

be folded back neatly to form a minimum 1/2-inch hem on the concealed side. Fabricate for waterproof and weather-resistant performance, with expansion provisions for running work, sufficient to permanently prevent leakage, damage or deterioration of the work.

(D) All sheet metal work shall be watertight and wind-tight in compliance with the purpose intended for the items indicated on the drawings or specified herein.

(E) **Cleating.** Continuous cleats for sheet metal work shall be provided where required. Cleats shall be of the same material and weight as the metal being installed.

(F) **Protection from Contact of Dissimilar Materials.** Sheet metal surfaces in contact with dissimilar metal shall be painted with heavy-bodied bituminous paint or shall be separated by means of moisture-proof building felts. Dissimilar metals shall be non-compatible materials that when placed in contact with each other will cause a corrosive chemical reaction.

661.09 Protection.

(A) Protect all sheet metal work until final acceptance of the project.

661.10 Clean Up.

(A) Clean all exposed sheet metal work at completion of installation. Grease and oil films, handling marks, contamination from steel wool, fittings and drilling debris shall be removed, and the work scrubbed clean. All exposed metal surfaces shall be free of dents, creases, waves, scratch marks and solder marks.

(B) At completion of the work, clean up and remove all rubbish and debris from the premises which resulted from this work to the satisfaction of the Engineer.

164 **661.11 Measurement and Payment.**

165

166 (A) Flashing and Sheet Metal work shall not be paid separately but
167 shall be considered incidental to the construction of the Truck Weigh
168 Station, in the Proposal Schedule.

169

170

171

END OF SECTION 661”

1 Make the following section a part of the Standard Specifications:
2
3

4 **“SECTION 662 – SEALANTS**
5

6 **662.01 General Conditions.**
7

8 (A) The General Conditions, the Special Provisions, and all other
9 applicable documents preceding these specifications shall govern all work
10 specified hereinafter in all Divisions and Sections.
11

12 **662.02 Summary.**
13

14 (A) Except as otherwise indicated, sealants shall be provided to
15 establish and maintain moisture and weatherproof continuous seals on a
16 permanent basis within recognized limitations of wear and aging for each
17 application and type of sealant material. Provide at all joint locations
18 where moisture penetration is possible, where a weather-tight installation
19 is required, and where indicated or required to finish the installation of two
20 or more adjoining materials, as specified herein.
21

22 **662.03 Submittals.**
23

24 (A) **Submit in accordance with Section 105.02 – Submittals.**
25

26 (1) **Certificates of Compliance.** Submit certificates from the
27 manufacturers attesting that materials meet the specified
28 requirements.
29

30 (2) **Manufacturers’ Descriptive Data.** Submit complete
31 descriptive data for each type of material. Clearly mark data to
32 indicate the type the Contractor intends to provide. Data shall state
33 conformance to specified requirements. Data for sealant and
34 caulking shall include application instructions, shelf life, mixing
35 instructions for multi-component sealants, and recommended
36 cleaning solvents.
37

38 **662.04 Delivery and Storage.**
39

40 (A) Deliver materials to the job site in the manufacturers’ external
41 shipping containers, unopened, with brand names, date of manufacture,
42 color, and material designation clearly marked thereon. Containers of
43 elastomeric sealant shall be labeled as to type, class, grade, and use.
44 Carefully handle and store all materials to prevent inclusion of foreign
45 materials.
46

662.05 Warranty.

(A) The Contractor shall execute to the Engineer a 2-year written warranty after the Project Acceptance Date that the installation will be watertight and that any leaks which develop during that period which are not due to improper use or willful damage will be repaired at no cost to the State.

(1) Repair of sealants as necessary to seal leaks which are attributable to faulty materials and/or workmanship;

(2) Repair or replacement of damage to the building and/or its finishes, equipment and/or furniture when occasioned by such leaks.

662.06 Materials.

(A) Products shall conform to the reference documents listed for each use. Color of sealant and caulking shall match adjacent surface color unless specified otherwise. For ASTM C 920 sealants, use a sealant that has been tested on the type(s) of substrate to which it will be applied.

(1) **Interior Sealants.** ASTM C 920, Type S or M, Grade NS, Class 12.5, Use NT. For use to seal general building construction joints, etc.

(2) **Exterior Sealants.** For joints in vertical surfaces, provide ASTM C 290, Type S or M, Grade NS, Class 25, Use NT. For joints in horizontal surfaces, provide ASTM C 920, Type S or M, Grade P, Class 25, Use T. For use to seal general building construction joints, etc.

(3) **Floor Joint Sealant.** ASTM C 920, Type S or M, Grade P, Class 25, Use T. Color of sealant shall be as selected.

(4) **Sanitary Sealant.** ASTM C920, Type S, Grade NS, Class 25, Use NT, G and A. For use around plumbing fixtures and areas of high moisture. Single component acetoxy silicone sealant.

(5) **Primer for Sealants.** Provide non-staining, quick-drying type and consistency recommended by the sealant manufacturer for the particular application.

(6) **Bond Breakers.** Provide type and consistency recommended by the sealant manufacturer for the particular application.

(7) **Backstops.** Provide glass fiber roving or neoprene, butyl, polyurethane, or polyethylene foams free from oil or other staining elements as recommended by the sealant manufacturer. Backstop material shall be compatible with the sealant. Do not use oakum and other types of absorptive materials as backstops.

(8) **Cleaning Solvents.** Provide types recommended by the sealant manufacturer.

662.07 Surface Preparation.

(A) Surfaces shall be clean, dry to the touch, and free from moisture, grease, oil, wax, lacquer, paint, or other foreign matter that would tend to destroy or impair adhesion. Where adequate grooves have not been provided, clean out grooves to a depth of ½ inch without damage to the adjoining work. No grinding shall be required on metal surfaces.

662.08 Sealant Preparation.

(A) Do not modify the sealant by addition of liquids, solvents, or powders. Mix multicomponent elastomeric sealants in accordance with manufacturer's printed instructions.

662.09 Application.

(A) **Elastomeric Sealant Installation Standard.** Comply with the requirements of ASTM C 962 for the use of joint sealants as applicable to the materials, applications, and conditions required.

(B) **Backstops.** Install backstops dry and free from tears or holes. Tightly pack the back or bottom of joint cavities with backstop materials to provide a joint of the depth as recommended by the sealant manufacturer.

(C) **Primer.** Immediately prior to application of the sealant, clean out all loose particles from joints. Where recommended by sealant manufacturer, apply primer to joints in concrete masonry units, wood, and other porous surfaces in accordance with compound manufacturer's instructions. Do not apply primer to exposed finish surfaces.

(D) **Bond Breaker.** Provide bond breakers to the back or bottom of joint cavities, as recommended by the sealant manufacturer for each type of joint and sealant used to prevent sealant from adhering to these surfaces. Carefully apply the bond breaker to avoid contamination of adjoining surfaces or breaking bond with surfaces other than those covered by the bond breaker.

(E) **Sealants.** Provide sealant compatible with the material to which it is applied. Do not use a compound that has exceeded its shelf life or has become too gelled to be discharged in a continuous flow from the gun. Apply the compound in accordance with the manufacturer's instructions with a gun having a nozzle that fits the joint width. Force sealant into joints to fill the joints solidly without pockets. Sealants shall be uniformly smooth and free from wrinkles. Upon completion of sealant application, roughen partially filled or unfilled joints, apply sealant, and tool smooth as specified.

662.10 Protection and Cleaning.

(A) **Protection.** Protect areas adjacent to joints from compound smears. Masking tape may be used for this purpose if removed 5 to 10 minutes after the joint is filled.

(B) **Cleaning.** Immediately scrape off fresh compound that has been smeared on masonry and rub clean with a solvent as recommended by the compound manufacturer. Upon completion of compound application, remove all remaining smears and stains resulting therefrom and leave the work in a clean and neat condition.

662.11 Measurement and Payment.

(A) Sealants work shall not be paid separately but shall be considered incidental to the construction of the Truck Weigh Station, in the Proposal Schedule.

END OF SECTION 662"

1 Make the following section a part of the Standard Specifications:
2
3

4 **“SECTION 663 – ALUMINUM DOORS AND FRAMES**
5

6 **663.01 General Conditions.**
7

8 (A) The General Conditions, the Special Provisions, and all other
9 applicable documents preceding these specifications shall govern all work
10 specified hereinafter in all Divisions and Sections.
11

12 **663.02 Summary.**
13

14 (A) Furnish and install aluminum doors and frames complete as
15 indicated on the drawings and as specified herein.
16

17 **663.03 Submittals.**
18

19 (A) **Submit in accordance with Section 105.02 – Submittals.**
20

21 (1) Submit eight (6) sets of shop drawings and manufacturers
22 descriptive literature for review and approval by the Engineer.
23

24 (2) Submit three (3) material samples of aluminum extrusion
25 and anodized color for approval by the Engineer.
26

27 **663.04 Materials.**
28

29 (A) Product shall be as manufactured by the Kawneer Company, Inc.,
30 Arcadia, Inc., or pre-approved equal. The product specified below is
31 manufactured by the Kawneer Company, Inc., unless noted otherwise, to
32 establish the minimal material, quality and performance requirements.
33

34 (B) Aluminum entrance doors shall be “Tuffline” Series 350 swing
35 doors.
36

37 (C) Aluminum door frames shall be Trifab II 451.
38

39 (D) Finish shall be Clear Anodized No.14.
40

41 (E) Hardware for the entrance door shall be as follows:
42

43 (1) **Butt Hinging.** 1-1/2 pair heavy duty 5” x 4-1/2” ball bearing
44 hinges per leaf. Bronze with finish to match frame and non-
45 removable pins.
46

(2) **Pull Handle (Exterior).** Style C09, US32D stainless steel finish.

(3) **Door Closer.** Concealed overhead, Husky with SAM II offset arm.

(4) **Threshold.** 1/4" x 5-1/2", No. 14 clear anodized aluminum finish threshold.

(5) **Door Stops.** Provide as required.

(F) Flush aluminum doors shall be "Flushline Entrances" swing doors. Door and frame shall be extruded of 6063-T5 aluminum alloy and temper (ASTM B221 alloy G.S. 10A-T5). Door face sheets shall be embossed architectural quality aluminum sheet .090" thick. Core of flush door shall be froth-in-place urethane foam at 5 lb./cu. ft. density and shall have zero (0) Ozone Depletion Potential (O.D.P) and contains no Chlorofluorocarbons (CFC's) or Hydro chlorofluorocarbons (HCFC's). All screws and miscellaneous shall be aluminum, stainless steel or zinc plated in accordance with ASTM A-164. Basic door section shall be 1-3/4" overall depth with integral reglets to received and conceal edges of face sheets on both sides of door. Top and bottom rails shall be joined to tubular door stiles by mechanical clip fastening and SIGMA deep penetration and fillet welds. Face sheets shall lap and interlock stiles and rails to create a hollow cavity for the frothed-in-place urethane core. Door shall be reinforced internally to receive surface applied and mortised hardware. Hardware for flush aluminum door shall be as specified in Section 665 – Finish Hardware.

(G) Hardware for doors shall conform to the requirements of the Americans With Disabilities Act Accessibility Guidelines (ADAAG), Sections 303.3, 404.2.7, 404.2.8. & 404.2.9.

(H) Glazing shall be ASTM C 1048, Kind FT (fully tempered), Condition A (uncoated surfaces), Type I, Class 3 (bronze tinted light reducing, shading coefficient of not less than 0.71), Quality q3, 1/4 inch thick. Tempered glass meeting ASTM C 1048 shall also conform to the requirements of ANSI Z97.1 to qualify as a safety glazing material.

663.05 Installation.

(A) Field verify all dimensions prior to ordering and fabrication.

(B) Install doors and frames per manufacturer's instructions and recommendations. Seal all perimeters weather-tight. Coordinate sill installation with the exterior elastomeric deck coating system.

(C) Protect doors and frames from damage until final acceptance from the Engineer. Damaged doors and frames will be replaced at no additional cost to the State.

663.06 Clean-Up.

(A) Remove all debris from the area and leave area and doors in clean condition.

663.07 Measurement and Payment.

(A) Aluminum Doors and Frames work shall not be paid separately but shall be considered incidental to the construction of the Truck Weigh Station, in the Proposal Schedule.

END OF SECTION 663”

1 Make the following section a part of the Standard Specifications:
2
3

4 **“SECTION 664 – ALUMINUM WINDOWS**
5

6 **664.01 General Conditions.**
7

8 (A) The General Conditions, the Special Provisions, and all other
9 applicable documents preceding these specifications shall govern all work
10 specified hereinafter in all Divisions and Sections.
11

12 **664.02 Summary.**
13

14 (A) Provide all labor, materials, tools, equipment and service to furnish
15 and install aluminum awning windows, and related components as shown
16 on drawings and as specified herein.
17

18 **664.03 Quality Assurance.**
19

20 (A) **Performance.**
21

22 (1) **Awning Windows.** ANSI/AAMA 101-I.S.-97 rating and
23 conforming with the following:
24

25 (a) **Air Infiltration.** ASTM E283 at a static air pressure
26 of 6.24 psf.
27

28 (b) **Water Resistance.** ASTM E331 and E547 at a static
29 pressure difference of 10.00 psf.
30

31 (c) **Uniform Structural Load.** ASTM E330 at a static air
32 pressure 97.50 psf positive load and 97.50 psf negative load.
33

34 **664.04 Submittals.**
35

36 (A) **Submit in accordance with Section 105.02 – Submittals.**
37

38 (1) **Shop Drawings.** Submit shop drawings for the Engineer's
39 review and do not fabricate prior to acceptance. Include
40 calculations and certification on shop drawings stating that
41 assemblies conform to local code requirements including wind
42 loads and are designed to withstand all anticipated thermal
43 expansion and contraction movements.
44

45 (2) **Samples.** Submit samples of finishes including hardware to
46 the Engineer for acceptance.
47

664.05 Product Handling.

(A) **Protection.** Protect the materials of this section before, during and after installation. Protect the installed work and materials of all other trades.

(B) **Replacement.** In the event of damage, immediately make all repairs and replacements necessary.

664.06 Warranty.

(A) Provide a warranty from the manufacturer or its authorized representative that the completed work will not be defective in workmanship, material, or installation (including watertightness of the entire application including joints at glass) for a period of two (2) years from the date of project acceptance and that repair or replacement of any work that is defective will be done promptly. This warranty does not extend to defects caused by unusual abuse or neglect.

664.07 Materials.

(A) Product shall be as manufactured by the Kawneer Company, Inc., Arcadia, Inc., or pre-approved equal. The product specified below is manufactured by the Kawneer Company, Inc., unless noted otherwise, to establish the minimal material, quality and performance requirements.

(B) **Project Out Window.** "Kawneer GLASSvent UT Windows", 3-1/8" Overall system depth, CW-PG40 (with 2-Cam Handles).

(C) **Aluminum Window Frames.** Shall be Trifab II 451.

(D) **Glazing.** Window glazing shall be 1" thick, insulated with low-E glass on exterior.

(E) **Finish.** All windows shall be Clear Anodized finish.

(F) **Fasteners.** Installation shall be with type 304 stainless steel screws.

664.08 Execution.

(A) **Surface Condition.** Examine the substrate and conditions under which work of this section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions have been corrected.

(B) Installation.

(1) Install windows as indicated on the drawings, square, plumb, and in true alignment. Surfaces shall be free from dents, buckles, dimples, or other defects.

(2) Anchor frames and other items securely to continuous construction to result in a rigid installation and in accord with required safety factors. Where anchorage involves other work, provide setting drawings for proper installation.

(3) Install hardware and adjust for proper operation. Seal metal to metal joints to prevent the entrance of water except at joints where frame members are designed to drain water to the exterior.

(4) At juncture between frames and adjacent materials, seal entire perimeter on both sides. Use sealant and backing material as specified in Section 662 - SEALANTS.

(5) **Protection of Contact Surfaces.** Protect dissimilar metals or with compatible materials such as concrete and other cementitious materials by painting contact surface with bituminous paint before installation or isolate with non-absorptive tape or gasket.

(6) **Expansion and Contraction.** Install aluminum work so as to avoid objectionable distortion or overstress of parts and fastenings resulting from thermal expansion and contraction.

(7) **Glazing.** Determine glass size and edge clearances by measuring actual openings. Set glass on glazing blocks to equally support full glass height and prevent any give or fracture.

664.09 Protection.

(A) After erection adequately protect by masking with light motor oil, Vaseline or other accepted covering on all exposed parts of the work and finish, protecting against damage from grinding and polishing machines and/or plaster, lime, cement, acid or other harmful substances.

664.10 Cleaning.

(A) After completion of all other work in the vicinity of the aluminum window and door frames, remove all masking, oil, Vaseline and other covering used to protect the work and thoroughly clean the aluminum surfaces with soap and plain water or a petroleum product such as white gasoline, kerosene or distillant. **Do not use abrasive cleaning agents.**

146
147
148 **664.11 Measurement and Payment.**
149

150 (A) Aluminum Windows work shall not be paid separately but shall be
151 considered incidental to the construction of the Truck Weigh Station, in the
152 Proposal Schedule.
153

154 **END OF SECTION 664”**
155
156

1 Make the following section a part of the Standard Specifications:
2
3

4 **“SECTION 665 – FINISH HARDWARE**
5

6 **665.01 General Conditions.**
7

8 (A) The General Conditions, the Special Provisions, and all other
9 applicable documents preceding these specifications shall govern all work
10 specified hereinafter in all Divisions and Sections.
11

12 **665.02 Summary.**
13

14 (A) Furnish and deliver to the building site, all finish hardware required
15 for all doors, etc., complete as indicated on the drawings and as specified
16 herein.
17

18 (B) It is the intent of these specifications to cover in general the class
19 and character of all finish hardware required.
20

21 (C) The hardware list specified hereinafter has been made for the
22 convenience of the Contractor and covers in general the necessary
23 hardware for doors, casework, etc., but all other doors, etc., shown on the
24 plan and not covered by the general characterization shall be fitted with
25 appropriate hardware of the same standards as the hardware described
26 throughout these specifications. Contractor shall furnish hardware
27 schedule as hereinafter specified.
28

29 (D) Suppliers proposing substitutes of equivalent products of other than
30 manufacturers named hereinafter shall submit schedules listing products
31 and manufacture specified and product and manufacturer of proposed
32 substitute.
33

34 (E) All locks shall be keyed to the facility's new keying system.
35

36 **665.03 Submittals.**
37

38 (A) **Submit in accordance with Section 105.02 – Submittals.**
39

40 (1) **Schedule.** Furnish six (6) copies of the schedule of
41 hardware in compliance with specifications and drawings. List each
42 opening and hardware to be applied. State keying, material, finish
43 and manufacturer's number for each item. Required types are
44 listed.
45

(2) **Manufacturer's Data.** Submit manufacturer's descriptive literature along with schedule for information only.

665.04 Delivery.

(A) Examine the plans, specifications, and details in order to check all items so they will be suitable and of perfect fit and delivered where and when required.

(B) All Hardware shall be delivered at the site, packed separately with all trimmings, screws, etc., for the particular door, all properly labeled and numbered so that they can be checked with the hardware list which shall be furnished with the goods when delivered.

(C) Upon delivery of the finishing hardware to the job site by the hardware supplier, the General Contractor shall have a responsible person check in the material at the place for storage. The hardware shall be protected from damage at all times, both prior to and after installation.

665.05 Representative.

(A) Provide services of a competent hardware specialist who is familiar with installation and operation of all finishing hardware items furnished.

665.06 Materials.

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

665.07 General Character.

(A) All hardware shall be of the best quality in construction, design and finish, and free from any defects. Any defective pieces shall be replaced by the Contractor at his own expense.

(B) Hardware shall be of the manufacture, type, weight, function and quality as shown by factory numbers on the hardware schedule. The products of other manufacturers are acceptable provided they meet or exceed the quality and finish of the products specified herein and are furnished with interchangeable cylinders.

(C) **Locksets.** Locksets shall be the product of a single manufacturer. Cylinders and the locks in which they are used shall be the product of the

same manufacturer. All locks shall be classified as Grade I, "Heavy Duty" with six-pin tumblers.

(D) Finish. Except as otherwise indicated, finish of hardware shall be 613 or as required to match existing hardware finishes.

(E) ADA Compliance. All hardware for doors indicated on the drawings shall conform to the requirements of the Americans With Disabilities Act Accessibility Guidelines (ADAAG), Sections 303.3, 404.2.7, 404.2.8. & 404.2.9.

665.08 Keying.

(A) Locks shall have four (4) keys each. Locks for the same rooms shall be keyed alike. All locks shall be master keyed to the facility new keying system. During period of construction, all locks shall be operated by a special master key. Regular day and master keys are to be retained by the Contractor so they cannot be obtained or duplicated by unauthorized persons. All keys shall be stamped "DO NOT DUPLICATE" at the point of manufacture. The special construction master key shall become inoperative when regular keys are turned over to the Engineer. Proper certification of factory assembly of all locks and cylinders as well as factory master keying shall be furnished by the Contractor prior to final acceptance of this portion of the work. Certificate shall then be given to the Engineer. Provide four (4) master keys.

665.09 Fastenings.

(A) Furnish necessary screws, bolts, and other fastenings for proper application of hardware. Fastenings shall be of suitable size and type of securing hardware for heavy use. Fastenings must harmonize with the hardware as to material and finish.

(B) Furnish necessary expansion shields, toggle bolts, machine or wood screws or other suitable approved anchoring devices where hardware is to be installed on concrete, masonry or other type of backing.

665.10 Tools and Instructions.

(A) All tools and maintenance or installation instruction packed with the closers and locksets shall be given to the Engineer when the project is complete.

665.11 Execution.**(A) Hardware Supplier's Inspection.**

(1) Before final inspection of the work under this contract and acceptance of the project by the Engineer, the supplier of hardware and other items specified in this Section shall visit the site and carefully inspect all parts for conformance to this specification, adequacy for intended use, proper functioning, appearance, finish and successful operation, assuming joint responsibility with the General Contractor.

(B) Keying Operation and Orientation.

(1) The General Contractor and/or hardware supplier shall together with the Engineer and/or representative(s) from the facility, conduct an orientation of the operation of all hardware and locks.

(C) Hardware Schedule.

(1) Furnish the following hardware groups in the amounts indicated on the drawings or required for a complete and proper installation.

Abbreviations.

ACU Accurate Lock & Hardware Co.

MCK McKinney Products Company

PEM Pemko

ROC Rockwood Manufacturing Co.

SAR Sargent Manufacturing Co.

STA Best Access Solutions, Inc.

HARDWARE SCHEDULEHW-01(Sgl. Int. Swing - D/01)

183
184
185
186
187
188 1 EA. MORTISE CYLINDER 6551-2 626 ASA
189 (BALANCE OF HARDWARE BY ALUMINUM DOOR MANUFACTURER)
190

HW-03(Pr. Ext. Swing)

191
192
193 8 EA. HINGE TA2314 4.5 X 4.5 US26D-NRP MCK
194 1 EA. LOCKSET 8237 LNL US10BL WBX SAR
195 1 EA. MORTISE CYLINDER 6551-2 626 ASA
196 2 EA. FLUSH BOLT 3917-12 626 TRI
197 1 EA. D.P. STRIKE 3910 626 TRI
198 2 EA. CLOSERS 351 UO EB SAR
199 2 EA. ASTRAGAL 29310 CV PEM
200 2 EA. DOOR STOP 1211 OR 1270WX 626 TRI
201 1 EA. RAIN DRIP 346C PEM
202 1 EA. DOOR BOTTOM DRIP 210AV PEM
203 1 EA. THRESHOLD 158A PEM
204

HW-02(Pair Ext. Swing - D/02, D/03, D04)

205
206
207
208 8 EA. HINGE TA2314 4.5 X 4.5 US26D-NRP MCK
209 1 EA. LOCKSET 8237 LNL US10BL WBX SAR
210 1 EA. MORTISE CYLINDER 6551-2 626 ASA
211 2 EA. FLUSH BOLT 3917-12 626 TRI
212 1 EA. D.P. STRIKE 3910 626 TRI
213 2 EA. CLOSERS 351 UO EB SAR
214 2 EA. ASTRAGAL 29310 CV PEM
215 2 EA. DOOR STOP 1211 OR 1270WX 626 TRI
216 1 EA. RAIN DRIP 346C PEM
217 1 EA. DOOR BOTTOM DRIP 210AV PEM
218 1 EA. THRESHOLD 158A PEM
219

HW-03(Int. Swing - D/05)

220
221
222
223 4 EA HINGE TA2314 4.5 X 4.5 US26D MCK
224 1 EA PRIVACY LOCKSET 50-8225 LNL US26D WBX
225 W/ INDICATOR SAR
226 1 EA KICK PLATE K1050 10" x 34" 630 ROC
227 1 EA DOOR CLOSER 351 H EN SAR
228 1 EA WALL STOP (CONCAVE) 409 626 ROC
229 MARBLE THRESHOLD BY OTHERS
230
231
232

665.12 Measurement and Payment.

(A) Fluid Applied Roofing System work shall not be paid separately but shall be considered incidental to the construction of the Truck Weigh Station, in the Proposal Schedule.

END OF SECTION 665”

1 Make the following section a part of the Standard Specifications:
2
3

4 **"SECTION 666 – GYPSUM WALLBOARD**
5

6 **666.01 General Conditions.**
7

8 (A) The General Conditions, the Special Provisions, and all other
9 applicable documents preceding these specifications shall govern all work
10 specified hereinafter in all Divisions and Sections.
11

12 **666.02 Summary.**
13

14 (A) Complete all gypsum wall board installation work as indicated on
15 the drawings and as specified herein. Work shall include, but not be
16 limited to, the following:
17

18 (1) Interior wallboard and ceiling on metal framing.
19

20 (2) Wallboard accessories.
21

22 **666.03 Quality Assurance.**
23

24 (A) **Industry Standard.** Comply with applicable requirements of GA-
25 216 "Application and Finishing of Gypsum Board" by the Gypsum
26 Association, except where more detailed or more stringent requirements
27 are indicated including the recommendation of the manufacturer.
28

29 (B) **Submittals.** Furnish erection and installation specifications,
30 conforming to Industry Standards for the Engineer to review.
31

32 **666.04 Product Handling.**
33

34 (A) Deliver gypsum wallboard materials in sealed containers and
35 bundles, fully identified with manufacturer's name, brand, type and grade;
36 store in a dry well-ventilated space, protected from the weather, under
37 cover and off the ground.
38

39 **666.05 Materials.**
40

41 (A) **Interior Wallboard.** Shall be 5/8", type "X", W/R, fire, moisture and
42 mold resistant type with tapered edges, complying with ASTM C 1396,
43 ASTM D 3273, and ASTM C 473, for installation at all areas.
44

45 (B) **Wallboard Fasteners.** Gypsum wallboard shall be secured to
46 wood and/or metal framing and furring with industry standard zinc coated

bugle head self-drilling, self-tapping Type W or S drywall screws, or appropriate fastener as the situation may require.

(C) Reinforced Tape and Cement. Materials for treating joints and nail heads shall be as manufactured or recommended by the manufacturer of the wallboard used.

(D) Wallboard Accessories. All wallboard accessories shall be of rigid vinyl compounds for durability, impact resistance, corrosion resistance and paintable conforming with ASTM C1047-85 and ASTM D3678-81 Class 2.

(E) Joint Treatment Materials. ASTM C 475; type recommended by manufacturer for the application indicated, except as otherwise noted.

(F) Cement Tile Backer Boards. Shall be 5/8" thick cement fiber board for backer board for ceramic wall tile installation, and 1/4" coated glass mat water resistant gypsum backer board for ceramic floor tile installation. Use 1/4" coated glass mat water resistant gypsum backer board for ceramic wall tile installation over existing wood siding.

(G) Metal Studs and Runners. Metal studs and runners shall be 20 or 25 gauge, hot-dipped galvanized steel, conforming to ASTM A525. Gauge of stud shall be governed by height of partitions and manufacturer's design criteria. Size of studs are as indicated on the drawings or as recommended by industry standards for application.

(H) Ceiling Support Materials and Systems.

(1) General. Size ceiling support components to comply with ASTM C754 unless indicated otherwise.

(2) Direct Suspension Systems. Manufacturer's standard hot-dipped galvanized steel system of interlocking furring runners, furring tees, wall angles, and accessories designed for concealed support of gypsum drywall ceilings; of proper type for use intended.

(a) System Manufacturer. Equal to one of the following:

Chicago Metallic Corp.
Armstrong
Donn USG Interiors.

666.06 Installation.

(A) General. Comply with ANSI A42.4 as applicable to the type of substrate and drywall support system indicated; and comply with the Gypsum Association GA-203 for installation of furring members.

(B) Gypsum Wallboard, General.

(1) Locate exposed end-butt joints as far from center of walls and ceilings as possible, and stagger not less than 1'-0" in alternate courses of board.

(2) Install wall/partition boards vertically to avoid end-butt joints wherever possible.

(3) Install exposed gypsum board with face side out. Do not install imperfect, damaged or damp boards. Butt boards together for a light contact at edges and ends with not more than 1/16" open space between boards. Do not force into place.

(4) Locate either edge or end joints over supports, except in horizontal applications or where intermediate supports or gypsum board back-blocking is provided behind end joints. Position boards so that both tapered edge joints abut, and mill-cut or field-cut end joints abut. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions.

(5) Attach gypsum board to framing and blocking as required for additional support at openings and cutouts.

(6) Space fasteners in gypsum boards in accordance with referenced standards and manufacturer's recommendations, except as otherwise indicated.

(C) Methods of Gypsum Wallboard Application.

(1) Single-Layer Application. On partitions/walls apply gypsum board vertically (parallel), unless otherwise indicated, and provide sheet lengths which will minimize end joints.

(2) Single-Layer Fastening Method. Apply gypsum boards to supports as follows:

(a) Fasten with screws, spaced not to exceed 6" centers.

(D) **Suspended Ceiling Systems for Attachment of Gypsum Wallboard.** ASTM C 754, except as indicated otherwise.

- (1) Secure hangers to structural support by connecting directly to structure where possible, otherwise connect to inserts, clips or other anchorage devices or fasteners as indicated.
- (2) Space main runners, 4'-0" o.c. and space hangers 4'-0" o.c. along runners, except as otherwise shown.
- (3) Level main runners to a tolerance of 1/4" in 12'-0", measured both lengthwise on each runner and transversely between parallel runners.
- (4) Wire-tie or clip furring members to main runners and to other structural supports as indicated.
- (5) Space furring member 16" o.c., except as otherwise indicated.
- (6) Install auxiliary framing at termination of drywall work, and at openings for light fixtures and similar work, as required for support of both the drywall construction and other work indicated for support thereon.

(E) **Installation of Trim Accessories.**

- (1) **General.** Where feasible, use the same fasteners to anchor trim accessory flanges as required to fasten gypsum board to the supports. Otherwise, fasten flanges by nailing or stapling in accordance with manufacturer's instructions and recommendations.
- (2) Install vinyl corner beads at external corners of drywall work.
- (3) Install vinyl edge trim whenever edge of gypsum board would otherwise be exposed or semi-exposed. Provide type with face flange to receive joint compound except where semi-finishing type is indicated. Install L-type trim where work is tightly abutted to other work, and install special kerf-type where other work is kerfed to receive long leg of L-type trim. Install U-type trim where edge is exposed, revealed, gasketed, or sealant-filled (including expansion joints).
- (4) Install J-type semi-finishing trim where indicated.

(F) **Installation of Drywall Finishing.**

- (1) **General.** Apply treatment at gypsum board joints (both directions), flanges of trim accessories, penetrations, fastener

heads, surface defects and elsewhere as required to prepare work for decoration. Prefill open joints and rounded or beveled edges, using type of compound recommended by manufacturer.

(a) Apply joint tape at joints between gypsum boards, except where a trim accessory is indicated.

(b) Apply joint compound in 3 coats (not including prefill of openings in base), and sand between last 2 coats and after last coat.

(c) Provide type 5 gypsum finish per Gypsum Association finishes.

666.07 Cleaning and Repairing.

(A) After installation and before painting, correct surface damage and defects. Leave surface clean and smooth, satisfactory to the painter. No painting shall be done over gypsum board work until the joints are thoroughly dry. Joints and fastenings are to be invisible after painting.

666.08 Measurement and Payment.

(A) Gypsum Wallboard work shall not be paid separately but shall be considered incidental to the construction of the Truck Weigh Station, in the Proposal Schedule.

END OF SECTION 666"

1 Make the following section a part of the Standard Specifications:
2
3

4 **“SECTION 667 – ACOUSTICAL CEILINGS**
5

6 **667.01 General Conditions.**
7

8 (A) The General Conditions, the Special Provisions, and all other
9 applicable documents preceding these specifications shall govern all work
10 specified hereinafter in all Divisions and Sections.
11

12 **667.02 Summary.**
13

14 (A) Provide acoustical ceiling system as indicated on the drawings and
15 as specified herein.
16

17 **667.03 Submittals.**
18

19 (A) **Submit in accordance with Section 105.02 – Submittals.**
20

21 (1) Samples of all types of acoustical tiles, suspension system,
22 adhesives, fastening devices, and all required appurtenances,
23 together with manufacturer's specifications for all items including
24 installation standards, shall be submitted to the Engineer for
25 approval. Tile shall not be ordered or installed without this
26 approval.
27

28 **667.04 Guarantee.**
29

30 (A) The Acoustical Contractor shall execute to the State, a one (1) year
31 written warranty from the time of acceptance of the project as a whole,
32 countersigned and guaranteed by the General Contractor covering all
33 materials and workmanship, and on written demand by the State within
34 that period, shall correct or replace any defective material or workmanship
35 at his own expense.
36

37 **667.05 Materials.**
38

39 (A) The following acoustical ceilings are manufactured by Armstrong to
40 establish minimal acceptable qualities. Products of equal or better quality
41 and finish as manufactured by Celotex and/or USG Interiors are
42 acceptable. The products of other manufacturers are also acceptable
43 provided they meet or exceed the material and construction requirements
44 specified herein and have been pre-approved by Amendment.
45
46

(B) Tiles. (All areas)

- (1) Pattern. "Fine Fissured", #1729 ceilings.
- (2) Flame Spread Rating. Class A (Flame spread 25 or under) UL labeled.
- (3) Light Reflectance Coefficient. LR 0.85
- (4) Grade. Minimum NRC: 0.55
CAC: Min. 35.0
- (5) Size. 24" x 48" Lay-in
- (6) Thickness. 5/8"
- (7) Edges. Square-cut
- (8) Mounting. Lay-in system, 15/16" exposed tee.
- (9) Finish. White
- (10) Manufacturer. Armstrong, or an approved equal.

(C) Suspension System.

- (1) Lay-in system shall consist of exposed grid of main runner and cross tees.
 - (a) Main runner and cross tees shall be as recommended by the manufacturer of the suspended system, conforming to the structural classification ASTM C 635. Main runners and cross tees shall be cold rolled steel, hot-dipped galvanized and finished in white baked enamel.
 - (b) Angle mounting shall be as recommended by the manufacturer of suspended system, matching carrier and cross tee in metal and finish.
 - (c) Wall moldings and trims shall be shapes as indicated on the drawings, of steel with baked-on vinyl enamel finish (white), to match suspension system. Wall moldings and trim shall be treated and protected against corrosion and rust.

667.06 Inspection and Preparation Work.

(A) Surfaces to receive acoustical units shall be dry, level, and free from irregularities. The Acoustical Contractor shall be responsible for the examination and acceptance of all surfaces and conditions affecting the installation of his work. Start of his work shall constitute acceptance of all conditions. Unsatisfactory conditions shall be reported to the Contractor so that corrective measures can be taken.

(B) Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid the use of less-than-half width units at borders and comply with reflected ceiling plans wherever possible.

667.07 Installation.

(A) **General.** Install materials in accordance with manufacturer's printed instructions, and to comply with governing regulations, fire resistance rating requirements as indicated, and industry standards applicable to the work. Installation shall comply with the Recommended Standards for Seismic Restraint of Direct-Hung Suspended Ceiling Assemblies, by the Ceilings & Interior System Construction Association (CISCA).

(B) Arrange acoustical units and orient directionally-patterned units as indicated.

(C) Install suspension systems to comply with ASTM C 636, with hangers supported only from building structural members as indicated. Locate hangers near each end and spaced as required, but not less than 4'-0" along each carrying channel or direct-hung runners, unless otherwise indicated.

(1) Secure wire hangers by looping and wire-tying, either directly to structures or to inserts, eye-screws or other devices which are secure and appropriate for the substrate, and which will not deteriorate or fail with age or elevated temperatures.

(D) Install edge moldings of the type indicated at edges of each acoustical ceiling area, and at locations where edge of units would otherwise be exposed after completion of the work.

(1) Secure moldings to building construction by fastening with screw-anchors into the substrate, through holes drilled in vertical leg. Space holes not more than 3" from each end and not more than 16" o.c. along each molding.

(2) Level moldings with ceiling suspension system, to a level tolerance of 1/8" in 12'-0".

(3) Miter corners of moldings accurately to provide hair-line joints, securely connected to prevent dislocation.

(E) Cope exposed flanges of intersecting suspension system members, so that flange faces will be flush (cope flange of member supported by other member).

(F) Install lay-in tile panels in coordination with suspension system, with edges concealed by support of suspension members.

(1) Install edge trim moldings where indicated and as needed to conceal edges of acoustical panels which would otherwise be exposed to view after completion of the work. Anchor with fasteners or, if not possible, secure with permanent adhesive.

(2) Install retention hold-down clips at all panels adjacent to exterior window walls and doors, and as recommended by the manufacturer to prevent panel up-lift.

667.08 Cleaning and Rejection.

(A) The Contractor shall exercise all necessary precautions to avoid damaging or soiling the units. Final appearance shall be to the satisfaction of the State. All damaged units shall be replaced with new units by the Contractor.

(B) The following defects shall also be cause for rejection or replacement at the Contractor's expense:

(1) Uneven joints or unaligned surfaces.

(2) Soiled tiles not cleaned to original condition.

(3) Fractures, cracks or corner chips.

(4) Color variation.

(5) Loose or fallen tiles.

(6) Structurally unsound suspended system.

(7) Damaged suspended system.

(8) Warping, buckling, or sagging of acoustic board.

667.09 Measurement and Payment.

(A) Acoustical Ceilings work shall not be paid separately but shall be considered incidental to the construction of the Truck Weigh Station, in the Proposal Schedule.

END OF SECTION 667”

1 Make the following section a part of the Standard Specifications:
2
3

4 **“SECTION 668 – RESILIENT TILE FLOOR**
5

6 **668.01 General Conditions.**
7

8 **(A)** The General Conditions, the Special Provisions, and all other
9 applicable documents preceding these specifications shall govern all work
10 specified hereinafter in all Divisions and Sections.
11

12 **668.02 Summary.**
13

14 **(A)** Provide resilient flooring and base where indicated on the drawings
15 and as specified herein.
16

17 **668.03 Submittals.**
18

19 **(A) Submit in accordance with Section 105.02 – Submittals.**
20

21 **(1)** Samples of floor tiles shall be submitted to the Engineer for
22 color and/or pattern selection.
23

24 **(2)** Manufacturer's product literature and installation instructions.
25

26 **(3)** Floor wax product literature.
27

28 **668.04 Materials.**
29

30 **(A) Vinyl composition tile** shall be asbestos free, 12 in. x 12 in. x 1/8"
31 thick, or other sizes as required to match existing, conforming to ASTM
32 F1066, Composition 1 (non-asbestos formulated), Class 2 (through
33 pattern tile), with a smooth wearing surface, factory waxed with a
34 minimum light reflectance of 30%. Colors and pattern shall match existing
35 or as selected by the Engineer.
36

37 **(B) Cove base** shall be vinyl or rubber, 4 in. high, top-set type, 1/8"
38 thick, with a smooth exposed surface and textured bonding surface on its
39 unexposed face, or as required to match existing resilient base. The
40 rubber or vinyl material shall be free from offensive odor and its color shall
41 be uniform throughout the thickness of the base. Color shall match
42 existing or as selected by the Engineer.
43

44 **(C) Adhesives** shall be water-resistant type, as recommended by the
45 manufacturer for the specific materials used. Do not use adhesive not
46 intended for its purpose.

(D) **Patching and leveling compounds** shall be latex-modified, Portland cement-based formulation unless otherwise required by the flooring manufacturer for the applications indicated. Gypsum based compounds shall not be used.

668.05 Delivery and Storage.

(A) Materials shall be delivered to the jobsite in original unopened containers marked with grade and manufacturer's brand name. Handle and store materials carefully.

668.06 Examination of Subfloors.

(A) The Installer shall examine the subfloors where the flooring materials will be installed for compliance with the flooring manufacturer's requirements. Installation shall not proceed until unsatisfactory conditions have been corrected. Proceeding with installation will indicate acceptance of the subfloor condition by the Installer and the Installer shall take full responsibility of the installation performance of the flooring materials.

668.07 Preparation of Subfloors.

(A) **General.** Comply with the flooring material manufacturer's installation instructions for the preparation of subfloors to receive resilient flooring. Bond and moisture tests, if required, shall be performed by the Installer at no additional costs to the State. Tests, if required, shall be scheduled with the Engineer, and reports of test results shall be copied to the Engineer.

(B) Unless otherwise required by the flooring manufacturer, the subfloor shall be broomed, wet mopped and scrubbed until it is free from dust, dirt, grease or other foreign material. It shall also be scraped to make the surface smooth and level.

(C) The concrete subfloor shall be free of all materials that may interfere with adhesive bond and shall be clean, dry and smooth before tiles are laid. Defects such as ridges, holes, and cracks shall be reported to the Contractor so that corrective measures can be taken. Cracks and depressions shall be filled with patching/leveling compounds approved by the flooring or adhesive manufacturer.

(D) A calcium chloride test shall be conducted to verify the moisture and calcium chloride levels in the concrete slab. Tests following the requirements of the Rubber Manufacturer's Association for Moisture Emission shall be conducted at a minimum 1 test per 2000 s.f. of floor

area. If tested levels exceed the adhesive or flooring manufacturer's requirements, or 3.0 pounds per 1,000 sf. per 24 hours, notify the Engineer for further instructions. Do not proceed with the installation of the adhesive or flooring. Provide copies of the test results to the Engineer.

(E) For concrete floor slab on grade, in areas to receive resilient floor tiles, should the calcium chloride test provide results not meeting the requirements of the flooring and/or adhesive manufacturer's specifications, special drying procedures (i.e. fans, heat, etc.) may be directed by the Engineer in addition to additional calcium chloride tests.

(F) If flooring adhesive or floor tile is laid on defective subfloors, such tile shall be removed, the subfloor defects corrected. Replacement and reinstallation of adhesives and floor tiles shall be at no additional cost to the State.

668.08 Project Conditions.

(A) Flooring materials and the spaces to receive flooring materials shall be conditioned in accordance with the flooring manufacturer's recommendation and instructions.

(B) Provide adequate ventilation to remove moisture and fumes from the areas where floor tiles are being installed.

668.09 Installation of Materials.

(A) See plans for locations where flooring is required.

(B) All work shall be done by experienced tradesmen in strict accordance with recommended specifications of the respective manufacturer. Where not contrary to manufacturer's recommendations, adhesive shall be applied with a notched trowel in a thin and even coat. Tiles shall be laid with tight joints in true alignment both ways. They shall be cut to fit accurately at joining with other materials, at vertical surfaces and/or with existing flooring. The underside of the tiles shall be heated if necessary to obtain satisfactory bond to the subfloor.

(C) Tiles shall be laid to be symmetrical about the center point of the room or as indicated on the drawings. All field installation shall be with full tiles only. Install cut tiles only at perimeter conditions to complete installation.

(D) Resilient base shall be applied onto thoroughly-dried walls with base adhesive only. Because of the thermoplastic character of vinyl base,

care shall be taken not to stretch it during installation since it will shrink and leave a gap at joints. The top and bottom edges shall be in firm contact with the wall and floor. Pre-molded interior and exterior corners shall be used unless otherwise approved by the Engineer. If corners are formed on the job, the wrap around from the corner shall be not less than 12 inches long. Otherwise, the cove base shall be continuous around the corners.

668.10 Cleaning and Protection.

(A) Spots of adhesive shall be removed immediately as work progresses. Floor shall not be washed or waxed until the adhesive has completely set, and in no case until after the minimum length of time recommended by the manufacturer has elapsed. The flooring shall be cleaned with a neutral cleaner recommended by the manufacturer and then mopped with clear water. Flooding of the floor is not permitted.

(B) After the flooring repair has completely dried, apply wax and buff to a smooth shinny finish per the flooring and wax manufacturer's instructions and recommendations to match the existing flooring. Wax shall be Johnson "Complete Floor Finish Wax", Butcher's "Mainstay Floor Finish Wax", or Spartan "On an On Floor Finish Wax".

668.11 Measurement and Payment.

(A) Resilient Tile Floor work shall not be paid separately but shall be considered incidental to the construction of the Truck Weigh Station, in the Proposal Schedule.

END OF SECTION 668"

1 Make the following section a part of the Standard Specifications:
2
3

4 **“SECTION 669 – CERAMIC TILE**
5

6 **669.01 General Conditions.**
7

8 (A) The General Conditions, the Special Provisions, and all other
9 applicable documents preceding these specifications shall govern all work
10 specified hereinafter in all Divisions and Sections.
11

12 **669.02 Summary.**
13

14 (A) Provide ceramic wall and floor tiles, as indicated on the drawings
15 and as specified herein.
16

17 **669.03 Performance Requirements.**
18

19 (A) **Static Coefficient of Friction.** Tile on walkway surfaces shall be
20 provided with the following values as determined by testing in
21 conformance with ASTM C 1028.
22

23 (1) **Level Surfaces.** Minimum of 0.6 (Wet).
24

25 (2) **Step Treads.** Minimum of 0.6 (Wet).
26

27 (3) **Ramp Surfaces.** Minimum of 0.8 (Wet).
28

29 **669.04 Submittals.**
30

31 (A) **Submit in accordance with Section 105.02 – Submittals.**
32

33 (1) **Samples.** Samples of ceramic tiles required shall be
34 submitted to the Engineer for approval and for color and pattern
35 selection. Samples shall be identified as to grade and
36 manufacturer. The full manufacturer's color selector board shall be
37 submitted.
38

39 (2) **Manufacturer's product specifications** including certificate of
40 compliance to ANSI A137.1
41

42 (3) **Submit installation specifications** complying with ANSI A108.
43

44 (4) **Certificate.** Before installation of ceramic tile, the Standard
45 Form of Master Grade Certificate signed by the Contractor and
46 Manufacturer stating grade and kind of tile shall be submitted to the

Engineer. All packages of tile shall be delivered to the job in sealed cartons bearing grade seals in conformance with U.S. Department of Commerce Simplified Practice Recommendation R61-61.

669.05 Materials.

(A) The following ceramic wall tiles and ceramic floor tiles are as manufactured by Dal-Tile to establish minimal acceptable qualities. The products of other manufacturers are acceptable provided they meet or exceed the material and construction requirements specified herein and have been pre-approved by an Addendum.

(B) Ceramic Wall Tiles. Standard grade, complying with ANSI A137.1.

(1) Ceramic wall tile and trims shall be dust-pressed, white non-vitreous body, semi-cushion edges and bright glazed finish.

(a) Field tile. 4-1/4" x 4-1/4" x 5/16" thick glazed wall tile, price group 2, "Semi-gloss" as manufactured by Dal-Tile or pre-approved equal.

(b) Accent tile. 4-1/4" x 4-1/4" x 5/16" thick glazed wall tile, price group 2, "Semi-gloss" as manufactured by Dal-Tile or pre-approved equal.

(2) Other shapes such as top and bottom trims for surface bullnose and cove base corners, etc. shall be provided to achieve a neat complete installation.

(3) Colors shall be as indicated on the drawings and/or as selected by the Engineer.

(C) Ceramic Floor Tile. Standard grade, complying with ANSI A137.1.

(1) Ceramic floor tile shall be 2" x 2" x 5/16" thick with semi-cushion edges and unglazed finish, porcelain ceramic mosaic, price group 2, "Keystones" as manufactured by Dal-Tile or pre-approved equal.

(2) Colors shall be as indicated on the drawings and/or as selected by the Engineer.

(D) Pointing Grout for Ceramic Tile. Commercial 100% solid epoxy tile grout, color as selected by the Engineer.

(E) **Waterproof Membrane.** CPE 0.030" thick sheet membrane, "NobleSeal TS" as manufactured by Nobel Company or pre-approved equal. Adhesives and sealants shall be as required by the manufacturer for a complete waterproof installation.

(F) **Water.** Fresh, clean and drinkable.

(G) **Thin-Set Mortar Setting Bed.** Latex-portland cement mortar conforming with ANSI A118.4 or dry-set mortar conforming with ANSI 118.11. Laticrete 254 Platinum Multipurpose Thin-Set Mortar or approved equal.

669.06 Preparation.

(A) Inspect, clean and repair/prepare all surfaces to receive new ceramic tile.

(B) Coordinate work with other trades as necessary.

669.07 Installation.

(A) **Waterproofing Membrane.** Install in strict accordance with the manufacturer's printed instructions and recommendations, utilizing manufacturer approved adhesives and components for a complete waterproof installation. Prep all surfaces waterproofing sheet membrane to be installed per manufacturer's instructions and recommendations.

(B) **Ceramic Tile.**

(1) Installation shall be in accordance with ANSI A108.1 for floor tile. Work shall be carefully laid out in an endeavor to match the repair area. If cutting is necessary, all cut ends shall be rubbed smooth and even.

(C) **Grouting and Pointing of Joints.** Joints shall be saturated with water and then grouted with a prepared tile grout mixed to a uniform creamy consistency by forcing the grout into the joints to the full depth. Match colors to existing. Take special care not to scratch glazed tile during this operation. Remove surplus grout before it has hardened and leave the face of the tile clean. Tool joints of cushion edge tile to depth of cushion.

(D) **Cleaning.** Upon completion of tile work, remove all rubbish, unused material, etc, and give the finished surface a thorough cleaning. Do not use acid solution on glazed tile work. Do not permit traffic on tile floors for 24 hours after laying. Thereafter permit no traffic unless floors

are covered with heavy paper. Leave finished tile work clean and free from cracked, chipped or broken tile. Protect tile work and threshold until acceptance of project.

669.08 Measurement and Payment.

(A) Ceramic Tile work shall not be paid separately but shall be considered incidental to the construction of the Truck Weigh Station, in the Proposal Schedule.

END OF SECTION 669”

1 Make the following section a part of the Standard Specifications:
2
3

4 **“SECTION 670 – PAINTING**
5

6 **670.01 General Conditions.**
7

8 **(A)** The General Conditions, the Special Provisions, and all other
9 applicable documents preceding these specifications shall govern all work
10 specified hereinafter in all Divisions and Sections.
11

12 **670.02 Summary.**
13

14 **(A)** Paint all surfaces as shown on the drawings and as specified
15 herein.
16

17 **(B)** This Section includes surface preparation and field painting of new
18 and renovated exterior and interior items and surfaces, and the repainting
19 of all exterior and interior painted surfaces.
20

21 **(1)** Surface preparation, priming, and finish coats specified in
22 this Section are in addition to shop priming and surface treatment
23 specified in other Sections.
24

25 **(C)** Paint exposed surfaces, except where these Specifications indicate
26 that the surface or material is not to be painted or is to remain natural. If
27 an item or a surface is not specifically mentioned, paint the item or surface
28 the same as similar adjacent materials or surfaces. If a color of finish is
29 not indicated, the Engineer will select from standard colors and finishes
30 available.
31

32 **(1)** Interior and Exterior surfaces scheduled to be finished.
33

34 **(2)** Non-Ferrous metals, plated or factory finished items
35 specifically noted to be painted or when such items occur as
36 accessories and appurtenance to surfaces required to be painted.
37

38 **(3)** Pipes, conduit, ducts, support apparatus and other exposed
39 items in areas to be painted.
40

41 **(D)** Surfaces not to be finished, unless otherwise indicated.
42

43 **(1)** Concrete floors, paving walks stairs and textured concrete.
44 Other concrete surfaces scheduled not to be painted.
45

46 **(2)** Finish hardware, unless prime coated.

(3) Plastic laminate, and ceramic tile.

(4) Flooring and floor coverings.

(5) Plumbing and lighting fixtures, and electrical device plates.

(E) Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.

(1) **Prefinished items include the following factory-finished components.**

(a) Architectural woodwork.

(b) Metal, phenolic, or plastic toilet enclosures.

(c) Light fixtures.

(2) **Concealed surfaces include walls or ceilings in the following generally inaccessible spaces.**

(a) Furred areas.

(b) Pipe spaces.

(c) Duct shafts.

(3) **Finished metal surfaces include the following.**

a) Anodized aluminum.

b) Stainless steel.

c) Chromium plate.

d) Copper and copper alloys.

e) Bronze and brass.

(4) **Labels.** Do not paint over UL, FMG, or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.

670.03 Related Sections.

(A) Divisions 15 and 16, identification marking of painting of mechanical and electrical equipment and apparatus.

670.04 References.

(A) ASTM D16 - Definition of terms relating to Paint, Varnish, Lacquer and Related Products.

(B) ASTM D2016 - Test Method for Moisture Content of Wood.

(C) MPI (Master Painter's Institute) - Approved Product List.

(D) PDCA (Painting and Decorating Contractors of America - Painting – Architectural Specification Manual.

(E) PCA (Portland Cement Association) - Painting Concrete.

(F) SSPC (Steel Structures Painting Council) - Steel Structures Painting Manual.

670.05 Definitions.

(A) **General.** Standard coating terms defined in ASTM D 16 apply to this Section.

670.06 Submittals.

(A) **Submit in accordance with Section 105.02 – Submittals.**

(1) **Product Data.**

(a) **Materials List.** Provide an inclusive list of required patching and coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.

(i) For products with premixed colors, provide manufacturer's standard color chips for selection by the Engineer.

(2) **Manufacturer's Information.** Provide data on all listed materials, including.

(a) Thinning and mixing instructions

(b) Application instructions and required mil film thicknesses.

(c) Manufacturer's Material Safety Data Sheets.

(3) **Certifications.** Provide a letter certifying paints and coatings are free of asbestos, lead, zinc-chromate, strontium chromate, cadmium, mercury, crystalline silica and other EPA regulated and hazardous materials. Provide a letter certifying the amounts of

mildewcide added by both the paint manufacturer and paint supplier.

(4) Schedule of Finishes. Provide finish schedule including paint spread rates required to achieve final dry film thickness indicated in the schedule.

(5) Schedule of Operations. Provide a work schedule showing sequence of operation and installation dates.

(6) Samples.

(a) It is the intent for all painting required in the section to match the existing adjoining painted surfaces as close as possible in color and finish. Therefore, samples shall not be required.

(7) Manufacturer's Instructions. Indicate special surface preparation procedures, and substrate conditions requiring special attention. Refer to paragraph 3.01, EXAMINATION.

670.07 Quality Assurance.

(A) Applicator Qualifications. A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.

(B) Source Limitations. All block fillers and primers for each coating system shall be from the same manufacturer as the finish coats or as approved by the manufacturer for use with the finish coats.

670.08 Regulatory Requirements.

(A) Comply with State OSHL (Occupational Safety and Health Law) and pollution control regulations of the State Department of Health and EPA.

670.09 Delivery, Storage, and Handling.

(A) Deliver materials to Project site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label and the following information:

(1) Product name or title of material.

(2) Product description (generic classification or binder type).

(3) Manufacturer's brand name and lot number and date of manufacture.

(4) Contents by volume, for pigment and vehicle constituents.

(5) Thinning instructions.

(6) Application instructions and coverage.

(7) Color name and number.

(8) VOC content.

(B) Storage.

(1) **Non-flammable Materials.** Store materials not in use in tightly covered containers in a well-ventilated area. Maintain storage containers in a clean condition, free of foreign materials and residue.

(2) Flammable Materials.

(a) Store in such a manner as to prevent damage. No paint material, empty cans, paint brushes and rollers may be stored in the building(s). Store these items in separate storage facilities away from the building(s). Contractor may furnish a separate job site storage structure, if the structure complies with the requirements of the local Fire Department. Keep the storage area shall clean. Lock any storage structures when not in use or when no visual supervision is possible.

(b) All rejected materials shall be removed from the job site immediately.

670.10 Project Conditions.

(A) Do not apply materials when surfaces and ambient temperatures are outside the ranges required by the paint product manufacturer. Do not apply exterior coatings during rain or when relative humidity is outside the humidity ranges required by the paint product manufacturer.

(B) Protect public, pedestrians and staff from injury. Provided, erect and maintain safety barricades around scaffolds, hoists and where

constriction operations create hazardous conditions.

(C) Completed Work. Provide necessary protection for wet paint surfaces.

(D) Protective Covering and Enclosures. Provide and install clean sanitary drop cloth or plastic sheets to protect furniture, equipment, floor and other areas that are not scheduled for treatment. Remove any paint applied to surfaces not scheduled for treatment.

(E) Fire Safety. Contractor and its employees shall not smoke in the vicinity of the paint storage area. Exercise precautions against fire at all times and remove waste rags, plastic (polyester sheets), empty cans, etc. from the site at the end of each day.

(F) Safeguarding Property. Safeguard the work and also the property of the State and other individuals in the vicinity of Contractor's work. Make good on any damages and for losses to work or property caused by Contractor or its employee's negligence. Where damaged property cannot be cleaned and restored to its original condition (i.e. prior to being damaged) replace it with a new product of equal quality. No prorating or use of "used" products will be permitted.

670.11 Extra Materials.

(A) Provide extra paint in each of the different colors, types and surface textures of exterior and interior paint to the user upon completion of the project. Paint shall be in unopened one-gallon containers and labeled with color, type, texture, room locations, and date in addition to manufacturer's label.

(1) Provide 1 gallon of each color for all other areas.

670.12 Warranty.

(A) Provide a two-year guarantee that the work performed under this section conforms to the contract requirements and is free of any defect of material or workmanship.

670.13 Paint Materials, General.

(A) Material Compatibility. Provide block fillers, primers, and finish-coat materials that are compatible with one another and with the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

(B) Mildewcide.

(1) Except for metal primers, provide primer and finish coats with suitable chemical mildewcide to the maximum amount of mildewcide per gallon of paint permitted by the mildewcide manufacturer without adversely affecting the quality of the paint, but not less than one ounce per gallon.

(C) Material Quality. Provide manufacturer's best-quality paint material of the various coating types specified that are factory formulated and recommended by manufacturer for application indicated. Paint-material containers not displaying manufacturer's product identification will not be acceptable.

(1) Furnish manufacturer's material data and certificates of performance for proposed products to be used.

(2) **Equivalency.** Equivalent products to the specified products are listed in the Master Painter's Institute's "Architectural Painting Specification Manual."

(3) **Substitution.** Only manufacturers listed on the "MPI Approved Product List" will be evaluated for equivalency.

(D) Colors. Paint colors shall match the existing as close as possible or as otherwise directed by the Engineer.

(E) EPA Regulated and Hazard Materials. Do not use paint or paint products containing lead, mercury, zinc chromates, strontium-chromate, cadmium or the EPA regulated or hazard materials.

670.14 Miscellaneous Materials.

(A) Provide patching and repair materials. Compatible with paint finishes and substrates. Use weather resistant materials for exterior surfaces and surfaces exposed to moisture.

(B) Accessories.

(1) **General.** Provide other materials not specifically indicated but required to achieve the finishes specified, of commercial quality.

(2) **Thinners.** Thinning of paint shall be done using material recommended by the manufacturer. Mix proprietary products according to manufacturer's requirements. Do not use compound

thinner, mineral oil, kerosene, refined linseed oil, or gasoline for thinning.

670.15 Examination.

(A) Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for paint application. Comply with procedures specified in PDCA P4.

(1) Proceed with paint application only after unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.

(a) Ensure that concrete and masonry surfaces are cured and dried to comply with the paint manufacturer's recommendations.

(2) Start of painting will be construed as Applicator's acceptance of surfaces and conditions within a particular area.

(B) Coordination of Work. Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.

(1) Notify the Engineer about anticipated problems when using the materials specified over substrates primed by others.

670.16 Preparation.

(A) General. Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of size or weight of the item, provide surface-applied protection before surface preparation and painting.

(1) After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.

(B) Cleaning. Before applying paint or other surface treatments, clean substrates of substances that could impair bond of the various coatings. Remove dust, oil and grease before cleaning.

(1) Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

(C) **Surface Preparation.** Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.

- (1) Provide barrier coats over incompatible primers or remove and reprime.

(D) **Surface Preparation Cementitious Materials.** Prepare concrete, concrete unit masonry, cement plaster, and mineral-fiber-reinforced cement panel surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.

- (1) Use abrasive blast-cleaning methods if recommended by paint manufacturer.

- (2) Determine alkalinity and moisture content of surfaces by performing appropriate tests. Submit test results to the Engineer.

- (a) Prior to painting, concrete and masonry surfaces shall be allowed to cure and dry in accordance with the paint manufacturer's instructions and recommendations.

- (b) Efflorescence and laitance shall be removed from the surface.

- (c) Prior to paint application, interior and exterior concrete and masonry (including grout joints) scheduled to receive paint shall be tested to determine the alkalinity level of the surface. Testing shall be performed in strict accordance with the test kit manufacturer's instructions. Submit test results to the Engineer.

- (d) Where the alkalinity level exceeds the pH level limit of the primer take one of the following three remedies at no additional cost to the State.

- (i) If new concrete or masonry, wait until alkaline level has dropped below the limit.

- (ii) Substitute a primer that is able to resist the measured alkalinity and that is compatible with the paint finish. Alkyd based primers and top-coats or

epoxy ester primers shall not be used. Submit the substitute primer to the Engineer for review.

(iii) Neutralize the surface in accordance with the primer manufacturer's instructions to reduce the alkaline level. However, acid washing is not permitted where the surface has been finished with a cementitious coating.

(3) Clean concrete floors to be painted with a 5 percent solution of muriatic acid or other etching cleaner. Flush the floor with clean water to remove acid, neutralize with ammonia, rinse, allow to dry, and vacuum before painting.

(E) Surface Preparation Wood. Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.

(1) Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.

(2) Prime, stain, or seal wood to be painted immediately on delivery. Prime edges, ends, faces, undersides, and back sides of wood, including cabinets, counters, cases, and paneling.

(3) If transparent finish is required, backprime with spar varnish.

(4) Backprime paneling on interior partitions where masonry, plaster, or other wet wall construction occurs on back side.

(5) Seal tops, bottoms, and cutouts of unprimed wood doors with a heavy coat of varnish or sealer immediately on delivery.

(F) Surface Preparation Ferrous Metals. Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with SSPC's recommendations.

(1) Blast steel surfaces clean as recommended by paint system manufacturer.

(2) Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before priming.

(3) Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with same primer as the shop coat.

(G) Surface Preparation Galvanized Surfaces. Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.

(H) Material Preparation. Mix and prepare paint materials according to manufacturer's written instructions.

(1) Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.

(2) Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.

(3) Use only thinners approved by paint manufacturer and only within recommended limits.

(I) Tinting. Tint each undercoat a lighter shade to simplify identification of each coat when multiple coats of same material are applied. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

670.17 Application.

(A) General. Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.

(1) Paint colors, surface treatments, and finishes are indicated in the paint schedules.

(2) Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.

(3) Provide finish coats that are compatible with primers used.

(4) The term “exposed surfaces” includes areas visible when permanent or built-in fixtures, grilles, and similar components are in place. Extend coatings in these areas, as required, to maintain system integrity and provide desired protection.

(5) Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only unless otherwise noted.

(6) Paint back sides of access panels and removable or hinged covers to match exposed surfaces.

(7) Finish exterior doors on tops, bottoms, and side edges the same as exterior faces.

(8) Finish interior of wall and base cabinets and similar field-finished casework to match exterior.

(9) Sand lightly between each succeeding enamel or varnish coat.

(10) Ensure primers are top coated within the times required by the paint manufacturers. Top coats not applied within the recoating window may be rejected.

(B) Scheduling Painting. Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

(1) The number of coats and film thickness required are the same regardless of application method. Do not apply succeeding coats until previous coat has cured as recommended by manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer’s written instructions, sand between applications.

(2) If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure that edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.

(3) Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm and does not deform or feel sticky under moderate

thumb pressure, and until application of another coat of paint does not cause undercoat to lift or lose adhesion.

(C) Application Procedures. Apply paints and coatings by brush or roller only.

(1) Brushes. Use brushes best suited for type of material applied. Use brush of appropriate size for surface or item being painted.

(2) Rollers. Use rollers of carpet, velvet-back, or high-pile sheep's wool as recommended by manufacturer for material and texture required.

(D) Minimum Coating Thickness. Apply paint materials no thinner than manufacturer's recommended spreading rate to achieve dry film thickness indicated. Provide total dry film thickness of the entire system as recommended by manufacturer.

(E) Mechanical and Electrical Work. Painting of mechanical and electrical work is limited to items exposed in equipment rooms and occupied spaces.

(F) Block Fillers. Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.

(G) Prime Coats. Before applying finish coats, apply a prime coat, as recommended by manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn-through or other defects due to insufficient sealing.

(H) Pigmented (Opaque) Finishes. Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.

(I) Completed Work. Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

670.18 Field Quality Control Testing.

(A) Inspection and Approvals. If required by the Engineer, obtain written approval upon completion of each phase of work (phases of work are: surface preparation and spot prime, prime, first finish coat, second finish coat) before proceeding into the next phase or work. For any particular area of work that deviates from the submitted work schedule, notify the Engineer one day (24 hours minimum) in advance when completing any phase of work. Provide access to areas to be inspected.

(1) Failure to obtain approval of any phase of work for a work area may result in redoing the operation at no cost to the State.

(2) Right of Rejection. Non-conforming work will be rejected by the Engineer. Remove rejected material from the job site immediately. Redo rejected work at no cost to the State.

(B) Thickness Testing. The Engineer may require all paints and their applied thickness tested to determine compliance with the Contract Documents. The State will select a laboratory, and the cost of testing shall be borne by the Contractor.

(1) Where the required paint thickness is deficient, provide additional coats to the affected surface(s) to meet the required paint thickness.

(C) Moisture Testing. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces is below the following maximums:

(1) Plaster and Gypsum Wallboard. 12 percent.

(2) Masonry, Concrete, and Concrete Unit Masonry. 12 percent.

(3) Interior Wood. 15 percent, measured in accordance with ASTM D2016.

(4) Exterior Wood. 15 percent, measured in accordance with ASTM D2016.

(D) Alkalinity Testing. Measure pH Level of surface to be painted. Notify the Engineer if alkalinity level is below the maximum permitted by the paint or primer manufacturer.

(1) Tests shall be paid by Contractor.

(E) **Adhesion Testing.**

(1) Provide adhesion testing per ASTM D3759 Test B (x scratch peel test).

(a) Test after each scheduled paint coat.

(b) Should test fail, remove paint, prepare surface, then recoat and test again.

(2) Testing shall be performed by a NACE certified inspector selected by the State. The cost of testing shall be borne by the Contractor.

670.19 Cleaning.

(A) **Cleanup.** At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from Project site.

(1) After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping without scratching or damaging adjacent finished surfaces.

670.20 Protection.

(A) Protect work of other trades, whether being painted or not, against damage from painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by the Engineer.

(B) Provide "Wet Paint" signs to protect newly painted finishes. After completing painting operations, remove temporary protective wrappings provided by others to protect their work.

(1) After work of other trades is complete, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

670.21 Exterior Paint Schedule.

(A) **Concrete.** Provide the following finish systems over exterior concrete.

(1) **Latex Finish.** Two finish coats over intermediate coat over primer.

(a) **Primer.** Exterior concrete and masonry alkali resistant

primer. MPI #3

(b) Intermediate. 1 coat PPG 4-110 Perma-Crete Pitt-Flex Elastomeric coating or approved equal (No MPI)

(c) Finish. 2 coats exterior latex paint, MPI #11

(d) Finish Coat Gloss Level. Semi-gloss

(B) Concrete Unit Masonry. Provide the following finish systems over exterior concrete unit masonry.

(1) Latex Finish. Two finish coats over intermediate coat over a block filler.

(a) Block Filler. Concrete unit masonry block filler: MPI #4

(b) Intermediate. 1 coat PPG 4-110 Perma-Crete Pitt-Flex Elastomeric coating or approved equal (No MPI)

(c) Finish. 2 coats exterior latex paint. MPI #11

(d) Finish Coat Gloss Level. Semi-gloss

(C) Zinc-Coated Metal. Provide the following finish systems over exterior zinc-coated metal surfaces.

(1) Latex Finish. Two finish coats over a galvanized metal primer.

(a) Primer. Exterior galvanized metal primer. MPI #135.

(b) Finish Coats. 2 coats exterior latex paint. MPI #11.

(c) Finish Coat Gloss Level. Semi-gloss or to match existing wall finish.

(D) Wood (Opaque). Provide the following finish systems over exterior wood surfaces.

(1) Latex Finish. Two finish coats over primer.

(a) Primer. Bonding primer. MPI #17

(b) Finish Coats. 2 coats exterior latex paint. MPI #54.

(c) **Finish Coat Gloss Level.** semi-gloss

(E) Dry film thickness of all paint products shall be per the manufacturer's recommendations.

670.22 Interior Paint Schedule.

(A) **Concrete.** Provide the following paint systems over interior concrete substrates.

(1) **Latex Finish.** Two finish coats over a primer.

(a) **Primer.** Interior concrete and masonry primer. MPI #3.

(b) **Finish Coats.** 2 coats interior latex paint. MPI #54.

(c) **Finish Coat Gloss Level.** semi-gloss or to match existing.

(B) **Gypsum Wallboard.** Provide the following finish systems over interior gypsum board surfaces.

(1) **Latex Finish.** Two finish coats over a primer.

(a) **Primer.** Bonding primer. MPI #17.

(b) **Finish Coats.** 2 coats interior latex paint. MPI #54.

(c) **Finish Coat Gloss Level.** Semi-gloss or to match existing.

(C) **Zinc-Coated Metal.** Provide the following finish systems over interior zinc-coated metal surfaces.

(1) **Latex Finish.** Two finish coats over a primer.

(a) **Primer.** Interior zinc-coated metal primer. MPI #134.

(b) **Finish Coats.** 2 coats interior latex paint. MPI #54.

(c) **Finish Coat Gloss Level.** semi-gloss or to match existing wall finish.

(D) **Wood (Opaque).** Provide the following finish systems over exterior wood surfaces.

(1) **Latex Finish.** Two finish coats over primer.

(a) **Primer.** Bonding primer. MPI #17

(b) **Finish Coats.** 2 coats exterior latex paint. MPI #54.

(c) **Finish Coat Gloss Level.** Semi-gloss

(E) Dry film thickness of all paint products shall be per the manufacturer's recommendations.

670.23 Measurement and Payment.

(A) Painting work shall not be paid separately but shall be considered incidental to the construction of the Truck Weigh Station, in the Proposal Schedule.

END OF SECTION 670"

1 Make the following section a part of the Standard Specifications:
2
3

4 **“SECTION 671 – MISCELLANEOUS SPECIALTIES**
5

6 **671.01 General Conditions.**
7

8 (A) The General Conditions, the Special Provisions, and all other
9 applicable documents preceding these specifications shall govern all work
10 specified hereinafter in all Divisions and Sections.
11

12 **671.02 Summary.**
13

14 (A) Provide all items of building specialties as shown on the drawings,
15 and as specified herein. Items shall include, but are not limited to, the
16 following.
17

18 (1) Toilet accessories.
19

20 (2) Room Signs.
21

22 (B) Toilet accessories and room signs required to be accessible shall
23 comply to HRS §103-50.
24

25 **671.03 Submittals.**
26

27 (A) **Submit in accordance with Section 105.02 – Submittals.**
28

29 (1) **Manufacturer's Data.** Submit manufacturer's descriptive
30 literature and specifications to the Engineer for approval.
31

32 (2) Submit six (6) sets of toilet accessories, and room signs
33 schedule including locations, mounting heights and details.
34

35 **671.04 Toilet Accessories.**
36

37 (A) The following specified items are as manufactured by Bobrick
38 Washroom Equipment Inc. to establish minimum acceptable quality.
39

40 (B) The products of other manufacturers are acceptable provided they
41 meet or exceed the material and construction requirements specified
42 herein and have been pre-approved.
43

44 (1) **Toilet Tissue Dispenser.** Bobrick Model B-4388.
45

46 (2) **Liquid Soap Dispenser.** Bobrick Model B-4112.

(3) **Paper Towel Dispenser.** Bobrick Model B-4262.

(4) **Toilet Seat Cover Dispenser.** Bobrick Model B-221.

(5) **Grab Bars.** Concealed mounting, Bobrick Model 5806 Series.

(6) **Mirror with Stainless Steel Frame.** Bobrick Model B-292 Series, 24" wide x 30" high.

(7) **Mop Holder.** Bobrick Model B-224x36.

671.05 Room Signs.

(A) Room name signs shall be non-ferrous, stamped cast aluminum plates, approximately 3/16" thick, 2" high, with raised, smooth satin finish letters, characters and braille without borders, or, fiberglass, non-corrosive, 3-ply laminate, approximately 3/16" to 1/4" thick, 2" high, with raised, smooth finish letters, characters and braille without borders. Background to be weatherproof enamel baked-on with crackled or other acceptable finish, or, non-glare, fiberglass core color. Characters shall have the following features.

(1) **Depth.** Raised characters and Braille shall be 1/32 inch minimum above their background.

(2) **Case.** Characters shall be uppercase.

(3) **Style.** Characters shall be sans serif. Characters shall not be italic, oblique, scrip, highly decorative, or of other unusual forms.

(4) **Character Proportions.** Characters shall be selected from fonts where the width of the uppercase letter "O" is 55 percent minimum and 110 percent maximum of the height of the uppercase "I".

(5) **Character Height.** Character height measured vertically from the baseline of the character shall be 5/8 inch minimum and 2 inches maximum based on the height of the uppercase letter "I".

(6) **Stroke Thickness.** Stroke thickness of the uppercase letter "I" shall be 15 percent maximum of the height of the character.

(7) **Character Spacing.** Character spacing shall be measured between the two closest points of adjacent raised characters within

a message, excluding work spaces. Where characters have rectangular cross sections, spacing between individual raised characters shall be 1/8 inch minimum and 4 times the raised character stroke width maximum. Where characters have other cross sections, spacing between individual raised characters shall be 1/16 inch minimum and 4 times the raised character stroke width maximum at the base of the cross sections, and 1/8 inch minimum and 4 times the raised character stroke width maximum at the top of the cross sections. Characters shall be separated from raised borders and decorative elements 3/8 inch minimum.

(8) Line Spacing. Spacing between the baselines of separate lines of raised characters within the message shall be 135 percent minimum and 170 percent maximum of the raised character height.

(9) Braille. Braille shall be contracted (Grade 2). Braille dots shall have a domed or rounded shape.

(10) Provide special clear message slots, as indicated on the drawings, with clear top and provisions to allow the insertions of 1/16 inch maximum thickness message strips to be furnished by the users.

(11) Exit signs shall be similar to room signs without clear message slots, having raised text and Grade 2 Braille.

(12) Room Signs shall comply with 2010 ADA Standards Section 703. Colors shall be as selected by the Engineer.

671.06 International Symbol of Accessibility (ISA) and Pictogram Signs.

(A) ISA signs and pictogram signs shall be similar to room signs, without clear message slots, and except that the ISA and pictogram portion of the signs shall be 6" x 6" with proportionate raised handicap symbol. Conform with the 2010 ADA Standards, Section 703.4 and 703.6.

671.07 Installation.

(A) Install specialty items in strict accordance with manufacturer's printed instructions and/or approved shop drawings.

671.08 Measurement and Payment.

(A) Miscellaneous Specialties work shall not be paid separately but shall be considered incidental to the construction of the Truck Weigh Station, in the Proposal Schedule.

END OF SECTION 671”

1 Make the following section a part of the Standard Specifications:
2
3

4 **“SECTION 672 – SUN CONTROL DEVICES**
5

6 **672.01 General Conditions.**
7

8 (A) The General Conditions, the Special Provisions, and all other
9 applicable documents preceding these specifications shall govern all work
10 specified hereinafter in all Divisions and Sections.
11

12 **672.02 Summary.**
13

14 (A) Provide sun control devices as indicated on the drawings and as
15 specified herein.
16

17 **672.03 Submittals.**
18

19 (A) **Submit in accordance with Section 105.02 – Submittals.**
20

21 (1) Submit six (6) sets of complete manufacturer's literature and
22 color samples to the Engineer for approval before any work is
23 fabricated.
24

25 (2) Submit samples of aluminum fabrication and finish to the
26 Engineer for review and approval.
27

28 **672.04 Warranty.**
29

30 (A) Provide written warranty to the Engineer that the sun control
31 devices will be free of defective materials or workmanship for a period of 1
32 year from the date of installation.
33

34 **672.05 Quality Assurance.**
35

36 (A) Manufacturer of sun control devices shall provide certification that
37 they have not less than six (6) years of experience in the design and
38 manufacturer of work similar to that shown on the plans and/or as
39 specified herein.
40

41 (B) **Performance requirements.** Design sun control devices to
42 accommodate local requirements for wind loading. Provide engineering
43 calculations to support design. Calculations shall be by a licensed
44 engineer registered in the State of Hawaii. Analysis of the blade deflection
45 to be limited to L/120, 3/4", or as required by code.
46

(C) Sun control device shall be mechanically assembled. Welded construction is not acceptable. Blades shall be removable for repair or replacement.

672.06 Materials.

(A) The following sun control devices are manufactured by Airlite to provide the minimum material and fabrication quality required. Products of other manufacturers meeting or exceeding the specified product are acceptable.

(B) Sun control devices shall be Model ASC4 having the following minimum design characteristics.

(1) **Blade Type.** Airfoil

(2) **Blade Material.** Extruded Aluminum, Alloy 6063-T5

(3) **Blade Thickness.** 0.081"

(4) **Blade Width.** 4"

(5) **Outrigger Material.** Aluminum Plate, Alloy 6061-T5

(6) **Outrigger Thickness.** 0.250"

(7) **Standard Fascia.** 3" Round Tube

(8) Fasteners shall be stainless steel. Provide types, gauges and lengths to suit installation conditions.

(9) Anchor to concrete walls using stainless steel anchor bolts and lead expansion shields.

(10) Finish shall be 3-coat 70% Kynar 500/Hylar 5000 AAMA 2605 – Dry film thickness 2.0 mil. Color shall be selected by the Engineer to match aluminum window frames.

(C) Fabricate sun control devices in sections.

86
87 **672.07 Installation.**
88

89 (A) All components shall be erected in strict accordance with
90 manufacturer's instructions and/or recommendations unless otherwise
91 specified herein. All parts shall be securely screwed and bolted tight, true
92 to line, level and plumb.
93

94 (B) Install sun control devices after exterior painting of the building has
95 been completed.
96

97 **672.08 Measurement and Payment.**
98

99 (A) Sun Control Devices work shall not be paid separately but shall be
100 considered incidental to the construction of the Truck Weigh Station, in the
101 Proposal Schedule.
102

103 **END OF SECTION 672"**
104

1 Make the following section a part of the Standard Specifications:

2
3 **“SECTION 673 – PLUMBING**

4
5 **673.01 SUMMARY**

6
7 **(A)** Plumbing work to include the removal/demolition of existing
8 plumbing fixtures (including associated plumbing line, supports,
9 accessories, etc.) and replacement with new fixtures as indicated in plans
10 and specifications.

11
12 **673.02 SUBMITTALS**

13
14 **(A)** Submit in accordance with SECTION 105 – CONTROL OF WORK
15 and SECTION 106 MATERIAL RESTRICTIONS AND REQUIREMENTS.

16
17 **(B)** Equipment Submittal: Before beginning work, submit for review
18 certified literature showing dimensions of equipment, of a list indicating
19 manufacturer and model of fixtures and trim, and a list indicating all
20 materials and items that are of a different manufacturer or model than those
21 specified.

22
23 **(C)** Shop Drawings: After review of equipment, submit for review
24 dimensioned installation shop drawings to scale showing details where
25 space requirements present problems, proposed departures from the
26 Contract Documents due to field conditions, and requirements for the
27 concrete work, access panels, inserts in slabs and openings in structure.

28
29 **(D)** As-Built Drawings: Record changes from the contract drawings of all
30 concealed piping. Indicate location of isolating valves and items requiring
31 maintenance or inspection. Dimension underground piping from a visible
32 point on structure. Indicate invert and slope of drainage piping at sufficient
33 location so that the invert can be calculated for any point in the system.
34 Submit field posted as-built drawings for review as required by SECTION
35 648 FIELD-POSTED DRAWINGS.

36
37 **(E)** Certificates: The Contracting Officer shall have the right to require a
38 written certificate, dated and signed by a responsible employee of this
39 Contractor, evidencing the performance of any portion of the work, or any
40 testing; as a condition precedent to the acceptance of any work or the result
41 of any test. Whenever a regulatory agency performs inspections or tests of
42 any portion of the work, a certificate shall be furnished by the Contractor
43 that the inspection or test was satisfactorily passed.
44
45

(F) Warranty: Submit warranty as noted under item entitled "WARRANTY" below.

673.03 QUALITY ASSURANCE

(A) Comply with all the requirements of the County of Honolulu, State of Hawaii.

(B) Obtain and pay for all fees, permits, licenses, assessments, connection charges and inspections required for this work.

(C) Substitution of another manufacturer's product for materials or equipment specified hereinafter and for items with "acceptable equal" after the brand name requires approval. Equivalent models listed in the Index Creations Cross Reference Blue Books as similar need not be qualified. Acceptable equal products of the following manufacturers are acceptable in lieu of those specified hereinafter by specific manufacturer and model number.

(1) Valves: Nibco, Watts, Hammond, Crane, Walworth, Dezurik, Lunkenheimer, or Stockham.

(2) Fixtures: Kohler, Chicago, or American Standard.

(3) Drainage System Specialties: Josam, Zurn, or Smith.

(4) Flush Valves: Sloan, or Delaney.

(5) Pipe Supports: Elcen, Fee and Mason, Grinnell, or Unistrut.

(6) Fixture Trim: Symmons, Speakman, Bradley, Chicago, Elkay, or T&S.

(D) Comply with the recommendations and requirements of the Codes and Standards listed hereinafter in addition to detailed requirements of this specification. In the event of conflicting requirements, this specification shall prevail.

(1) American Society for Testing and Materials (ASTM)
Publications:

A74 Cast Iron Soil Pipe and Fittings

B88 Seamless Copper Water Tube

B306	Copper Drainage Tube (DWV)
C564	Rubber Gaskets for Cast Iron Soil Pipe and Fittings
(2)	American National Standards Institute Publications (ANSI):
B16.18	Cast Copper Alloy Solder-Joint Pressure Fittings
B16.22	Wrought Copper and Copper Alloy Solder Joint Pressure Fittings
B16.23	Cast Copper Alloy Solder Joint Drainage Fittings - DWV
B16.26	Cast Copper Alloy Fittings for Flared Copper Tubes
C2	National Electrical Safety Code
(3)	Cast-Iron Soil Pipe Institute Publication (CISPI):
Standard No. 301	Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications
Standard No. 310	Couplings Joint for Use in Connection with Hubless Cast Iron Soil Pipe and Fitting
(4)	Plumbing and Drainage Institute (PDI) Standards:
PDI-WH-201	Water Hammer Arresters

673.04 PRODUCT DELIVERY, STORAGE AND HANDLING

(A) Furnish new equipment, fixtures, materials and accessories bearing the manufacturer's identification. Coordinate deliveries to avoid interference or construction delays. Protect products during delivery, storage, installation, and the remainder of the construction period after installation.

673.05 WARRANTY

(A) All work in this section shall be guaranteed by the Contractor for a period of one year from the date of project acceptance as a whole. Should any fixture or material fail within this period, this Contractor shall be responsible for all damage to any part of the premises caused by the failure and shall repair or replace the defects at no cost to the State.

673.06 PLUMBING FIXTURES

(A) Provide the following fixtures, where shown on the Drawings, with all trims, chrome plated escutcheon plates, chrome plated P-traps and continuous waste arms, tube risers, and cover plates. Provide supply stops valves in each supply to each fixture. Zinc-alloy or plastic handles shall not be used for faucet and valves. Provide all required items for a complete operational and integral system. Provide safety covers on the exposed drain piping and supply stops for Lavatories/Accessible Lavatories in accordance with the Americans with Disabilities Act Accessibility Guidelines (ADAAG) Section 606.5. The force to operate all accessible fixtures shall not be greater than five (5) pounds in accordance with ADAAG Section 309.4. Brands listed or pre-approved equal.

(1) Accessible Water Closet (AWC): American Standard 3043.001 Madera FloWise, floor mounted, top spud vitreous china, elongated bowl, 1.1-1.6 gallons per flush. Provide American Standard 5901.100 heavy duty solid plastic open front seat less cover. Provide supply, chrome plated flush valve with screwdriver bak-chek angle stop with protective cap and vacuum breaker (maximum 5 lb. actuator). Sloan Royal 111-1.28 Flush Valve. Install flush valve with handle on wide side of stall. Install new accessible water closet as required to comply with ADAAG 2010 Standards for Accessible Design paragraph 604.

(2) Accessible Lavatory (ALAV): Kohler K-2005 wall hung lavatory bowl, Delta 501LF-HGF 4" centers lavatory faucet with maximum 0.5 GPM aerator. Provide floor-supported wall carrier with concealed arms. Provide ADA approved angle stops, risers, offset p-trap, perforated grid strainer, and escutcheons. Provide p-trap and angle stop covers in accordance with ADA requirements. Install new accessible lavatory as required to comply with ADAAG 2010 Standards for Accessible Design paragraph 606.

(3) Accessible Sink (ASK): Elkay Lustertone LRAD1716 top mount, single bowl sink, 17"Lx16"W 18 gauge type 304 nickel bearing, satin finish, stainless steel. Provide with Elkay LK1500

faucet with 1.5 GPM flow control. Provide with Elkay LK-35 conical grid strainer basket with 1-1/2" tailpiece, stainless steel with flex stem and rubber stopper, angle stops, riser, offset drain, p-trap, escutcheons, etc. Provide p-trap guard, offset drain guard, and angle stop covers. Install new accessible sink as required to comply with ADAAG 2010 Standards for Accessible Design paragraph 606.

(4) Accessible Electric Water Cooler (AEWC): Elkay VRCGRNTL8C high efficiency bi-level wall mount vandal resistant electric water cooler with barrier-free access. Unit shall deliver 8.8 GPH of 50 degree F drinking water at 80 degrees F ambient and 80 degree F inlet water. Units shall have vandal-resistant pushbutton activation with vandal-resistant, water efficient, one-piece bubbler. Unit shall meet ADA guidelines. Unit shall be lead-free design which is certified to NSF/ANSI 61 and 372 and meets Federal and State low-lead requirements. Unit shall be certified to UL399. An internally mounted valve and adjustable stream regulator shall control water flow between 20 and 105 psig. R-134a refrigeration system shall be hermetically sealed and refrigerant flow shall be capillary tube controlled. An adjustable thermostat having an off position shall control refrigeration system. Stainless steel top shall have integral drain strainer. Heavy-duty galvanized frame shall support stainless steel exterior panels. 115 Volts, 60 Hz, full load amps: 2.8 and rated Watts: 260.

(5) Service Sink (S/S): Kohler K-6716, acid resisting enameled cast iron, 24" x 20" outside dimensions with included stainless steel rim guard, Kohler K-8905 faucet with threaded outlet, lever handle, vacuum breaker, chrome plated, 2.0 gpm cold water flow restrictor. Provide 3" trap with cleanout.

Provide ANSI Z358.1 wall-mount swing-down emergency eye/face wash system with vandal-resistant ceramic valve, identification sign, and inspection tag. Bradley S19-270JW.

(B) Maintenance Tools: Provide two (2) sets of maintenance tools per building, including range adjustment tool, strap wrench, and hex wrench provided by the factory.

673.07 PIPE AND FITTINGS

(A) Sanitary Waste and Vent Pipes, Below Grade: Service weight cast-iron soil pipe, ASTM A74, with dual tight gaskets, or no-hub cast-iron soil pipe conforming to CISPI 301 with MG couplings.

(B) Below grade piping within building in sizes 6" and smaller may be hubless cast iron sanitary system with MG mechanical cast iron couplings or approved equal, conforming to Cast Iron Soil Pipe Institute's Standard 301-72. Stainless steel couplings are unacceptable. Each assembled coupling shall bear the following clearly identifiable markings: the manufacturer, the size, and the letters UPC, indicating conformance with the Uniform Plumbing Code. Install couplings per manufacturer's written instructions, and tighten nuts or bolts heads alternately and gradually to manufacturer's specifications using an accurate torque wrench.

(C) Sanitary Waste and Vent Pipes, Above Grade: Above grade cast iron soil, waste and vent piping in enclosed pipe shafts, concealed ceiling spaces or enclosed under floor spaces may be No-Hub systems, Tyler No-Hub pipe and fittings or equal, conform to Cast Iron Soil Pipe Institute Standard 301-82 with Cast Iron Soil Pipe Institute Standard 310 coupling joint.

(D) Water Pipes, Below Grade: Type "K" seamless rigid copper tubing conforming to ASTM B88 with wrought copper solder type fittings conforming to ANSI B16.22 or ANSI B16.18. Joints shall be brazed with a silver alloy filler metal. Provide "X-Tru-Coat" or equivalent polyethylene wrap.

(E) Water Pipes, Above Grade: Above ground piping shall be Type "L" seamless rigid copper tubing conforming to ASTM B88 with wrought copper or cast copper alloy solder type fittings conforming to ANSI B16.22 or ANSI B16.18. Solder shall be 95-5 tin-antimony or approved equal.

673.08 VALVES

(A) Ball Valves, 1/2" - 2": Bronze construction, two-piece body, 600-psi WOG, full-port, insulated quarter-turn handle, double O-ring stem seals, blowout-proof stem, PTFE seats.

(B) Check Valves: bronze body, swing type, renewable disc, screwed cap and ends, 125 psi SWP.

(C) Strainer: Y-strainers for lines 2" and smaller, bronze body, 20 mesh stainless steel screen, screwed ends, hose end valve, 300 psi WOG.

(D) Unions: Provide unions at all equipment and accessory locations and at screwed valves. Provide dielectric unions at lines of dissimilar metals. EPCO Model FX or approved equal.

673.09 PLUMBING SYSTEM SPECIALTIES

(A) Water Hammer Arresters: Smith Hydrotrol Series or approved equal.

<u>WHA TYPE</u>	<u>Smith No.</u>	<u>Fixture Units</u>
A	5005	1-11
B	5010	12-32

(B) Pressure Reducing Valve (Water): Pressure reducing valve shall be of bronze body construction with renewable stainless steel seat, stainless steel integral strainer and high temperature resisting diaphragm. Valve shall be designed with large orifice and spring cage construction to provide high capacity with low reduced pressure fall-off. Provide with integral low flow bypass.

673.10 PIPING INSULATION

(A) All insulation material applied to the exterior surface of metal pipes shall have flame spread of not more than 25 and a smoke development rating of not more than 50 when tested as a composite installation, including insulation, facing material, tapes and adhesives as normally applied.

(B) Accessible Sinks and Lavatories: Drain piping and water piping insulation shall be molded vinyl. Installation shall be in compliance with ADAAG Section 606.5. Insulation shall be self extinguishing and as manufactured by Truebro, McGuire Products, Brocar Products or approved equal.

673.11 PREPARATION

(A) Visit the worksite and become fully aware of all existing conditions. Investigate the Contract Documents and make proper provisions to avoid interference or construction delays. Determine the exact route of each pipe. Make offsets and changes in direction required to maintain proper head room and pitch or to accommodate the structure and the work of other trades. Furnish other trades with information to properly locate and size openings in the structure required for this work. Furnish anchor bolts, sleeves, inserts and supports required for this work.

673.12 INSTALLATION AND REQUIREMENTS

(A) Perform work using personnel skilled in the trade involved. Provide competent supervision. Furnish new equipment, fixtures, materials and

accessories bearing the manufacturer's identification and conforming to recognized commercial standards. Provide all extra materials and labor for a complete operable system at no extra cost to the State.

673.13 FIXTURE INSTALLATION

(A) Set fixtures in an approved workmanlike manner. Point up all edges against building structure with white grout. Provide adequate supports for wall-mounted fixtures. Provide supplies for all waterlines to fixtures, except those using flush valves; Brass-Craft or equivalent, compression joint type with chromium plated brass escutcheon and cover tube, loose-key angle stop valve and drawn copper tube riser. Provide chromium plated brass P-trap, waste fittings and escutcheon and cover tube, loose key angle stop valve and drawn copper tube riser. Provide chromium plated brass P-trap, waste fittings and escutcheon as required for fixture. Exposed metal including pipe shall be polished chromium plated.

673.14 PIPING INSTALLATION

(A) Conform to the requirements of the Uniform Plumbing code. Inspect all piping inside and outside. Remove interior obstructions and ream out pipe ends. Tool markings on polished fittings are not acceptable. Cut pipe accurately so that it can be worked into place without springing or forcing. Install pipes parallel to the wall of the structure and plumb. Make changes in direction with fittings. Bushings are not permitted. Install valves with stems above horizontal. Provide proper support and adequate provisions for expansion, contraction, slope and anchorage. Provide dielectric unions where copper tubing connects to steel pipe. Wrap pipe or tubing with 1/4" thick felt, secure with tape, where it contacts other materials. Have piping tested, inspected and approved before it is furred in, buried or otherwise hidden. Provide standard weight galvanized steel pipe sleeves where water pipes pass through structure, sufficiently large to provide 1/4" clearance around pipe. Caulk watertight around pipes passing through sleeves. Wrap pipe with polyethylene tape where it passes through sleeve and when it contacts concrete or masonry. Grout with fireproof material around all pipe penetrations through slabs and walls full length of penetrations. Provide chrome-plate brass escutcheons, set tight on the pipe and to the wall where pipes are exposed in finished areas. Provide clamping collar to membrane flange where pipe or drains penetrate waterproof membrane. Perform all welding using qualified welders in accordance with American National Standards Institute's Code B31.1 and American Welding Society Standard B3.0.

673.15 PIPING SYSTEM SUPPORTS

(A) Pipe Supports: Support underground piping on firm soil along its entire length. Where rocks are encountered, have trench excavated to minimum overdepth of 4-inches and backfilled with granular moist earth, thoroughly tamped. Materials used for backfilling over piping shall be granular earth, free from debris and stones. The Contracting Officer's representative may reject any materials which he considers unsuitable for fill. Provide a minimum of one foot of cover for all pipes. Support steel and copper pipe at maximum spacing of 6 feet for pipes 1-1/2" and smaller, 10 feet for pipes 2" through 4".

(B) Pipe Hangers: Steel clevis hanger with adjustable hanger rod; 3/8" for pipe 2" and smaller, 1/2" for pipe 2-1/2" through 3-1/2" and 5/8" for pipe 4" and larger.

673.16 DRAINAGE, WASTE AND VENT PIPE SYSTEMS

(A) Slope drain lines at 1/4" per foot unless otherwise indicated. On roof vents and where other drains occur above the ground floor, provide clamping device with drain. Provide a four-pound lead flashing sheet extending eight inches out around drain body and secure with clamp device. On vents through roof, extend vent flashing 8-inches out all around base of vent, extend collar up vent and turn in at top. Install hubless cast-iron and neoprene gasketed no-hub coupling below grade. MG stainless steel clamps and cast-iron no-hub couplings shall be installed in accordance with manufacturer's written instructions.

673.17 WATER PIPING SYSTEM

(A) Secure each water line where it penetrates partitions to serve fixtures, hose bibs and similar items. Wrap all lines passing through concrete with polyethylene tape. Install unions or flanges at all valves, equipment and system specialties. Set hose bibs 18" above finished grade, unless otherwise indicated. Install dielectric unions at connections of copper and ferrous pipes.

(B) Provide water hammer arrester on all cold water lines serving fixtures using flush valves sized in accordance with the PDI Standards WH201 for the total number of fixture units connected to the branch line. Install arrester between last two fixtures served or as shown. Provide access panel for concealed arresters.

673.18 STANDARDIZED PIPE IDENTIFICATION SYSTEM

- (A) Use an arrow marker with each pipe content marker, the arrow shall always point away from the pipe marker and in the direction of the flow.
- (B) If flow can be in both directions, use a double headed arrow marker.
- (C) Apply pipe marker and arrow marker at every point of pipe entry or exit where line goes through wall.
- (D) Apply pipe marker and arrow marker on each riser and "T" joint.
- (E) Apply pipe marker and arrow marker every 20 feet on long continuous lines.
- (F) Apply markers on the two lower quarters of the pipe and where view is unobstructed.
- (G) Arrow markers shall be 4 inches long minimum, and pipe content marker lettering shall be block-style lettering, all caps, with size minimum 1-1/2 inches in height. All identifications shall be contrasting color against the background, i.e., black lettering against white pipe insulation.

673.19 TESTING AND ADJUSTING

- (A) All work completely installed and tested as required by this section and the applicable plumbing ordinances, and proven leak tight before inspection is required. Providing of all required equipment and labor to make the test and repeating of the tests to the satisfaction of those making the inspection is within the scope of this section of the specifications. Any work concealed without the required test and approval shall be uncovered and tested at the Contractor's expense.
- (B) Procedure:
- (1) Soil, Waste and Vent Piping: Filled with water to the highest point in each system, and left filled for eight hours with no noticeable change in water level; after approval, remove the test plugs and flush the line.
 - (2) Water Piping: At 150 psi and left for an eight hour period without loss of pressure; and left under line pressure for the balance of the construction period.
 - (3) Plumbing Fixtures: Filled with water and checked for leaks

and/or retarded flow.

(4) All Valves: Adjusted and balanced to provide for the proper operation of the various systems. After disinfecting, strainer screens shall be removed, cleaned and reinstalled.

673.20 DISINFECTING

(A) All domestic water lines shall be thoroughly flushed and drained after installation. Sterilization shall be accomplished by opening taps at the end of all branches, and slowly filling the system adding liquid chlorine, or hypochlorite solution, to the water until water flowing from all branches indicates not less than 50 P.P.M. residual chlorine; the system allowed to stand for not less than eight (8) hours, with all valves opened and closed several times during this period; then drained and thoroughly flushed until all traces of chlorine are eliminated (less than 0.2 P.P.M.) Certificate shall be submitted to the Contracting Officer. The Contractor shall be responsible for the proper disposal of chlorinated water to safeguard public health and environment in accordance with applicable Department of Health requirements.

673.21 SPARE-PARTS DATA

(A) After approval of materials and equipment and 2 months prior to the project acceptance date, the Contractor shall furnish a complete list of parts and supplies, with current source of supply.

673.22 PIPE PENETRATION

(A) Where pipes penetrate fire rated walls and floors the space between the pipe and pipe sleeve shall be sealed with fireproof sealant.

(B) Installation shall be in accordance with manufacturers' instructions.

END OF SECTION 673"

1 Make the following section a part of the Standard Specifications:
2
3

4 **“SECTION 674 – AIR CONDITIONING AND VENTILATION**
5

6 **674.01 SUMMARY**
7

8 (A) This section shall apply to all phases of work indicated in contract
9 drawings, or required to provide for a complete installation of mechanical
10 systems included in this project.
11

12 **674.02 DESCRIPTION OF WORK**
13

14 (A) This section covers the furnishings, fabrication, delivery and
15 installation of the air conditioning system complete, including but not
16 limited to the following:
17

- 18 (1) Split-system air conditioning units.
- 19
- 20 (2) Refrigerant and condensate drain piping.
- 21
- 22 (3) Corrosion coating.
- 23
- 24 (4) Fans.
- 25
- 26 (5) Controls.
- 27
- 28 (6) Operation and maintenance instructions and manuals.
- 29
- 30 (7) Manufacturer's literature, shop drawings and record drawings.
- 31
- 32 (8) Inspection, tests, and guarantee.
- 33

34 **674.03 RELATED WORK SPECIFIED IN OTHER SECTIONS**
35

36 (A) All power wiring including disconnects and wiring to all motors
37 specified in Section 675 – GENERAL ELECTRICAL REQUIREMENTS.
38

39 **674.04 QUALITY ASSURANCE**
40

41 (A) Comply with all the requirements of the City & County of Honolulu
42 and State of Hawaii.

43
44 (B) Obtain and pay for all fees, permits, licenses, assessments, and
45 inspections required for this work.
46

(C) Substitutions of another manufacturer's product specified hereinafter and for items with "acceptable equal" after the brand name requires approval.

(D) Comply with the recommendations and requirements of the Codes and Standards listed hereinafter in addition to detailed requirements of this specification.

(1) National Fire Protection Association (NFPA) Standards:

70-2011 National Electrical Code

90A-2012 Air Conditioning and Ventilating Systems

(2) Air Conditioning. Heating and Refrigeration Institute (AHRI) Standards:

270-2015 Sound Rating of Outdoor Unitary Equipment

410-2001 Forced Circulation Air Cooling and Heating Coils

430-2014 Central Station Air Handling Units

(3) Air Moving and Conditioning Association (AMCA) Standards:

210-2007 Test Code for Moving Devices

300-2014 Test Code for Sound Rating Air Moving Devices

(4) American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE):

Handbook, Applications - 2015

Handbook, Equipment - 2016

(5) Sheet Metal and Air Conditioning Contractors National Association (SMACNA):

Manual for the Balancing and Adjustment of Air Distribution Systems.

HVAC Duct Construction Standards, 2005

674.05 SUBMITTALS

(A) Submit in accordance with SECTION 105 – CONTROL OF WORK and SECTION 106 MATERIAL RESTRICTIONS AND REQUIREMENTS.

(B) Equipment Submittals: Before beginning work, submit for review manufacturer's certified literature showing ratings and dimensions of equipment and of a list indicating all materials and items that are of a

different manufacturer or model than those specified. Include equipment wiring diagrams.

(C) Shop Drawings: After review of equipment, submit for review dimensioned installation shop drawings to scale showing details where space requirement presents problems; proposed departures from the Contract Documents due to field conditions, requirements for concrete work, access panels, inserts in slabs, and openings in structure.

(D) As-Built Drawings: Record changes from the contract drawings of all concealed piping, ductwork and equipment. Indicate location of isolating valves, dampers, and items requiring maintenance or inspection. Submit As-Built Drawings for review prior to final inspection.

(E) Certificates: The Contracting Officer will have the right to require a written certificate, dated and signed by a responsible employee of the Contractor, evidencing the performance of any portion of the work, or any testing; as a condition precedent to the acceptance of any work or the result of any test. Whenever a regulatory agency performs in sections or tests of any portion of the work, a certificate shall be furnished by the Contractor that the inspection or test was satisfactorily passed.

(F) O and M Submittals: The Contractor shall submit to the Contracting Officer 2-CDs.

(G) Testing and Balancing Report: After installation, the new system shall be tested, balanced and adjusted. Submit 4 copies of the testing and balancing report to the Contracting Officer for review and approval prior to the final acceptance of the project.

(H) Guarantee: Submit Guarantee as noted under item entitled "GUARANTEE" hereinbelow.

(I) Maintenance Service Contract: Submit Maintenance Service Contract as noted under the item entitled "ONE YEAR MAINTENANCE SERVICE CONTRACT" hereinbelow.

674.06 PRODUCT DELIVERY, STORAGE, AND HANDLING

(A) Furnish new equipment, material, and accessories bearing the manufacturer's identification. Coordinate deliveries to avoid interferences or construction delays. Protect products during delivery, storage, installation and the remainder of the construction period after installation.

674.07 OMISSIONS

(A) It is the intent of the plans and specifications to provide a complete installation. Should there be omissions, the Contractor shall call the attention of the Contracting Officer to such omissions in 14 days advance of the date of bid opening so the necessary corrections can be made.

674.08 GUARANTEE

(A) Contractor and installer shall guarantee and certify in writing all work in this section for a period of one year after 30 days of trouble-free operation from the date of project acceptance by the Contracting Officer. Replacement of lost refrigerant and correction of undue noise or vibration is included on the guarantee. Contractor shall be responsible for all damages to any part of the premises during equipment installation work under this section. Normal maintenance requirements are not included in this guarantee. Should any equipment or material fail due to faulty workmanship or materials within this period replace or repair that item at no cost to the State.

674.09 EQUIPMENT

(A) Capacities and characteristics of equipment are indicated on the drawings. See electrical drawings for all voltage and phase requirements of all equipment furnished under this work. Provide magnetic across-the-line starter with on-off switch for each motor of mechanical equipment unless the equipment is factory wired to a single power connection or unless otherwise indicated hereinafter. Provide NEMA 3R weatherproof starters with fiberglass enclosure for the outdoor installation. Capacities and characteristics of equipment are as indicated on the drawings. See electrical drawings for all voltage and phase requirements of all equipment furnished under this work. Provide combination magnetic across-the-line starter and circuit breaker for each motor of mechanical equipment unless the equipment is factory-wired to a single power connection or unless otherwise indicated hereinafter. Provide vibration isolators as indicated hereinafter. All motors shall be high efficiency type.

(1) Split-System Air Conditioning Unit:

(a) Air-Cooled Condensing Unit (ACCU): Single-circuit R410A refrigeration system. Factory-installed refrigerant strainer, four-way reversing valve, electronic controlled expansion valve, high and low side charging ports, service valves, and interconnecting piping. Hermetic digitally controlled inverter driven twin rotary compressor to modulate capacity in 1-Hz increments. Overcurrent protection and

vibration isolation integral with the compressor. Non-ferrous condenser coil with integral coil guard and factory-applied corrosion resistant material with hydrophilic coating. Coil coating and outdoor unit cabinet shall be tested in accordance with ASTM B-117 salt spray test procedure for a minimum of 1000 hours. Direct drive, variable speed propeller type condenser fan. Brushless digitally controlled fan motor with inherent protection and permanently lubricated bearings. LG, Fujitsu, Daikin, Mitsubishi, or accepted equivalent.

(b) 4-Way Ceiling Cassette Fan Coil Unit (FCU): Unit shall have built-in control panel to communicate with the outdoor ACCU. Standard functions: self-diagnostic function, auto restart function, auto clean function, dehumidifying function, hot start. Filter access shall be from the bottom of the unit and unit shall be factory supplied with primary removable washable filter and secondary 3M HAF filter. Unit shall have built-in condensate lift mechanism and outside air intake. Provide with wired thermostat.

(2) Ceiling Cabinet Exhaust Fan (EF): Ceiling mounted exhaust fans shall be of the centrifugal direct drive type. The fan housing shall be constructed of galvanized steel. The polypropylene duct collar shall include a backdraft damper. The designer grille shall be constructed of non-yellowing high-impact polystyrene and attached to the housing with hidden attachment screws. The access for wiring shall be internal. The motor disconnect shall be internal and of the plug-in type. The motor shall be mounted on vibration isolators. The fan wheel shall be of the forward-curved centrifugal type, constructed of calcium carbonate filled polypropylene and dynamically balanced. All fans shall bear the AMCA Certified Ratings program AMCA Sound and Air Performance Seal and shall be UL Listed.

(3) Supply Fan (SF): Centrifugal, direct driven inline fan, able to be mounted in any position at any angle and constructed in accordance with standard spiral duct dimensions. Housing shall be constructed of heavy gauge galvanized sheet metal. Externally mounted electrical terminal box with pre-wired terminal strip connections. Capacitor shall be located within electric terminal box. Motor shall be permanently sealed self-lubricating ball bearing type, equipped with automatic reset thermal overload protection, and acceptable for continuous duty. Motorized impeller shall be both statically and dynamically balanced as one integral unit to provide for vibration free performance. Impeller shall be molded of high

impact polypropylene. Fan air flow performance shall be based on tests conducted in accordance with AMCA Standard 211 and shall be licensed to bear the AMCA Certified Ratings label.

674.10 SPECIAL WIRING

(A) All control circuits extending to remote control devices, thermostats, etc., will be 120 volts maximum.

(B) Any wiring not shown and required for air conditioning to properly connect equipment, including connections to special safety control or apparatus not shown, shall be included under this Section.

674.11 DUCTWORK - MATERIALS

(A) General exhaust, outside air, and dryer ductwork shall be galvanized metal installed of gauges and with bracing and joints all in accordance with latest edition of ASHRAE Guide and SMACNA Duct Construction Standards.

(B) The thickness of the sheetmetal and size and spacing of the stiffeners used shall be in accordance with the requirements of the latest edition of the ASHRAE Guide and Data book. Connections to plenum shall be airtight.

674.12 VOLUME DAMPERS AND BALANCING DAMPERS

(A) Volume dampers shall be installed where shown and as required for air balancing. Dampers shall be two gauges heavier than the duct in which they are installed and shall be reinforced to prevent vibration and noise.

(B) Balancing dampers for branches and mains shall be equipped with Young Regulator (Hand quadrant) or approved equal

674.13 PIPING

(A) Condensate Drain: Condensate drain piping shall be Schedule 40 PVC pipe and drainage pattern fitting with solvent welded joints. Provide seal trap at connection to unit. Provide cleanout at every change in direction of the condensate piping.

(B) Refrigerant Piping:

(1) Material and dimensional requirements for field assembled ACR refrigerant piping, valves, fittings, and accessories shall

conform to ANSI B9.1 and ANSI B31.5, except as hereinafter specified. Refrigerant piping shall be hard drawn seamless copper tubing. Brazing filler material for refrigerant piping shall conform to AWS A5.8.

(2) Pipe hangers and supports shall conform to MSS SP-69 and MSS SP-58, Type, except as indicated otherwise.

(3) Fittings, Copper Tubing: Cast brass or wrought copper, solder joint type, ANSI B16.18 or B16.22.

(4) Globe and angle refrigerant valves shall be forged brass or bronze alloy with packed stem and seal cap. Packless type valves with hand wheels and gorged brass or bronze alloy bodies with brazing ends may be used in sizes up to and including 7/8-inch OD. Bonnets shall be replaceable with the valve in place. All refrigerant valves shall be back-seating type to allow repacking under pressure.

674.14 INSULATION

(A) General: Insulation, adhesives, coatings and accessories shall have surface burning characteristics as determined by ASTM E84 and UL 723, not to exceed 25 for flame spread and 50 for smoke developed.

(B) Refrigerant and Condensate Piping Insulation: 1-inch thick Armaflex insulation covered with aluminum jacket and made to be weather-tight. Exterior piping shall additionally be covered with aluminum jacket and made weather-tight.

674.15 CONTROLS

(A) Thermostats: Space thermostats shall have adjustable set points. All thermostats shall have key locking, plastic tamperproof covers which do not affect their performance adjustable.

(B) Time-Clocks: All time clocks shall be 7 day programmable, 24 hour with 10 hour capacitance backup with manual bypass. The time clock/control system shall be programmable and operational without an auxiliary computer.

674.16 VIBRATION ISOLATION

(A) Unless otherwise noted on drawings, all mechanical equipment shall be mounted on vibration isolators to prevent transmission of vibration and mechanically transmitted sound to building structure. Vibration isolator shall

be selected in accordance with weight distribution to produce reasonably uniform deflection.

674.17 PIPE HANGERS AND SUPPORTS

(A) All hangers, supports, bolts, nuts, washers and accessories shall be galvanized unless otherwise specified.

(B) Drilled-In Threaded Inserts: Where supports in beams and joists are required after concrete has been poured, Phillips "Redhead" Drilled-In Threaded Inserts shall be provided, installed in accordance with manufacturer's recommendations.

(C) Provide adjustable hangers, saddles, inserts, brackets, rolls, clamps, supplementary steel, etc., as required for proper support of all pipe lines. Hangers shall be designed to allow for expansion and contraction of pipe lines and shall be of adequate size to permit covering to run continuously through hangers. Piping at coils shall be supported independently so that no weight will be supported by the equipment. Hangers shall be of manufacture and type specified or equivalent products. Manufactured by B-Line, PHD, Superstrut or accepted equivalent.

(D) Pipe support spacing and hanger rod size shall conform to the table below.

<u>Pipe Size</u>	<u>Spacing</u>	<u>Pipe Support Pipe Size</u>	<u>Rod Diameter</u>
All sizes	Not over 6-feet	Up to 2-inches	3/8-inches

(E) Supplementary Steel: Provide all necessary supplemental structural steel for proper support or attachment of hangers. Steel shall be hot dipped galvanized.

(F) Single Hangers: Support single pipe runs as follows:

(1) Pipe 3-1/2 inches and smaller: Split ring type hanger; Grinnell Fig. 104.

(2) Trapeze type hanger shall be used to provide necessary clearances.

(G) Floor Support:

(1) Pipes 2-inches and smaller shall be fabricated of 2-inch x 2-inch x 1/4-inch angle with 2-inch schedule 40 galvanized steel pipe supports and floor flange.

(H) Insulation shields shall be Anvil International Fig. 167 or equivalent field fabricated.

674.18 COOPERATION WITH OTHER TRADES AND CONFLICT IN WORK

(A) Contractor shall examine all drawings of proposed work and coordinate his work with other trades. Work conflicts shall be brought to the attention of the Contracting Officer and work rearranged or modified in accordance with his decision.

(B) If changes in indicated locations or arrangements of work are required, they shall be made by Contractor without additional charge to the State.

674.19 REFRIGERANT PIPING SYSTEM

(A) Quality Control: Prior to initial operation examine and inspect piping systems for conformance to plans and specifications and ASME/ANSI B31.5. Equipment, material, or work rejected because of defects or nonconformance with plans, specifications, and ANSI Codes for pressure piping shall be corrected as directed by the Engineer.

(B) Tests: After completion of piping installation and prior to initial operation. Conduct tests on piping system. Furnish materials and equipment required for tests. Correct defects disclosed by the test. Perform test after installation and prior to acceptance in the presence of the Engineer and subject to his approval.

Test Pressures: Refrigerant system test pressures for tightness shall not be less than test pressures specified in ANSI/ASHRAE 15 or ASME/ANSI B31.5.

Evacuation: After completion of leak testing of refrigerant system, remove all air and moisture from system with a high vacuum pump. Pump shall be capable reducing absolute pressure in system to a point where any water present in lines will vaporize at a temperature appreciably below ambient temperature and will be withdrawn from system. Before conducting evacuation test, inspect vacuum pump oil for purity and provide new oil charge if existing charge is contaminated. Evacuate system to a maximum absolute pressure of 0.202 inches of Mercury (500 microns) or lower. During evacuation, ambient temperature shall not drop below 35 degrees F. Use pressure gauges for measurement of pressure. Upon

achieving evacuation of system, valve off vacuum pump from system for a period of at least 12 hours. Consider system tight and dry and free of air, if absolute pressure has not increased by more than 0.002 inches of mercury (50 microns) at the expiration of this period. Repeat pressure test if pressure rise exceeds 0.02 inches of mercury, indicating a leak in system or presence of moisture. If no leaks are found, resume evacuation test and continue until dryness of system is achieved. When a satisfactory vacuum has been obtained, break vacuum by introducing vapor (no liquid) and subsequently seal off system.

Start-Up and Operational Test: Start up and initially operate refrigeration system. During this time, periodically clean strainers until no further accumulation of foreign materials occurs. Exercise care so that minimum loss of refrigerant occurs when strainers are cleaned. Adjust safety and automatic control instruments as necessary to place them in required operation and sequence.

674.20 CONDENSATE DRAIN PIPING SYSTEM

(A) Slope Lines at 1/4-inch per foot unless otherwise directed. Terminate condensate drain at funnel drains.

674.21 PIPING SYSTEM SUPPORTS

(A) Pipe Supports: Factory-fabricated by Elcen, Fee and Mason, Grinnell, or Unistrut. Provide concrete inserts, beam clamps, channel framing, hanger rods and accessories required for proper pipe support. Ramset or explosive type anchors are not permitted. Support copper pipe at maximum spacing of 6 feet for pipes 1-1/2 inches and smaller. Support vertical piping with hanger at base of riser and with pipe clamp at each floor. At each support point on insulated piping, provide Owens-Corning Kaylo pipe insulation around pipe with 18-gauge sheet metal jacket each two pipe diameters in length.

674.22 EQUIPMENT INSTALLATION

(A) All equipment shall be installed as per manufacturer's recommendations, with adequate clearances provided for servicing and as required by applicable codes.

(B) Necessary supports shall be provided for equipment, appurtenances and pipe, as required. These include frames or supports for air conditioners, and other similar type items requiring supports.

674.23 WORKMANSHIP AND FABRICATION

(A) Ductwork:

- (1) Fabricate all ductwork and related work to highest industry standards and recommendations of ASHRAE and SMACNA.
- (2) Duct dimensions shown are required net inside dimensions.
- (3) Sides of ductwork greater than 24" shall be cross broken. Long seams shall be snap lock or Pittsburgh lock groove, hammered flat or double seamed. Ducts shall also have supplemental stiffening as required to prevent drumming and to provide structurally sound assembly.
- (4) Center line radius of curves, bends, offsets for branch and connections shall be equal to 1-1/4 times duct width or larger. Duct turns in all square elbows shall be accomplished by using pre-fabricated turning vanes such as Tuttle & Bailey "Ducturn" or other approved equal (Delta H2). Double thickness turning vanes in ducts deeper than 16-inches may be used in lieu of "Ducturn" provided prior approval of design is given by the Architect.
- (5) Volume and splitter dampers shall be installed where required and shall be provided with extension rods for adjusting and locking. Dampers shall be made of not lighter than 18-gauge steel for dimensions up to 18-inches and multi-louvered type on ducts over 18-inches high. All dampers shall have Young Regulator No. 401 locking quadrants or approved equal.
- (6) Ducts shall be supported at joints every 6 feet or less with steel hanger straps one inch wide and made of material not lighter than 18 gauge riveted to seams. Bolts or sheet metal screws may be used to fasten straps to ductwork provided prior approval is given by the Architect.
- (7) Paint inside of all supply, return, and exhaust ducts with one coat of flat black paint wherever duct is visible through register or grille opening.
- (8) Ducts passing through roof or through outside walls shall be suitably and properly flashed and counter-flashed to prevent leaks. Fresh air intake of ventilation opening shall be provided with screened louvers.
- (9) Access doors which shall be at least two gauges heavier than duct material shall be installed with reinforced frames made airtight with felt or sponge rubber strips and shall be attached to

ductwork with Ventlock No. 260 hinges and latches or approved equal.

674.24 VIBRATION ISOLATION

(A) Vibration transmission from all reciprocating and/or rotating equipment such as compressor and centrifugal fan shall be effectively isolated, by use of vibration mountings or hangers. Mounting and hanger sizes shall be determined by the manufacturer to assure adequate deflection and vibration isolation, and shall be installed in accordance with manufacturer's recommendations to provide not less than 90 percent isolation efficiency.

674.25 CLEANING AND ADJUSTING

(A) Equipment shall be wiped clean, with all traces of oil, dust, dirt, or paint spots removed. Bearings shall be properly lubricated with oil or grease as recommended by the manufacturer. Belts shall be tightened to proper tension. All control valves and other miscellaneous equipment requiring adjustment shall be adjusted to setting indicated or directed. Fans shall be adjusted to the speed indicated by the manufacturer to meet specified conditions. Temporary filters shall be provided for all fans that are operated during construction, and after all construction dirt has been removed from the building, new filters shall be installed.

(B) Condensate drain line shall be leak tested. No leaks are allowed at any joints.

674.26 TESTING AND BALANCING AIR DISTRIBUTION SYSTEMS

(A) The Contractor shall obtain the services of an independent test and balance agency that specializes in and whose business is the testing and balancing of air conditioning systems. All final reports shall be signed by the individual performing the test and submitted to the test Contracting Officer.

(B) Testing and balancing shall be performed in complete accordance with AABC National Standards for Field Measurement and Instrumentation, Form Number 81266, Volume One, section applicable to air balancing or NEBB, Procedural Standards for Testing, Adjusting, Balancing of Environmental Systems.

(C) Instruments used for testing and balancing of air must have been calibrated within a period of 6 months and checked for accuracy prior to start of work.

(D) Balancing:

(1) Duct systems shall be balanced as follows: system (or air moving device) to not less than 95 percent of design CFM.

(2) Test Data: The Contractor shall provide the Contracting Officer with typewritten schedules of readings taken during the balancing and testing operations indicating the required or specified reading, the first reading taken, and final balanced reading for the items below.

(a) Air Conditioning Unit: Size, type, fan speed in rpm, outlet velocity in fpm, external static pressure, total static pressure, air quantity CFM, and motor load in amperes.

(b) Air Outlets and Inlets: Size, velocity, and air quantity in CFM.

(c) Coils: Size; face velocity in fpm; air temperature entering coil and air temperature leaving coil, wet-bulb and dry-bulb degrees Fahrenheit.

(d) Main Ducts: Size, velocity in fpm, and air quantity in CFM.

(e) Control Settings: On-site settings for all automatic controls including thermostats, safety controls, and other similar items shall be provided in the form of a type tabulated list indicating type of control, location, setting, and function.

(E) Contractor shall completely adjust and readjust temperature control system so that all thermostats are maintaining required temperatures in all portions of the building so equipped.

674.27 FIELD INSTRUCTIONS

(A) Upon completion of the work and at a time designated, the services of one or more qualified personnel shall be provided by the contractor for a period of not less than two days to instruct the representative of the Contracting Officer and Building User in the operation of the air conditioning system and the maintenance and troubleshooting training to State Maintenance Personnel. These field instructions shall cover all the items contained in the bound instructions.

674.28 ONE YEAR MAINTENANCE SERVICE CONTRACT

(A) In addition to the Guarantee on materials and workmanship, the Contractor shall submit 7 copies of the Maintenance Service Contract, countersigned by the General Contractor that will validate said Guarantee. The Guarantee and maintenance service shall extend for a period of one year commencing after 30 consecutive days of trouble-free operation after the Project Acceptance Date or the air conditioning equipment acceptance date, if earlier than the Project Acceptance Date, and shall include all labor, materials, equipment and parts necessary to service the complete system, in accordance with the attached Schedule of Maintenance Service so as to assure proper operation and function of the system. All costs for the periodic maintenance, including emergency calls, shall be borne by the Contractor. This maintenance period and the Guaranty period shall run concurrently (same start and end dates). The maintenance of the equipment shall start within one month of equipment start-up and continue until the end of the Project Maintenance Service Contact period.

(B) However, should the Contractor default on the Maintenance Service Contract and must restart or complete the service, then the warranty period shall also be extended to match the revised maintenance service period.

(C) Trouble-free operation is defined as the non-disabling condition or a non-recurring failure or disruption.

(1) The system shall be free of all discrepancies, contamination and debris that require correction in excess to those described for the monthly service that is included in the Schedule of Maintenance.

(2) The system is maintaining operational conditions and other parameters as measured during acceptance tests.

(D) The installer shall include a listing of the following items along with the Maintenance Service Contract:

(1) Name of the servicing Contractor.

(2) Air conditioning system acceptance date.

(3) Service contract expiration date.

(4) Monthly inspection schedule for maintenance period.

(5) Itemized listing of the equipment covered under the service contract, including a description of the equipment identified, its model and serial number(s), and manufacturer's name(s), and the quantity of each size and type of equipment.

(E) The Maintenance Service Contract shall be submitted along with the Operations and Maintenance Manual on/or before the Project Acceptance Date. Submit to the Contracting Officer a Service Maintenance Report, using the form found at the end of this section.

(1) 1 copy: Contractor

(2) 2 copies: Contracting Officer

(F) Operation and Maintenance

(1) Submit 3 hard bound copies and one electronic copy (PDF) on CDs of the Operations and Maintenance Manual on all equipment and the system as a whole. The manual shall identify project name and number, contractor, consultant, date, and all equipment provided. It shall include the manufacturer's name, model and serial number, tag number, capacity, quantity of each unit, their location and area (room) served, and shall include the manufacturer's installation, operation, and maintenance manuals, including control and wiring diagrams and source of service and replacement parts. Also include equipment submittal information that was stamped and reviewed by the Consultant. When standard manufacturer's brochures are used, adequately indicate (highlight, arrow, etc.) the project related information, and delete (X or cross out) the non-applicable information. Air testing and balancing reports shall be included in the Operations and Maintenance manual.

(2) Distribution of submittal shall be as follows:

(a) 1 copy: Building User

(b) 2 copies and 2 CDs: Contracting Officer

(G) Air Conditioning Manufacturer Must Stock Spare Parts Locally

(1) Specify that air conditioning equipment to be considered for bid purposes must be of a manufacturer that has locally stocked spare parts, representative and support of a service organization reasonably convenient to the site of installation which has serviced manufacturer's unit of comparable type, size, and capacity installed and operating satisfactory in the State of Hawaii for a minimum of 2

years prior to bid opening. The contractor shall provide a list of locations in Hawaii with addresses and telephone numbers when requested by the Contracting Officer.

(H) Schedule of Maintenance Services: Periodic maintenance shall conform to the following schedule, with at least the following basic services:

(1) Split System Air Conditioning Unit

(a) Monthly Service

1) Check for abnormal noise and vibration. Visually check for air, water, and refrigerant leaks.

2) Inspect and clean/clear all drip pans and flush all related condensate drain lines with nitrogen. (Contractor may be liable for water damage due to clogged drains). Install pan tablets if necessary to control algae.

3) Inspect condenser coil condition. Clean condenser coil of dirt and debris accumulation.

4) Change all disposable air filters at least once a month; use Farr 30/30 or approved equal.

5) Wash permanent type filters with an approved detergent and spray coat with an approved filter treatment solution. Replace deteriorated permanent type filters which cannot be cleaned.

6) Check and record refrigerant suction and discharge pressures.

7) Check and record compressor amperages and voltage.

8) Check and record supply and return air temperatures and return air relative humidity.

9) Operate equipment to check for proper operation, unusual noise and vibration; adjust or repair all equipment and controls as required; clean up all equipment.

734 10) Check time clock for proper operation and time
735 settings.

736
737 11) Certify performance of and completion of monthly
738 service and that all discrepancies are reported and
739 corrected. Submit written service report indicated all
740 abnormalities/discrepancies, if any, and actions taken.

741
742 **(b) Annual Service**

743
744 1) Adjust alignment of bearings and sheaves; lubricate
745 fan and motor bearings. Replace worn or noisy
746 bearings or sheaves.

747
748 2) Clean all cooling coils of dirt accumulation using
749 nitrogen, high pressure air/water, steam, or chemical
750 (non-acid) coil cleaner solution. Contractor shall protect
751 surrounding areas from water overflow and spillage.
752 Provide additional provisions to catch water
753 overflows/spills if necessary.

754
755 3) Check pressure and temperature differential across
756 cooling coils and log readings. Clean strainers, check
757 vents and drain lines on cooling coils.

758
759 4) Clean supply and return air grilles, registers and
760 diffusers and fresh air intake grilles and dampers.

761
762 5) Clean and adjust water valve; clean all fan wheels
763 and interior and exterior of equipment housings.

764
765 6) Secure all loose housing, seal leaks and touch-up
766 paint after cleaning all rust.

767
768 7) Check and calibrate all pneumatic and /or electric
769 temperature controls.

770
771 8) Check for refrigerant leaks with leak detector.

772
773 9) Tighten all electrical connections in starter and
774 disconnects.

775
776 10) Certify performance and completion of annual
777 service. Submit written service report indicated all
778 abnormalities/discrepancies, if any, and any action
779 taken.

(2) Temperature Controls

(a) Quarterly Service

1) Check control devices for proper operation, sticking stems, calibration; repair/replace weak or broken springs.

2) Check automatic dampers for tightness in closing, bent blades, and defective linkage; lubricate connections for free movement and repair as required.

3) Adjust thermostat to maintain 75 degrees Fahrenheit room temperature.

4) Certify performance of quarterly maintenance services and that all discrepancies are reported and corrected.

(I) Work Schedule: All maintenance work shall be performed between the hours of 7:30 a.m. and 4:00 p.m., on normal working days, Monday through Friday, excluding State holidays.

(J) Trouble Calls:

(1) Emergency service and repairs required between regular service calls shall be rendered within 24 hours after the Contractor is notified, non-working days excluded.

(2) The Contractor shall call the Contracting Officer the next working day after being notified of the problem and report the status of repairs.

(K) Maintenance Report/Checklist: The Contractor shall prepare and maintain a maintenance service report/checklist which shall include the following:

(1) Date maintenance service was performed.

(2) Name of mechanic who performed said maintenance.

(3) The type and cost (labor, materials, parts and equipment) of repair performed on the unit, if any.

(4) Documents and other data pertaining to the maintenance performed.

(5) It will be the responsibility of the Contractor to maintain the report/checklist by recording the above noted data after each scheduled maintenance and emergency repairs, and have the checklist available for inspection at the building site. The report shall be sufficiently detailed to properly reflect the past maintenance history of the equipment.

(6) Reports shall be certified by a representative of the facility being served and shall be submitted to the Contracing Officer monthly or at the completion of the service trouble call.

(L) Cleanup and Work Practices:

(1) The Contractor shall keep the job site free of debris, litter, discarded parts, etc., and shall clean all oil drippings during the daily progress of work. The Contractor shall remove all tools, parts, and equipment from the service areas upon completion of the work.

(2) The Contractor shall exercise caution during the progress of his maintenance and repair work to prevent damage to the ceilings, roofing, and other building structure. The Contractor shall restore all damages, caused by his or her negligence, to its original condition at his or her own expense.

Date: Sheet No.

Name of Facility and Location:

Date of Service Call:

Time In, Time Out at Site:

Person(s) Contacted:

Nature of Service Call – (routine Maintenance or Emergency - Explain):

Equipment Readings and Maintenance Performed (List all items services and identify equipment)

Remarks:

859 **674.29 Measurement and Payment.**

860

861 **(A)** Air conditioning and ventilation work shall not be paid separately
862 but shall be considered incidental to the construction of the Truck Weigh
863 Station, in the Proposal Schedule.

864

865

866

END OF SECTION 674”

1 Make the following section a part of the Standard Specifications:
2
3

4 **SECTION 675 - GENERAL ELECTRICAL REQUIREMENTS**

5 6 **675.01 Description.**

7
8 **(A)** This section specifies the general electrical requirements for all
9 labor, materials, equipment, and services under the following:
10

11 **(1)** SECTION 676 - INTERIOR ELECTRICAL WORK.

12
13 **(2)** SECTION 677 - INTERIOR LIGHTING.
14

15 **675.02 Work Included.**

16
17 **(A)** The Contractor shall provide all labor, materials, equipment,
18 supervision and services required for the construction of the electrical
19 systems. The finished installations shall be complete, operable and shall
20 include all work specified herein and shown on the Drawings.
21

22 **(B)** The work shall include complete testing of all equipment and wiring
23 at the completion of the work and making any minor connection changes
24 or adjustments necessary for the proper functioning of the system and
25 equipment. All systems shall be properly adjusted and in working order at
26 the time of final acceptance.
27

28 **(C)** All concrete, steel reinforcement, miscellaneous metal-work,
29 earthwork, painting, and grouting shall conform to the applicable
30 requirements of the detailed equipment specifications as prescribed in
31 appropriate Sections.
32

33 **(D)** It is the intent of these Specifications and other Contract
34 Documents to require an installation complete in every detail.
35 Consequently, the Contractor will be responsible for minor details or for
36 any special construction which may be found necessary to properly
37 furnish, install, adjust, test, and place in successful and continuous
38 operation, the entire electrical system and the cost of same shall be
39 included in the contract price.
40

41 **675.03 Description of Work.**

42
43 **(A)** Work shall include, but not be limited to, the following:

(1) Interior electrical distribution system, including metering equipment, panelboards, overcurrent protection devices, and feeders.

(2) Complete electrical system wiring including branch circuits, luminaires, switches, receptacles, outlets and control devices.

(3) Complete lighting and control systems, including photocells, lighting contactors, and control stations.

(4) Power wiring for electrically-operated equipment and appliances.

(5) Telephone and communications system infrastructure.

(6) Testing.

(B) Electrical wiring system shall have sufficient capacity to accommodate all equipment, appliances and other electrical loads as specified herein and shown on the drawings and as required per National Electrical Code and other applicable codes, standards and requirements plus spare capacity to accommodate any planned future facilities and additions and minimum 25 percent spare capacity for future growth.

675.04 References.

(A) Comply with local ordinances; National Electrical Code; National Electrical Safety Code, applicable regulations of the National Board of Fire Underwriters; specifications of ANSI, NEMA, UL, IES, and IPCEA; and regulations of the City and County of Honolulu.

(B) Comply with requirements and regulations of electric and telephone utilities.

(C) In the event of conflict between pertinent codes and regulations, and the requirements of the referenced standards, or those indicated in Specifications and on drawings, the provisions of the more stringent shall govern.

675.05 Permits and Inspection.

(A) All permits required by local ordinances shall be obtained and paid for by the Contractor.

(B) After completion of the work, the Engineer shall be furnished a certificate of final inspection and acceptance from the local authority having jurisdiction.

675.06 Coordination.

(A) Refer to all project Drawings and to all Sections of the project Specifications. Coordinate and fit all work accordingly so that all electrical outlets and equipment will be properly located and readily accessible. The Drawings indicate the relation of wiring and connections and must not be scaled for exact locations. Verify all construction dimensions at the project and make changes necessary to conform to the building as constructed. Work improperly installed due to lack of construction verification shall be corrected at the Contractor's expense.

(B) Work shall be scheduled to avoid delays, interferences, and unnecessary work. If any conflicts occur necessitating departures from the Drawings and Specifications, details of departures and reasons therefore shall be submitted immediately for consideration by the Engineer.

675.07 Submittals.

(A) Shop drawings and catalog cuts of the equipment and products identified in technical section for approval.

(B) Each submittal shall be prepared with a summary sheet attached to each copy identifying all items included in the submittal.

(C) Incomplete submittals and those without summary sheets will be returned without review. Review and acceptance of shop drawings by Engineer shall not relieve the Contractor of responsibility to provide for a complete and proper installation.

675.08 Delivery, Handling and Storage.

(A) Deliver all materials of this Division in manufacturer's original unopened packages or containers with label intact and legible.

(B) Use means necessary to protect the materials of this section before, during and after installation; to protect the installed work and materials of all other trades; and to protect the original structure, work and materials of the State.

(C) In the event of damage, immediately make all repairs and replacements necessary to the acceptance of the Engineer and at no additional cost to the State.

675.09 Warranty.

(A) Installation shall be complete in every detail as specified and ready for use. Unless otherwise indicated, any items supplied by Contractor developing defects of design, construction, or quality within one year of final acceptance by Engineer shall be replaced by such new materials, apparatus or parts to make such defective portion of the complete system conform to the true intent and meaning of the Drawings and Specifications at no additional cost to the State.

(B) LED luminaires shall carry a minimum warranty of 5 years.

(C) The warranty shall be countersigned by the General Contractor.

675.10 Drawings and Specifications.

(A) Electrical system drawings are diagrammatic and symbolic. Locations of outlets, devices, raceways, apparatus, etc., shown are approximate and shall be installed with the required maintenance and code clearances and to avoid conflict with other systems and trades. Visit site and verify lineal footages required and check scales and dimensions shown on architectural drawings prior to bidding to verify locations, routing and lineal footages of electrical work required for inclusion into bid. Study adjacent architectural, structural and mechanical details and make installation in most logical manner for eye appeal and coordination with other systems and trades. Unless dimensioned or noted otherwise, orderly configuration and visual composition are fully intended.

(B) Include additional components and wiring which are not shown or specified herein but are required for proper control and operation to provide for a complete and operable system within intent indicated on the drawings and specifications.

(C) Study architectural, structural and mechanical drawings and specifications prior to bidding and provide additional wiring including apparatus and devices for equipment furnished by the State or other trades without additional cost.

(D) Relocate devices, apparatus and associated wiring including raceways, from locations shown, without additional cost, for code compliance and to avoid conflict with other systems or trades, structures, utilities and when directed before installation.

(E) Equipment ratings or wire sizes that are missing or shown in error shall have adequate capacity to serve the required and future loads plus minimum 25 percent spare capacity, and be in compliance with NEC

(F) Verify voltages and other ratings of energy conversion, transformation and electrical utilization equipment prior to placing order with factory. Input voltages of equipment shall match serving utility or system voltage available.

675.11 Materials and Workmanship.

(A) All materials shall conform to the latest issue of all applicable standards as established by NEMA, NFPA, ANSI, IEEE, IES, ASTM and Underwriters' Laboratories, and shall bear the manufacturer's name, trade name and when available, the Underwriters' Label.

(B) Neat appearances in the finished work will be required. Only experienced electrical workers shall be employed for the electrical installation.

(C) All work not installed and completed in accordance with the latest rules and regulations of the NEC, OSHA, NESC, and all local ordinances shall be removed and reinstalled correctly at the Contractor's expense.

675.12 General.

(A) Install all electrical materials and equipment in accordance with manufacturer's recommendations and as accepted by the Engineer for the seismic zone classification at the project site.

(B) Cut, break, drill and patch as required to install electrical system. Repair any surface damaged or marred by notching, drilling or any other process necessary for installation of electrical work. Patch any damaged surfaces to match the existing surface.

(C) All wiring and overcurrent devices for equipment furnished by other trades are sized for a contemplated equipment size. If equipment other than contemplated and indicated on the plan is provided, the Contractor shall be responsible for providing the required wiring, switches, and overcurrent devices at no cost to the State. The Contractor shall submit the proposed revisions to the electrical design to the Engineer for acceptance.

(D) The Electrical Contractor shall coordinate his work with other trades to avoid conflicts with civil, mechanical, structural, and architectural elements of this project.

222 **675.13 Jobsite Conditions.**

223
224 **(A)** These specifications are accompanied by construction drawings
225 including building and site plans of all trades showing locations of all
226 outlets, switches, service runs, feeder runs, devices, and other electrical
227 equipment. The locations are approximate and before installing, study
228 adjacent architectural details and make installation in most logical manner.
229 Any device may be relocated within 10 feet before installation at direction
230 of Engineer without additional cost to State.

231
232 **(B)** Before installing, verify all dimensions and sizes of equipment.

233
234 **(C)** Verify that electrical system may be installed in strict accordance
235 with the original design, the Drawings and Specifications and the
236 manufacturer's recommendations.

237
238 **(D)** In the event of discrepancy, immediately notify the Engineer. Do
239 not proceed with installation in areas of discrepancy until all such
240 discrepancies have been fully resolved.

241
242 **675.14 Connections to Equipment Provided by Other Trades.**

243
244 **(A)** Electrical Contractor shall provide conduit, wiring and all electrical
245 connections from building wiring to motors for ventilation, air conditioning,
246 and other equipment, including all switches, motor protection devices, as
247 specified by other trades.

248
249 **(B)** Electrical Contractor shall ascertain from other trades furnishing
250 motor-driven equipment, the exact size and type of all motors, the exact
251 locations of such equipment and the proper point where electrical
252 connections should be brought through the floors or walls, as the case
253 may be. Locations shown are diagrammatic only; correct locations shall
254 be the full responsibility of the Electrical Contractor.

255
256 **(C)** Examine mechanical, architectural, and other Drawings and
257 Specifications for information concerning motors and control apparatus
258 and diagrams.

259
260 **(D)** Install individually mounted starters furnished for motors under
261 other Divisions. Provide and install safety switches as necessary for each
262 such motor.

263
264 **(E)** All control devices and control wiring shall be provided as described
265 in the installation manuals of equipment and/or the Drawings and
266 Specifications of other trades and disciplines.

267 **675.15 Demonstration of Complete Electrical Systems.**

268
269 (A) Submit written certification that electrical systems are complete and
270 operational. Submit certification with Contractor's request for final review.

271
272 (B) At the time of final review of electrical work, demonstrate the
273 operation of electrical systems. Provide labor, apparatus and equipment
274 for systems' demonstration. The various tests shall be under the direction
275 and supervision of the Engineer.

276
277 (C) The Contractor shall provide all test equipment, materials, labor,
278 and temporary power hook-ups to perform start-up and all tests as
279 required, to obtain final field acceptance from the State. All tests shall be
280 conducted in the presence of the Engineer or his representative. All test
281 procedure shall conform to this specification and applicable standards.
282 (ANSI, IEEE, NEMA, OSHA, NFPA, etc.)

283
284 (D) The Contractor shall be responsible for all tests and test record.
285 Testing shall be performed by and under the immediate supervision of the
286 Contractor. Test record shall be kept for each piece of equipment.
287 Copies shall be furnished to the Engineer for his review and/or
288 acceptance.

289
290 (E) A visual inspection of all electrical equipment, to check for foreign
291 material, tightness or wiring and connection, proper grounding, matching
292 nameplate charts with specification, etc., shall be made prior to actual
293 testing.

294
295 (F) After demonstration of systems, submit to the Engineer 6 sets of
296 keys for electrical equipment locks.

297
298 **675.16 Measurement and Payment.**

299
300 (A) Work under this Section will not be paid for separately but shall be
301 considered incidental to the construction of the Truck Weigh Station, in the
302 Proposal Schedule.

303
304
305 **END OF SECTION 675**

1 Make the following section a part of the Standard Specifications:
2
3

4 **“SECTION 676 - ELECTRICAL WORK**
5

6 **676.01 Description.**
7

8 **(A)** This article includes, but is not limited to, interior electrical systems
9 as indicated in the drawings.
10

11 **(B) Related Work Specified Elsewhere.** SECTION 675 - GENERAL
12 ELECTRICAL REQUIREMENTS applies to this article with additions and
13 modifications specified herein.
14

15 **(C) Applicable Publications.** The publications cited within this
16 specification form a part of this specification to the extent referenced.
17 Unless otherwise indicated, most recent edition of the publication with
18 current revisions and amendments will be enforced.
19

20 **676.02 Submittals.**
21

22 **(A) Product Data.**
23

24 **(1)** Panelboards.
25

26 **(2)** Overcurrent protection devices.
27

28 **(3)** Safety switches.
29

30 **(4)** Automatic control devices. (Photocells, time switches.
31 lighting and control contactors).
32

33 **(5)** Cabinets.
34

35 **(6)** Metering equipment.
36

37 **(7)** Junction boxes larger than 6-inch square.
38

39 **(B)** Submit written notification of all tests and test results as stipulated
40 in paragraphs entitled “TESTING” hereinbelow.
41

42 **676.03 General.**
43

44 **(A)** Materials shall be new and those items listed by the Underwriters’
45 Laboratories shall bear “UL” label of approval.

(B) Brand names, manufacturer's names and catalog numbers indicate standard of design and quality required. Acceptable manufacturers for electrical apparatus include General Electric, Square D/Schneider, Siemens, and Eaton. All apparatus supplied shall bear the name of the approved manufacturer on its nameplates. Substitute materials may be used if pre-qualified prior to bidding by the Engineer.

(C) Electrical equipment and luminaires shall be supplied through the manufacturer's designated representative by a local distributor.

(D) Proof of compliance shall be furnished when shop drawings are submitted.

(E) Where 2 or more similar type items are furnished, all shall be of the same manufacture, e.g., safety switches shall be of the same manufacturer unless otherwise noted.

(F) Where electrical apparatus is to be installed outdoors, NEMA 4X stainless steel housings shall be provided, unless noted otherwise.

676.04 Raceways.

(A) **Rigid Steel Conduit.** Rigid steel, zinc-coated inside and outside, for use with threaded fittings. ANSI C80.1.

(B) **Electrical Metal Tubing (EMT).** Thin walled steel tubing, zinc-coated. ANSI C80.3.

(C) **Flexible Metal Conduit.** Flexible steel conduit; zinc-coated inside and outside, smooth inside walls, liquid-tight with factory fittings for liquid-tight installation. Provide bushings with bonding jumper lugs for flexible conduit in excess of 6 feet in length. UL 360.

(D) **Plastic Conduit.** Polyvinyl chloride, Schedule 40. Provide a separate green equipment grounding conductor.

676.05 Boxes.

(A) **Outlet and Small Junction Boxes.** Nominal 4 inches square, 2-1/8 inches minimum depth exclusive of plaster ring, pressed steel, galvanized for corrosion protection. Outlet boxes for information outlets shall be 4 11/16-inch square by 2 1/8-inch deep. Exposed boxes and boxes exposed to the weather shall be cast steel, type FD, prime painted and enamel finished, with neoprene gasketed covers, threaded hubs for conduit connections and stainless steel screws. Boxes for metal surface raceways shall match raceways.

(B) **Extension Rings for Outlet Boxes.** Pressed steel, zinc-coated for corrosion protection.

(C) **Boxes Larger than 4 Inches Square.** Fabricated from NEC grade steel, zinc-coated for corrosion protection, prime painted and finished to match adjacent architectural elements. For exterior and wet locations, boxes and wireways shall be stainless steel with matching neoprene gasketed covers, threaded hubs for conduit connections and stainless steel screws. Boxes with any dimension larger than 12 inches shall have removable, hinged cover.

676.06 Cabinets.

(A) Fabricated from NEC grade steel with hinged door and lockable latch, galvanized for corrosion protection, finished to match panelboards for surface or flush mounting and size as shown on Drawings. For exterior and wet locations, cabinets shall be stainless steel, NEMA 4X, Type 316, with matching neoprene gasketed trim and doors, threaded hubs for conduit connections, stainless steel screws and hardware and external means for mounting.

(B) All cabinets for power systems (i.e., panelboards, relay cabinets, etc.) shall be keyed alike. All cabinets for signal systems shall be keyed alike, but differently than power system cabinets.

676.07 Conductors.

(A) Solid or stranded copper, sizes according to American Wire Gauge as shown on Drawings and #12 AWG minimum unless otherwise indicated. Stranded conductors only for #8 AWG and larger. All wiring shall be color-coded.

(B) **Branch Circuits.** Type THWN.

(C) **Luminaire Wires.** Per NEC.

(D) **Conductors Larger than #8 AWG.** XHHW.

(E) **Conductors for Equipment Connection.** Stranded flexible type.

676.08 Wiring Devices.

(A) **General.** Ratings and NEMA arrangement types as indicated. Drawings show minimum application ratings, specification describes nominal ratings.

(B) **Switches.** Ivory, 20A, 120/277V, non-mercury quiet type, specification grade with nylon body. Provide double pole, keyed, 3-way and 4-way switches, as indicated.

(C) **Duplex Convenience Receptacles.** Ivory unless otherwise indicated, 20A, 125V, specification grade, grounding type, unless otherwise noted. Provide tamperproof, safety covers, where indicated.

(D) **Other Receptacles.** Specification grade, ratings and NEMA configurations as indicated. Provide twist lock receptacles where indicated.

(E) **Ground Fault Circuit Interrupters.** Receptacle type similar to duplex convenience receptacle except 20A and UL listed per UL 943 with 6 milliampere ground fault sensing circuit. Feed-through type with test and reset buttons.

676.09 Device plates.

(A) Heavy duty nylon or Lexan, ivory color.

(B) **For Exterior Use.** Weatherproof flip-open cover, high-grain non-metallic, plastic or fiberglass, with cable opening and neoprene gaskets for plug-in equipment in outdoor or wet applications when receptacle is in use per NEC. Color to match adjacent finish. Cover shall be pad-lockable and capable of closing with a plug cap connected to the receptacle.

676.10 Control Equipment.

(A) **Time Switch.** Shall be equipped with a self-starting synchronous drive motor, a 24-hour dial, an electrically wound carry-over spring mechanism providing a minimum of 10 hours of operation during periods of power outages. Time switch shall be 2-pole with 120-volt timing motor and contact ratings as required to match lighting circuit, 60 cycles, with 40 ampere contacts. Time switch shall be equipped with manual type bypass switch and shall be housed in a NEMA 1 enclosure.

(B) **Lighting Contactors.** Contact ratings as specified, electrically-held, coil voltage to match lighting circuit voltage, NEMA 1 enclosure, number of poles as required.

(C) **Photocell.** In rush current rating of 20 amperes, operating voltage range of 105 to 285 volts, and mounting features as indicated. Light level setting shall be adjustable from 0.5 to 3.0 footcandles.

(D) **Manual Motor Starters.** HP rated toggle operated mechanism with appropriate overload heater elements, NEMA 1 enclosure. (NEMA 4 cast iron or ferrous alloy with neoprene gaskets for outdoor applications or where exposed to damp atmosphere or as indicated.) Toggle positions "ON", "OFF" and "TRIPPED" engraved or embossed on body and visible without removing enclosure cover.

676.11 Panelboards.

(A) Mounting, voltage rating, main bus capacity, breaker complement and lugs as specified on drawings, complete with housing, door, trim, lock and typewritten circuit directory. Provide ground bus for all panels.

(B) Panelboards should have copper bussing with bolt-on, molded case circuit breakers. Provide one-inch-per-pole breakers, half-size breakers not allowed. Circuit breaker complement short circuit ratings shall be fully rated. Use of series rated equipment will not be permitted. Toggle positions "ON", "OFF" and "TRIPPED" engraved or embossed on body and visible without removing enclosure cover.

(C) All locks shall be common-key type. Furnish 6 sets of keys to the Engineer.

(D) Panel housing and entire circuit breaker complement shall be of the same manufacture.

676.12 Circuit Breakers and Safety Switches.

(A) Circuit breakers, unless otherwise shown, shall be molded case, toggle mechanism operated, with no-fuse ambient-compensated thermal-magnetic overload automatic trip units for overcurrent and short-circuit protection, interchangeable trip units when available and contacts rated to interrupt short-circuit currents as specified on Drawings. Non-automatic breakers shall have short circuit withstand ratings as specified on Drawings. Multi-pole breakers shall have single, common operating handle for all poles. Toggle positions "ON", "OFF" and "TRIPPED" and breaker rating engraved or embossed on body and visible without removing enclosure cover.

(B) Safety switches shall be heavy-duty grade, horsepower rated and sized as indicated or as to match branch circuit overcurrent device rating.

(C) Enclosures for breakers and switches to be NEMA 1, for interior locations and NEMA 4X stainless steel for exterior locations.

676.13 Metering Equipment.

(A) Provide in accordance with Hawaiian Electric Company (HECo) standards and requirements.

676.14 Duct Seal.

(A) Pliable, non-toxic material used for application around empty conduits to minimize moisture and rodent/insect infiltration. Must be re-enterable material allowing for removal/reapplication after initial installation. Non-drying, non-cracking, non-corrosive material that will not adversely affect raceway and conductors. Provide duct seal at all duct entries in apparatus and risers.

676.15 Hardware, Supports, Backing, Etc.

(A) Provide all hardware, supports, backing and other accessories necessary to install electrical equipment. Wood materials shall be treated against termites, iron or steel materials shall be galvanized for corrosion protection, and non-ferrous materials shall be brass or bronze.

(B) Bolts, nuts, washers, and screws used for exterior use shall be high quality stainless steel or brass.

(C) **Ground Rods.** Ground rods shall be copper clad steel type, 3/4-inch diameter, 10 feet long, sectional type, and conform to UL 467.

676.16 Execution.**(A) Raceways.**

(1) Use conduits with approved coupling and connectors. All cuts square, using saw. Ream the ends. Bends made with approved tools. Reject flattened or crushed conduit. No running thread. Bushing and 2 locknuts at connection to boxes and enclosures.

(2) All raceways shall be blown and swabbed after installation to remove any water then immediately sealed to prevent water infiltration during construction. Raceways must remain sealed except when pulling conductors. If water is discovered during the warranty period the Contractor shall remove water from raceways and associated boxes at no additional cost to the State.

(3) Exposed conduit runs to be parallel and/or perpendicular to architectural and structural elements. Galvanized rigid steel conduit or IMC up to 7 feet above finished interior floor. EMT permitted for exposed installation indoors above 7 feet.

(4) **Electrical Metallic Tubing (EMT).** Acceptable for exposed, indoor installation as indicated above and for all concealed indoor installations with the following exceptions:

(a) EMT not permitted in/under grade slab.

(b) EMT not permitted in walls that are in contact with earth.

(c) Provide factory-made transitions between rigid conduit and EMT. Use only compression type, concrete tight couplings.

(d) Field-paint exposed tubing with corrosion-resistant paint.

(5) Non-metallic conduits only permitted for exterior ductlines and beneath grade slab at building; within retaining walls in contact with earth up to the first outlet box or conduit coupling above the height of earth being retained; and within walls anchored to grade slab and not in contact with earth up to height of first outlet box or conduit coupling. Exposed installation of non-metallic conduit not permitted.

(6) Minimum conduit diameter shall be 3/4-inch trade size except that 1/2-inch conduit will be permitted for branch circuit (non-signal) raceways with a maximum of 2 current carrying conductors #10 AWG and smaller.

(7) Provide nylon pullstring of 200-pound minimum tensile strength in all empty conduits in excess of 15 feet in length.

(8) Conceal all raceways unless otherwise noted on the drawings.

(9) Raceway penetrations through walls, floors and roof and raceway terminations shall be watertight and fire rated as necessary and be caulked, sealed and made with materials approved for that purpose.

(10) Provide locknuts and bushings for all raceway terminations.

(11) Provide hubs for all raceway connections to boxes and enclosures exposed to weather.

(B) Boxes.

(1) Plumb and securely fasten. Flush boxes - exactly flush; apply form oil so that stray concrete can be removed readily. Remove all debris from interior.

(2) Install boxes serving opposite sides of walls a minimum of 6 inches apart to minimize noise transmission.

(C) Conductors.

(1) **Lubricants.** Non-wax type, chemically neutral to insulation and sheath. Mechanical means for pulling to be torque-limiting type and not be used for #2 AWG and smaller wires.

(2) No-solder pressure connectors or crimp connections for #8 AWG and larger wires. Remove all sharp points that can pierce tape. Reinsulate according to wire manufacturer's directions. Make splices within boxes in accessible locations.

(3) Clean all raceways, boxes, and enclosures before pulling wires and cables. Form neatly in enclosures for minimum of cross-overs.

676.17 Miscellaneous Details.

(A) Provide necessary foundations, supports, backing, etc., for all raceways and equipment. Attach to wood and steel by screws or bolts. Attach to concrete by expansion anchors. Powder charge driven studs and anchors shall not be used.

(B) Clean all surfaces of enclosures and equipment.

(C) Close all unused knockout holes.

676.18 Painting.

(A) Wipe clean of dirt, oil, grease, etc., with rag and solvent, prime and finish to match surrounding finish. Do not paint over nameplate. Paint as specified in SECTION 670 - PAINTING.

(B) All surface-mounted boxes, enclosures, and exposed raceways shall be painted to match the color of surrounding areas. Exposed raceways with dedicated utility spaces are not required to be painted.

(C) Do Not field-paint circuit breakers, panelboards, and safety switches.

676.19 Identification.

(A) All overcurrent protection devices, switchbanks, enclosures, and cabinets shall be provided with plastic plate identifying itself and its use.

(1) Identify all panelboards, meters, breakers and safety switches.

(2) Cabinets. (i.e. RELAY "2A").

(3) Switchbanks (e.g. identify function of each switch).

(4) Lighting contactors.

(B) Plastic plate shall be laminated black and white, engraved 1/4-inch high lettering to expose black layer. Plate shall be riveted to the cover and located directly below device handle, or top side of door.

(C) CAUTION SIGNS shall be provided as required by Ordinances and/or by OSHA.

676.20 Grounding.

(A) Ground services, metallic enclosures, raceways and electrical equipment according to requirements of National Electrical Code, Article 250. Install 3/4-inch x 10-foot copperclad ground rod, Copperweld Steel Co., with top 12 inches below finished grade. Provide additional ground rods spaced minimum 6 feet apart as required. Bond together with No. 1/0 bare copper wire buried 12 inches below finished grade or as indicated to obtain a ground resistance of 25 ohms or less as measured by 3-point fall of potential method with electric ground megger. Connect ground rods to building entrance equipment and nearest cold water pipe with grounding electrode conductor per N.E.C. At water meter, install pipe clamps, Thomas & Betts Co., No. 3900 series, on both sides of meter and bond together. Connection shall not interfere with installation or removal of water meter.

(B) Ground connections to equipment, raceways, motors, grounding type receptacles and other metallic parts directly exposed to ungrounded conductors by insulated conductors, No. 12 minimum, AWG copper, N.E.C. Type TW, green insulation, or continuous approved metal raceways unless indicated otherwise. Provide insulated ground wires to all receptacles, panels, transformers and switchboards.

(C) All grounding wire runs where exposed and within building in raceways. Run equipment ground wires together with circuit conductors.

676.21 Testing.

(A) Upon completion of this portion of work, and prior to its acceptance by the State, make all required tests and secure all required approval from agencies having jurisdiction. Any deficiencies found shall be rectified and work affected by such deficiencies shall be completely retested at Contractor's expense. Written notification of all proposed tests shall be provided to the Engineer a minimum of 14 days prior to the date of the test.

(B) Perform an operational test after completion of the installation in the presence of the Engineer, to assure proper operation of all items of work. Remove all grounds and shorts. Balance feeder loads.

(C) Measure resistance of grounding system at service and furnish 3 copies of results to the Engineer.

676.22 Measurement and Payment.

(A) Work under this Section will not be paid for separately but shall be considered incidental to the construction of the Truck Weigh Station, in the Proposal Schedule.

END OF SECTION 676"

1 Make the following section a part of the Standard Specifications:
2
3

4 **SECTION 677 - INTERIOR LIGHTING**

5 6 **677.01 Description.**

7
8 **(A)** This section includes, but is not limited to, interior luminaires,
9 lamps, and emergency lighting units.
10

11 **(B) Related Work Specified Elsewhere.**

12
13 **(1)** SECTION 675 - GENERAL ELECTRICAL REQUIREMENTS
14 applies to this section, with the additions and modifications
15 specified herein.
16

17 **(2)** SECTION 676 - INTERIOR ELECTRICAL WORK applies to
18 this section, with additions and modifications specified herein.
19

20 **(C) Applicable Publications.** The publications listed within this
21 specification form a part of this specification to the extent referenced. The
22 publications are referred to in the text by the basic designation only.
23 Unless otherwise indicated, most recent edition of publication with current
24 revisions and amendments will be enforced.
25

26 **677.02 Description of Work.**

27 **(A)** The work includes providing luminaires and battery-powered units
28 and systems for interior use, including luminaires and accessories
29 mounted on the exterior surfaces of buildings. Materials not normally
30 furnished by manufacturers of these devices are specified in SECTION
31 676 - INTERIOR ELECTRICAL WORK.
32

33 **677.03 Submittals.**

34 35 **(A) Manufacturer's Data.**

36
37 **(1)** Luminaires and drivers.

38
39 **(2)** Emergency lighting equipment.
40

41 **(B) Shop Drawings.**

42
43 **(1)** Luminaire assemblies.

44
45 **(2)** Emergency lighting systems.

46 **677.04 LED Luminaires.**

47
48 **(A)** Provide luminaires specifically engineered for LED light sources
49 and drivers. Use of linear or screw-base retrofit LED light sources is not
50 acceptable. LED luminaires shall carry a minimum warranty of 5 years.

51
52 **(B) LED Light Sources.**

53
54 **(1)** Correlated Color Temperature (CCT) shall be in accordance
55 with NEMA ANSLG C78.377. Nominal CCT: 4000 degrees K
56 unless otherwise specified.

57
58 **(2)** Color Rendering Index (CRI) shall be greater than or equal
59 to 80 for 4000 degrees K light sources.

60
61 **(3) Color Consistency.** Manufacturer shall utilize a maximum
62 4-step MacAdam ellipse binning tolerance for color consistency of
63 LEDs used in luminaires.

64
65 **(C) LED Luminaire Power Supply Units (Drivers).** UL 1310. LED
66 power supply units (drivers) shall meet the following requirements:

67
68 **(1)** Minimum efficiency shall be 85 percent.

69
70 **(2)** Rated to operate between ambient temperature of minus 22
71 degrees F and 104 degrees F.

72
73 **(3)** Designed to operate on the voltage system indicated.

74
75 **(4)** 60 Hz operating frequency.

76
77 **(5)** Power factor shall be greater than or equal to 0.90.

78
79 **(6)** Total Harmonic Distortion (THD) current shall be less than or
80 equal to 20 percent.

81
82 **(7)** Drivers shall be mounted integral to the luminaire. Remote
83 mounting of driver is not allowed.

84
85 **(8)** UL listed with sound rating of A.

86
87 **(9)** Equipped with over-temperature protection circuit that turns
88 light source off until normal operating temperature is achieved.

89 **677.05 Recess- and Flush-Mounted Luminaires.**

90
91 (A) Provide type that can be relamped from the bottom. Trim for the
92 exposed surface of flush-mounted fixtures shall be finished as indicated.
93

94 **677.06 Suspended Luminaires.**

95
96 (A) Provide hangers capable of supporting twice the combined weight
97 of the adjoining luminaires and shall sustain a steady pull of not less than
98 500 pounds (1000 pounds for security type fixtures). Provide with swivel
99 hangers to ensure a plumb installation. Hangers shall be zinc-plated steel
100 with swivel-ball tapped for the conduit size indicated. Hangers shall allow
101 luminaires to swing within an angle of 45 degrees. Single-unit suspended
102 luminaires shall have twin-stem hangers. Multiple-unit or continuous row
103 luminaires shall have a tubing or stem for wiring at one point and a tubing
104 or rod suspension provided for each unit length of chassis, including one
105 at each end. Rods shall be a minimum 1/4-inch diameter.
106

107 **677.07 Emergency Lighting Equipment.**

108
109 (A) UL 924, NFPA 70, and NFPA 101. Provide lamps in wattage
110 indicated.
111

112 **677.08 Installation.**

113
114 (A) Set luminaires plumb, square, and level with ceiling and walls, in
115 alignment with adjacent luminaires, and secure in accordance with
116 manufacturers' directions and accepted shop drawings. The installation
117 shall meet with the requirements of NFPA 70. Mounting heights specified
118 or indicated shall be to bottom of luminaire for ceiling-mounted luminaires
119 and to center of luminaire for wall-mounted luminaires. Obtain approval of
120 the exact mounting for each luminaire on the job before installation is
121 commenced and, where applicable, after coordinating with the type, style,
122 and pattern of the ceiling being installed. Recessed luminaires may be
123 supported from suspended ceiling support system ceiling tees if the ceiling
124 system support rods or wires are provided at a minimum of 4 rods or wires
125 per luminaire and located not more than 6 inches from each corner of
126 each luminaire. Do not support fixtures by ceiling acoustical panels.
127 Where luminaires of sizes less than the ceiling grid are indicated to be
128 centered in the acoustical panel, support such luminaires independently or
129 with at least one 3/4-inch metal channel spanning, and secured to, the
130 ceiling tees. Provide rods or wires for luminaire support under this section
131 of the specifications. Rods or wires shall conform to the requirements of
132 SECTION B094 - PAINTING. Additionally, for recessed luminaires,
133 provide support clips securely fastened to ceiling grid members, a
134 minimum of one at or near each corner of each luminaire.

(B) Supports for fixtures shall sustain a steady pull of 1000 pounds for security type fixtures, and not less than 2-1/2 times weight of fixtures and accessories.

(C) Provide unswitched circuits for emergency lighting equipment to prevent unnecessary battery operation when utility power is available.

(D) Provide for local control of lights unless indicated otherwise. Provide relay and contactor-controlled lighting circuits where remote switching is required.

(E) Where specifically recommended by the manufacturer of specialty electrical items, work performed shall be done by factory trained technicians.

677.09 Grounding.

(A) Ground noncurrent-carrying parts of equipment as specified in SECTION 676 - INTERIOR ELECTRICAL WORK. Where the copper grounding conductor is connected to a metal other than copper, provide specially treated or lined connectors suitable for this purpose.

677.10 Field Tests.

(A) **Operating Test.** Upon completion of the installation, conduct an operating test to show that the equipment operates in accordance with the requirements of this section. Make adjustments and add and/or replace light fixtures and other equipment as required to correct deficiencies. Lighting level measurements shall be provided upon request and be made at intervals as directed by the Engineer and with a NIST calibrated cosine corrected photometer with a silicon photodiode.

(B) **Insulation Resistance Test.** Perform as specified in SECTION 676 - INTERIOR ELECTRICAL WORK both before and after connection of luminaires and equipment.

(C) **Ground Resistance Tests.** Perform as specified in SECTION 676 - INTERIOR ELECTRICAL WORK.

677.11 Measurement and Payment.

(A) Work under this Section will not be paid for separately but shall be considered incidental to the construction of the Truck Weigh Station in the Proposal Schedule.

END OF SECTION 677

1 Make the following Section a part of the Standard Specifications:

2
3 **“SECTION 678 – UNIT MASONRY ASSEMBLIES**

4
5
6 **678.01 General Conditions.**

7
8 (A) The General Conditions, the Special Provisions, and all other applicable
9 documents preceding these specifications shall govern all work specified
10 hereinafter in all Divisions and Sections.

11
12 **678.02 Summary.**

13
14 (A) Section Includes:

15
16 (1) Concrete masonry units.

17 (2) Steel reinforcing bars.

18 **678.03 Definitions.**

19
20 (A) CMU(s): Concrete masonry unit(s).

21 (B) Reinforced Masonry: Masonry containing reinforcing steel in grouted
22 cells.

23
24 **678.04 Performance Requirements.**

25
26 (A) Provide structural unit masonry that develops indicated net-area
27 compressive strengths at 28 days.

28
29 (B) Determine net-area compressive strength of masonry from average net-
30 area compressive strengths of masonry units and mortar types (unit-strength
31 method) according to Tables 1 and 2 in ACI 530.1/ASCE 6/TMS 602.

32
33
34 **678.05 Submittals.**

35
36 (A) Material Certificates: For each type and size of the following:

37 (B) Masonry units.

38 (C) Include data on material properties.

39 (D) Cementitious materials. Include brand, type, and name of manufacturer.

(E) Preblended, dry mortar mixes. Include description of type and proportions of ingredients.

(F) Grout mixes. Include description of type and proportions of ingredients.

(G) Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.

(H) Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C 109/C 109M for compressive strength, ASTM C 1506 for water retention, and ASTM C 91 for air content.

(I) Include test reports, according to ASTM C 1019, for grout mixes required to comply with compressive strength requirement.

(J) Statement of Compressive Strength of Masonry: For each combination of masonry unit type and mortar type, provide statement of average net-area compressive strength of masonry units, mortar type, and resulting net-area compressive strength of masonry determined according to Tables 1 and 2 in ACI 530.1/ASCE 6/TMS 602.

678.06 Quality Assurance.

(A) Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.

(B) Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.

(C) Masonry Standard: Comply with ACI 530.1/ASCE 6/TMS 602 unless modified by requirements in the Contract Documents.

678.07 Delivery, Storage, and Handling.

(A) Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.

(B) Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

(C) Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

(D) Deliver preblended, dry mortar mix in moisture-resistant containers designed for use with dispensing silos. Store preblended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in covered weatherproof dispensing silos.

(E) Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

678.08 Project Conditions.

(A) Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.

(B) Do not apply uniform floor for at least 12 hours and concentrated loads for at least three days after building masonry walls or columns.

(C) Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.

(1) Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.

(2) Protect sills, ledges, and projections from mortar droppings.

(3) Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.

(D) Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

678.09 Concrete Masonry Units.

(A) CMUs: ASTM C 90.

(1) Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 1900 psi.

(2) Density Classification: Normal weight.

(3) Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions.

(B) Mortar and Grout Materials.

(1) Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white

112 cement as required to produce mortar color indicated.

113 (2) Hydrated Lime: ASTM C 207, Type S.

114 (3) Masonry Cement: ASTM C 91.

115 (4) Mortar Cement: ASTM C 1329.

116 (5) Aggregate for Mortar: ASTM C 144.

117 (6) Aggregate for Grout: ASTM C 404.

118 (7) Water: Potable.

119 (C) **Reinforcement.**

120
121 (1) Reinforcing Bars: Deformed Bar Reinforcement: ASTM A 615/A
122 615M, Grade 60.

123 (D) **Mortar and Grout Mixes**

124
125 (1) General: Do not use admixtures, including pigments, air-entraining
126 agents, accelerators, retarders, water-repellent agents, antifreeze
127 compounds, or other admixtures, unless otherwise indicated.

128 (a) Do not use calcium chloride in mortar or grout.

129 (2) Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form
130 of a preblended mix. Measure quantities by weight to ensure accurate
131 proportions, and thoroughly blend ingredients before delivering to Project
132 site.

133
134 (3) Mortar for Unit Masonry: Comply with ASTM C 270 Specification.
135 Provide the following types of mortar for applications stated unless
136 another type is indicated.

137 (a) For reinforced masonry, use Type S.

138 (4) Grout for Unit Masonry: Comply with ASTM C 476.

139 (a) Use grout of type indicated or, if not otherwise indicated, of
140 type (fine or coarse) that will comply with Table 1.15.1 in ACI
141 530.1/ASCE 6/TMS 602 for dimensions of grout spaces and pour
142 height.

143 (b) Proportion grout in accordance with ASTM C 476, paragraph
144 4.2.2 for specified 28-day compressive strength indicated, but not
145 less than 2000 psi.

(c) Provide grout with a slump of 8 to 11 inches as measured according to ASTM C 143/C 143M.

678.10 Examination.

(A) Examine conditions, with Installer and Officer-in-Charge present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

(1) For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.

(2) Verify that foundations are within tolerances specified.

(3) Verify that reinforcing dowels are properly placed.

(B) Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.

(C) Proceed with installation only after unsatisfactory conditions have been corrected and approved by Officer-in-Charge.

678.11 Installation, General.

(1) Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

(2) Wetting of Brick: Wet brick before laying if initial rate of absorption exceeds 30 g/30 sq. in. per minute when tested per ASTM C 67. Allow units to absorb water so they are damp but not wet at time of laying.

678.11 Tolerances.**(1) Dimensions and Locations of Elements:**

(a) For dimensions in cross section or elevation do not vary by more than plus 1/2 or minus 1/4 inch.

(b) For location of elements in plan do not vary from that indicated by more than plus or minus 1/2 inch.

678.12 Laying Masonry Walls.

(1) Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.

(2) Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in one-third running bond; do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.

(3) Stopping and Resuming Work: Stop work by racking back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.

(4) Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.

(5) Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.

(6) Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below and rod mortar or grout into core.

(7) Fill cores in hollow CMUs with grout 24 inches under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.

678.13 Mortar Bedding and Jointing.

(A) Lay hollow CMUs as follows:

220 (1) With face shells fully bedded in mortar and with head joints of depth
221 equal to bed joints.

222 (2) With webs fully bedded in mortar in grouted masonry, including
223 starting course on footings.

224 (3) With entire units, including areas under cells, fully bedded in mortar
225 at starting course on footings where cells are not grouted.

226 (B) Lay solid masonry units with completely filled bed and head joints; butter
227 ends with sufficient mortar to fill head joints and shove into place. Do not deeply
228 furrow bed joints or slush head joints.

229

230 **678.14 Reinforced Unit Masonry Installation.**

231

232 (A) Temporary Formwork and Shores: Construct formwork and shores as
233 needed to support reinforced masonry elements during construction.

234

235 (1) Construct formwork to provide shape, line, and dimensions of
236 completed masonry as indicated. Make forms sufficiently tight to prevent
237 leakage of mortar and grout. Brace, tie, and support forms to maintain
238 position and shape during construction and curing of reinforced masonry.

239 (2) Do not remove forms and shores until reinforced masonry members
240 have hardened sufficiently to carry their own weight and other loads that
241 may be placed on them during construction.

242 (B) Placing Reinforcement: Comply with requirements in ACI 530.1/ASCE
243 6/TMS 602.

244 (C) Grouting: Do not place grout until entire height of masonry to be grouted
245 has attained enough strength to resist grout pressure.

246 (1) Comply with requirements in ACI 530.1/ASCE 6/TMS 602 for
247 cleanouts and for grout placement, including minimum grout space and
248 maximum pour height.

249

250 (2) Limit height of vertical grout pours to not more than 5'-4".

251

252

678.15 Field Quality Control

(A) Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas, as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.

(B) Inspections: special inspections according to the "International Building Code."

(1) Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.

(2) Place grout only after inspectors have verified compliance of grout spaces and of grades, sizes, and locations of reinforcement.

(3) Place grout only after inspectors have verified proportions of site-prepared grout.

(C) Testing Prior to Construction: One set of tests.

(D) Grout Test (Compressive Strength): For each mix provided, according to ASTM C 1019.

678.16 Repairing, Pointing, and Cleaning.

(A) Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.

(B) Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.

(A) In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.

(B) Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:

(C) Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.

(D) Wet wall surfaces with water before applying cleaners; remove cleaners

290 promptly by rinsing surfaces thoroughly with clear water.

291 **678.17 Masonry Waste Disposal**

292

293 (A) Salvageable Materials: Unless otherwise indicated, excess masonry
294 materials are Contractor's property. At completion of unit masonry work, remove
295 from Project site.

296 **678.18 Measurement and Payment**

297

298 (A) Payment for the work covered under this section shall not be made
299 directly but shall be considered incidental to the construction of the Truck Weigh
300 Station, in the Proposal Schedule.

301

302

END OF SECTION 678"

1 Make the following section a part of the Standard Specifications:
2
3

4 **SECTION 679 - WEIGH IN MOTION SYSTEM**

5
6 **679.01 Description.** This work includes furnishing labor, materials, tools,
7 machinery and equipment necessary to install and construct an operating Weigh-
8 In-Motion system complete in place according to the contract. The Weigh-In-
9 Motion system includes:

10
11 (A) Trenching, structural excavating, backfilling, restoring work and
12 installing pullboxes.

13
14 (B) Weigh-In-Motion system equipment.

15
16 (C) Concrete foundations, ductlines, cables, wiring, painting and
17 restoration work.

18
19 (D) Coordinating work and arranging for inspection of work with the
20 Engineer and other agencies as required.

21
22 (E) Turning over to the Department a complete and operating Weigh-
23 In-Motion system according to the contract.

24
25 (F) Furnish and install the incidental parts that the contract does not
26 show and that are necessary to complete the Weigh-In-Motion system as
27 though such parts were in the contract.

28
29 (G) Electrical equipment shall conform to the NEMA standards and this
30 contract. Material and workmanship shall conform to the National Electric
31 Code (NEC); National Electrical Safety Code (NESC); General Order Nos.
32 6 and 10 of the Hawaii Public Utilities Commission; the standards of
33 ASTM, ANSI; Electronics Industries Associates (EIA); and local
34 ordinances that may apply.

35 36 **679.02 Materials.**

37
38 (A) Concrete shall conform to Section 601 - Structural Concrete.

39
40 (B) Reinforcing steel shall conform to Section 602 - Reinforcing Steel.

41
42 (C) Steel plate covers and anchor bolts shall conform to ASTM A 36 and
43 A 307, respectively. The Contractor shall zinc-coat the anchor bolts if
44 exposed.

(D) Other materials shall conform to the following:

Dark Green Enamel Paint	708.03
Paint Thinner	708.04
Concrete Pull Box	712.06(B)
Conduits	712.27

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

The Fiber Optic Contractor shall be a locally based installer who shall have at least 3 years' experience, in installing fiber optic cables over \$250,000, specifically for outdoor overhead joint-pole and underground applications. The firm shall also track and document the installation data and tension measurements when installing the fiber optic cables. Any tension measurements, which exceed the manufacturer's recommendation, will be considered means for the cable rejection. The Fiber Optic Contractor shall be fully responsible for the quality and integrity of the installed cable and the operability of the final fiber optic cable product.

The Engineer may make inspection or sampling of certain materials at the factory or warehouse before delivery to the work site, when required.

679.03 Weigh In Motion System.

(A) System Introduction.

(1) The Mainline Sorting System will sort commercial vehicles on the mainline highway upstream from a Department weight enforcement station. Vehicles are sorted as they pass over the Sorter System sensors; vehicles that are potentially in violation of weight regulations will be signaled to exit to the inspection station ramp; vehicles that are in compliance with the regulations will be signaled to bypass the station.

(2) The objective of the Department is to have a fully operational Mainline Sorting System capable of accurately and automatically pre-screening vehicles in motion for enforcement purposes. Based on the weights obtained from the WIM screening, the system shall automatically direct the selected vehicles to the enforcement

scales, as illustrated in the attached plans and these specifications.

(3) The Weigh-In-Motion (WIM) system is to be modular for ease of service and upgradeability. Changing or upgrading the functionality at a site shall require only the addition of the electronics modules and peripheral devices needed for that functionality; existing equipment shall be usable in the upgraded system.

(4) The scope of work is to supply and install the following:

(a) Weigh-in-Motion (WIM) Scales, axle sensors, inductive loops, controller electronics and cabinet.

(b) Lane directional signals or Changeable Message Sign (CMS) including support structures and sensing loops.

(c) Tire Anomaly and Classification System (TACS).

(d) Overview Video Camera (OVC) installation.

(e) License Plate Reader (LPR) installation.

(f) USDOT Number Reader installation.

(g) Container Reader (CR) installation.

(h) Intelligent Roadside Operations Computer (iROC) and local database for electronic screening of LPR, USDOT, and CR credentials.

(i) Interface to Static Scale for Mainline WIM calibration and Hold and Release functionality.

(j) Communications wiring and conduit for all equipment.

(k) Power wiring and conduit.

(l) Open/Closed Sign.

(m) Network communications.

(5) The purpose of this project is not for the research and development of a mainline sorting system which might perform the objectives as described above. Therefore, the Contractor shall be

required to furnish documentation which demonstrates to the satisfaction of the Department that all equipment proposed for use in the system is of standard manufacture; that the manufacturer has had similar equipment available for purchase for not less than ten years and has at least three (3) successful Mainline Sorter System installations (which are not for research and development purposes); and that the manufacturer's WIM equipment has a proven acceptable performance history while in use under conditions similar to those for the intended use

(6) As a minimum, the equipment documentation provided by the Contractor shall include the following for the Mainline Sorter:

(a) Detailed description of how the system requirements will be met.

(b) Drawings showing control and display panels with descriptions.

(c) Description and example screen images of the operator display on the workstation computer.

(d) Manufacturer's name and model number, supported by descriptive material for (but not limited to) the standard package components with all accessories identified under "Description." Submittals shall be supported by descriptive material, such as catalog cuts, diagrams, and other data published by the manufacturer, to show conformance to specifications and plan requirements; model numbers alone will not be acceptable.

(e) Document successful interface with TACS System. A list of five (5) references with names, addresses, and persons to contact for similar installations.

(f) At least five (5) Weigh-In-Motion references and at least three (3) Mainline Sorter System references which have had systems in regular use for a period of not less than five years. The Department reserves the right to request the owner's evaluation of in-service equipment. These must all be different references.

(B) Mainline WIM Sorting System.

(1) Mainline WIM Sorter Operational Overview.

(a) Commercial vehicles approaching the weigh station shall be directed into the right hand lane by means of static signing as provided by the Department. A vehicle approaching the weigh station will pass over the Mainline Weigh-In-Motion (WIM) system, which is embedded in the highway approximately 200 feet (60 meters) prior to the weigh station exit ramp. The right lane will be equipped with double threshold Bending Plate WIM Scales that meet ASTM E 1318-09 Type III accuracy and reliability. WIM electronics will be located at the roadside adjacent to the WIM scales and sensors and will process the information collected by the in-road equipment.

(b) The WIM system shall collect axle weight and spacing, vehicle speed, classification and other relevant data to create a vehicle record. If the system is equipped with the optional video imaging equipment, a side image of the passing vehicle will be combined with the vehicle record. Based on a comparison of the vehicle record to the parameters set by the station operator, the WIM system will make a sort decision and advise the driver to either exit or bypass the weigh station via the Changeable Message Signs (CMS) located on the side of the road. There shall be provision for an operator selectable percentage of non-violating vehicles to be randomly selected from the mainline for visual inspection at the scale house.

(c) Additional Technology that will be placed on the mainline for credential and safety compliance will include Overview Camera, License Plate Reader, USDOT Reader, Container Reader, and Tire Anomaly and Classification System.

(2) Mainline WIM Sorter Functional Requirements. Lanes at the Sorter site that are equipped with WIM sensors are termed WIM lanes; vehicle data from WIM lanes shall include axle and vehicle weights. Lanes at the Sorter site that are NOT equipped with WIM sensors are termed Automatic Vehicle Classification (AVC) compliance lanes; vehicle data from AVC lanes shall include vehicle classifications but no weight data.

(a) WIM Scales.

1. For WIM operation, the sensor configuration for the mainline drive lane that enters into the weigh

station shall be: *"loop - WIM scale - WIM scale - WIM scale - WIM scale - loop"*.

2. There shall be four scale frames which are permanently embedded into the roadway structure on the mainline drive line that enters into the Weigh Station. The four scale weighpad platforms must be mounted and secured within the frames and must be removable for service requirements or replacement. The instrumentation for the weighpad shall be strain gauge load cells mounted directly on the underside of, and integral to the weighpad. The scale frames shall measure 69.63 x 25.3 x 1.65 inch (1769 x 643 x 42 mm). The WIM scale shall be installed flush with the road surface. 8. The depth of the scale frame excavation shall not exceed 4 inches in the drain area, 2.5 inches in the load bearing area.

3. The stationary weighpad platform shall be constructed of high strength steel. The weighpad shall operate at high or low speed (from 5 to 200 KPH or 3 to 125 MPH). There shall be two 68.9 x 20 x 0.96 inch (1750 x 508 x 24.5 mm) independent weighpad platforms used per lane of traffic, giving a total weighing surface of approx. 11.5 ft. x 20 inches (3.5 x 0.5 m). The bending plates shall determine individual weights for both the left and right tires of each axle on a vehicle.

4. The bending plate shall be no more than 1 in (25 mm) thick and shall be constructed from a single piece of metal with no welding or bolting. The individual weight of the bending plate or frame shall not exceed 265 pounds nor shall the combined weight of a single bending plate and its frame exceed 505 pounds.

5. The WIM scales shall operate properly in a temperature range of -40°F to +176°F (-40°C to +80°C). The WIM scales and their frames shall be rust proofed. All installation hardware shall be either stainless steel or rust proofed. All surface mounting bolt and service holes shall be sealed.

6. Construction and total lane closure time shall not exceed 8 hours duration (consecutive closure

time), including the time required for grinding and scale installation.

7. Replacement of a weighpad shall be less than one hour (not including traffic control).

8. The WIM scales and frames shall be grounded with ground rods. The signal processing electronic components/modules shall be protected against transient over-voltages such as lightning. The signal cable shall be a 24 AWG 4 conductor shielded cable and sealed to the scale to prevent water intrusion into the measuring channels.

9. The accuracy of the Bending Plate weigh pads shall be in conformance with the ASTM E 1318 "Standard Specifications for Highway Weigh-in-Motion (WIM) Systems with User Requirements and Test Method" performance requirements for a Type III system on the for double threshold configuration (four weigh pads per lane) and Type I for single threshold configuration (two weigh pads per lane).

10. Prior to installation of the weighpad platform the Contractor shall ensure the roadway meets the requirements of Section 6 of ASTM E 1318-09. If necessary, to meet the requirements, the Contractor shall grind the concrete roadway beginning 200 feet (60 meters) prior to the scale location and ending 100 feet (30 meters) after the scale location, for a total of 300 feet (90 meters), with a minimum 36 inch (90 cm) blanket grinder.

(3) TACS (Tire Anomaly Classification System).

(a) The Tire Anomaly and Classification System (TACS) screens commercial vehicles on the mainline and TIS ramp to identify those vehicles which are unsafe due to missing or underinflated tires.

(b) The Tire Anomaly and Classification System (TACS) supports the screening of commercial vehicles at highway (up to 100 mph) and ramp speeds (down to 1 mph) at weigh station facilities to identify those vehicles which are unsafe due to missing or underinflated tires. In addition, TACS supports the identification of vehicles which are using wide

based tires (super singles) and detects single/dual tire configuration for enhanced classification. The system identifies vehicles which meet these criteria and allows station operator(s) to select these vehicles for inspection.

(c) TACS consists of the following components:

1. In-Road Sensors - for tire detection and measurement, for vehicle classification in accordance with federal and/or local classification schemes, for verifying that a vehicle is properly positioned in a lane and for determining speed, axle width and vehicle length

2. Sensor Electronics - to capture the signal information from the In-Road Sensors, process this information and pass vehicle and tire information to the Roadside Electronics.

3. Roadside Electronics - to integrate the TACS information with other vehicle measurement information such as weigh-in-motion, license plate, RFID and camera information into a consolidated vehicle record for distribution to the Weigh Station Work Station for action as appropriate.

4. Weigh Station Work Station, Software and Graphical User Interface (GUI) - to present information to weigh station operators and support their setting of commercial vehicle screening criteria based on data provided by TACS

(4) Detector Loops.

(a) The Sorter system shall use inductive loops to detect the presence, entry or exit of a vehicle in support of WIM and AVC operations.

(b) Each detector loop shall have a minimum loop area of 6 feet x 6 feet (1.83 m x 1.83 m) with 45° angle cut at the corners.

(c) Loop wire must be 1 conductor, 14 AWG, IMSA 51-5. Loop leads must be 2 conductor, 14 gauge, IMSA 50-2 cable.

(d) All saw-cut loops shall be sealed with 3M loop sealant.

(e) For each CMS there shall be a detector loop. The Mainline WIM system shall use the signals from these detector loops to control the timing of the message displayed by each CMS such that the correct message is displayed to each vehicle.

(5) iSINC Mainline Sorter Electronics.

(a) The Mainline Sorter System Electronics shall be located next to the WIM scales in a roadside cabinet. The System Electronics shall be responsible for creating vehicle records and formatting the truck data to enable a user to remotely view the vehicle records. The WIM interface electronics will be a stand-alone system with the capability to collect and interpret the signals from the WIM Scale.

(b) All material necessary for setup and operation of the system must be provided including all wiring and cabling.

(c) The system must be provided with the required software pre-loaded. The software must automatically execute when the system is powered up.

(d) The electronics must be modular to facilitate easy maintenance, troubleshooting and in-field servicing. For ease of maintenance, each type of input and output device shall interface to a system electronics printed circuit board interface module. All interface modules shall feature self-testing and built-in fault diagnosis. All sensor modules shall be field replaceable and slot mounted in a system electronics sub-chassis.

(e) The system electronics shall be available in optional CE compliant configurations. These configurations shall satisfy the following European Union directives:

1. Low Voltage 2006/95/EC
2. Electromagnetic Capability Directive 2004/108/EC
3. Restriction of Hazardous Substances Directive 2002/95/EC

410 **4. Waste Electronic and Electrical Equipment**
411 **Directive 2002/96/EC**

412
413 **(f)** The system shall be of a durable, industrial design
414 and construction, and enable continuous operation, with
415 automated start-up in the event of a power outage. For
416 reliability, modularity and ease of communication with any
417 additional system components that may be added at a future
418 date, system electronics modules shall communicate over a
419 rugged CAN Bus system (Controller Area Network protocol).

420
421 **(g)** The electronics shall include interfaces to the
422 following components:

- 423
424 **1. WIM Sensors including Piezo, Bending Plate,**
425 **Single Load Cell, Kistler Lineas Quartz**
426
427 **2. Axle Sensors including Piezo and DYNAX**
428
429 **3. Safety and Credentialing Systems including**
430 **OVC, LPR, USDOT, CR, and TACS**
431
432 **4. Loops**
433
434 **5. Offscale Detectors**
435
436 **6. Communications System**

437
438 **(h)** The roadside electronics shall provide a facility for
439 viewing vehicle records and sensor diagnostics over either a
440 direct computer connection or a telecommunications link.

441
442 **(i)** All components of the electronic system, including
443 inductive loop detectors, will contain electrical over-voltage
444 protection to prevent damage from electrical surges, spikes
445 and lightning.

446
447 **(j)** The System Electronics shall provide the following
448 functions:

- 449
450 **1. Insert sequence numbers for vehicle records**
451 **for tracking purposes.**
452
453 **2. Perform WIM operation.**
454
455 **3. Weigh all vehicles traveling over WIM scales.**

456
457 4. Classify all vehicles traveling on all
458 instrumented lanes of the highway.

459
460 5. Perform weight compliance analysis on
461 vehicles in accordance with department or agency
462 regulations.

463 6. Perform sorter operation in accordance with
464 decisions based on weight compliance analysis, other
465 violations (speeding, improper maneuver, sudden
466 speed change, etc.).

467
468 7. Capture images for all vehicles.

469
470 8. Filter out all non-interesting images and format
471 for Web server.

472
473 9. Perform data collection, data storage, file
474 management and report generation functions for
475 collected vehicle information.

476
477 **(k)** The system shall include a data downloading system
478 to allow collected vehicle data to be retrieved either remotely
479 or on site.

480
481 **(l)** The Mainline WIM Sorting System shall be provided
482 with a secure, weather resistive roadside enclosure to house
483 the System Electronics, the WIM computer and its
484 peripherals and the side image camera equipment.

485
486 **(m)** All wires from scales, offscale sensors, axle sensors,
487 loops, etc. shall be terminated on terminal strips. The
488 terminal strips shall be identified by terminal strip number
489 and screw connection number. These terminal strips shall be
490 readily accessible. All cables shall be long enough to easily
491 reach these terminal strips. Terminal strips, splices, or other
492 type of connections prior to these standard terminal strips
493 shall not be allowed except for splicing of a loop to a
494 shielded twisted loop lead.

495
496 **(n)** All AC power connections shall be shielded to prevent
497 electrical shock.

498
499 **(o)** The System Electronics shall meet the following
500 requirements:

System	Low Temperature: -40 degrees C Cold start
	High Temperature: +75 degrees C
	Humidity: 95% relative humidity, non-condensing
	Processor: 32-bit RISC architecture
	Memory: 32 MB RAM, up to 4 GB Storage
	CAN Bus environment for sensor and control configuration
	Non-volatile storage for vehicle information to prevent data loss during power outages and to retain sensor module configuration
Communications	Industry standard CAN Bus environment
	USB interface
	Ethernet interface
	One RS-232 serial interface dedicated to external interface
	One RS-232 serial interface dedicated to remote administration (modem dial-in)
	Remote administration via Telnet Secure Shell (SSH) or Windows Remote Desktop
	Remote file download via Secure FTP
Software	Sensor inputs include Single Load Cell, Bending Plate, Slow Speed WIM, Kistler Lineas Quartz, DYNAX, Piezo, Loops and Serial and Digital Devices
	Sensor inputs from WIM Scale, loop and piezo sensors
	Vehicle Classification performed by means of user-defined classification scheme
	Weight Compliance performed by means of user-defined weight compliance scheme
	Records data logs on operational status, power supply condition and system activity
Maintenance	Local connection through laptop PC in terminal mode
	Remote connection through a dial-up modem to a PC in terminal mode
	Telnet over an Ethernet Interface
	Interface cards shall be hot-swappable (i.e. cards can be safely removed or replaced while the system is operating and powered)
	System configuration and fault diagnosis operations
Axle Sensor Interface (WIM and Piezo)	Adjustable threshold for detecting axles
	Capable of automatic temperature compensation
	Capable of autocalibration
Digital I/O Interface	Report on rising edge, falling edge or both
	Adjustable input debounce
	Control output state, single pulse, or square wave
	Adjustable timeout on inputs

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502

(6) Changeable Message Signs (CMS).

NH-064-1(010)
679-12a

(a) CMS shall be used to communicate directions to the driver after a mainline vehicle compliance check has been completed. The Lane Control System (LCS) shall consist of one Changeable Message Signs and inductive detector loops as required for CMS control. The LCS shall be installed along the side of the roadway approximately 200' downstream from the Mainline WIM Sorter System. The LCS system shall be controlled by the roadside WIM electronics. The LCS shall direct vehicles to enter the weigh station or bypass the station, based on the results of the mainline sort decision. The LCS system shall be controlled such that it ensures that the message display is synchronized according to the detection and tracking of a vehicle passing over the LCS loops. In this way, only the vehicle for which the message is intended will see the message on the CMS.

(b) The CMS shall be capable of displaying typical directional messages, such as:

Report Message: **TRUCK MUST EXIT
TO WEIGH STATION**

or Bypass Message: **TRUCK BYPASS
WEIGH STATION**

(c) Each message character shall be 5.5 inches (14 cm.) high. The sign shall have a viewing angle of 90 degrees horizontally, and 40 degrees vertically. The messages must be clear and legible under any lighting conditions. When not energized, the sign shall be completely blank, with no ghost images.

(d) The CMS shall be mounted on a breakaway steel sign support which meets crash requirements as set forth by NCHRP 350 and approved by a licensed engineer.

(7) Overview Camera.

(a) The System shall include an Overview Camera imaging system to record images of vehicles for identification purposes. The imaging system shall consist of camera capable of taking pictures in all lighting conditions and the image processing electronics to record the image of each vehicle that passes through the system. The overview image

camera shall be mounted alongside the roadway on the mainline positioned to obtain the best possible images, detailing their cab and side. The images shall be linked with the vehicle records of commercial vehicles; non-commercial images shall be discarded. The camera shall be capable of full color images during daytime operation, and monochrome (black & white) near-infrared images during nighttime and low light operation. The imaging system electronics shall be located in the roadside System Electronics enclosure.

(b) The Imaging System shall consist of the following system components:

1. Color and low light monochrome (black & white) video camera
2. Illuminator system
3. Video capture system

(8) License Plate Reader (LPR).

(a) The system shall include a License Plate Reader (LPR) system.

(b) Images produced by the LPR system shall be linked to the record of the appropriate vehicle. The LPR camera system will interface seamlessly with the iSINC Mainline Sorter Electronics and the iROC database and credentialing system.

(c) The License Plate Recognition will utilize a high quality, high resolution camera tuned to provide the best possible performance with regards to capture accuracy and automatic license plate reading accuracy. The high-resolution capability will provide a wide field-of-view to enables the system to have only one camera per lane, while still providing full road coverage with overlapping fields of view.

(d) The license plate recognition system will have an ANR/LPR (Automatic Number Recognition / License Plate Recognition) engine that is able to perform analysis of all captured images. The images and data produced by the license plate recognition system will meet evidential enforcement requirements in multiple countries. The system

will allow for exchangeability of cameras and image processing algorithms to suite license plates issued and found within the State of Hawaii.

(e) Triggering of License Plate Reading system will be performed on commercial vehicles only using the iSINC loop input and the height discriminator.

(9) USDOT Number Recognition System (UNRS).

(a) The system shall include a USDOT Number Recognition System (UNRS).

(b) Images produced by the UNRS shall be linked to the record of the appropriate vehicle. The USDOT camera system will interface seamlessly with the iSINC Mainline Sorter Electronics and the iROC database and credentialing system.

(c) The USDOT Number Recognition System will utilize a high quality, high resolution camera tuned to provide the best possible performance with regards to capture accuracy and automatic USDOT reading accuracy. The high-resolution capability will provide a wide field-of-view to enables the system to have only one camera per lane, while still providing full road coverage with overlapping fields of view.

(d) The USDOT Number Recognition System will have an ANR/USDOTR (Automatic Number Recognition / USDOT Recognition) engine that is able to perform analysis of all captured images. The images and data produced by the USDOT recognition system will meet evidential enforcement requirements in multiple countries. The system will allow for exchangeability of cameras and image processing algorithms to suite USDOT markings issued and found within the State of Hawaii.

(e) Triggering of USDOT Number Recognition System will be performed on commercial vehicles only using the iSINC loop input and the height discriminator.

(10) Container Reader System (CR).

(a) The system shall include a Container Reader System (CR).

(b) Images produced by the Container Reader system shall be linked to the record of the appropriate vehicle. The Container Reader camera system will interface seamlessly with the iSINC Mainline Sorter Electronics and the iROC database and credentialing system.

(c) The Container Reader System will utilize a high quality, high resolution camera tuned to provide the best possible performance with regards to capture accuracy and automatic Container reading accuracy. The high-resolution capability will provide a wide field-of-view to enables the system to have only one camera per lane, while still providing full road coverage with overlapping fields of view.

(d) The Container Reader System will have an ANR/CR (Automatic Number Recognition / Container Recognition) engine that is able to perform analysis of all captured images. The images and data produced by the Container recognition system will meet evidential enforcement requirements in multiple countries. The system will allow for exchangeability of cameras and image processing algorithms to suite Container markings issued and found within the State of Hawaii.

(e) Triggering of Container Recognition System will be performed on commercial vehicles only using the iSINC loop input and the height discriminator.

(11) Overheight Sensor - Height Discriminator. The system shall include an overheight sensor and be capable of sorting overheight vehicles based on the output from the sensor. This sensor will also provide the LPR, USDOT, and CR information for trigger purposes.

(12) Operator Display. The Vendor shall supply a workstation computer and software capable of supporting the following operator functionality:

(a) Vehicle Display.

1. The workstation shall receive the vehicle records from the Mainline WIM electronics and display vehicle records in a Vehicle Display Window. The Display shall be a listing of the records for each vehicle which will include:

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- a. Record number
- b. Time and date
- c. Vehicle class
- d. Gross vehicle weight
- e. Vehicle length
- f. Speed
- g. Maximum allowed GVW for the vehicle class
- h. Individual axle weights
- i. Axle spacing
- j. Axle group weights
- k. The sort decision
- l. OVC image
- m. LPR image and Optical Character Recognition string
- n. USDOT image and Optical Character Recognition string
- o. CR image and Optical Character Recognition string
- p. TACS system information

2. The operator shall be able to select any vehicle record displayed to obtain a more detailed display which contains all the information that the system has stored in the vehicle record, which will include the information above in table form, plus all violation and error messages and all images associated with the vehicle record displayed at full size.

(b) Sorting Controls.

1. The workstation display shall have controls to allow the operator to be able to set the sorting threshold used at the Mainline WIM Sorter. The sorting threshold determines at what percentage of legal weight a vehicle must be measured to be required to report. In this way, the operator may set the Mainline WIM Sorter to bring in the maximum number of trucks that the station can process, without exceeding the station capacity.

2. The workstation display shall have controls to allow the operator to select a percentage of non-violating vehicles to be randomly selected from the mainline for visual inspection at the scale house. This allows enforcement officials to perform random safety checks on otherwise compliant trucks.

(c) **CMS Controls.** The workstation display shall have controls to allow the operator to manually select the message displayed on the CMS signs.

(13) Manual Console.

(a) A Manual Console shall be provided as an interface that allows the operator to over-ride the automatic Sorter Systems and manually control the CMS using a rotary switch. The switch positions on the Manual Console will be:

1. Automatic
2. Bypass
3. Report
4. Off

(b) The Manual Console shall operate independently from the Mainline Sorter electronics to control the CMS (i.e. the Manual Console shall remain operational even if the sorter electronics are not functioning).

(14) Virtual Weigh Station.

(a) The Mainline Sorter System shall be able to function as a Virtual Weigh Station, transmitting the resulting vehicle

record data over a network connection for display to one or more authorized users at any location.

(b) The display for a single user connected to the Virtual Weigh Station via a network connection shall show a list of vehicle records. Each vehicle record shall contain the following information:

1. A thumbnail image of the vehicle
2. The vehicle record number
3. Date and time
4. The vehicle class
5. Speed
6. Length of the vehicle
7. Gross Vehicle Weight
8. Individual axle weights
9. Axle spacing
10. Axle groupings
11. Axle group weights
12. OVC image
13. LPR image and Optical Character Recognition string
14. USDOT image and Optical Character Recognition string
15. CR image and Optical Character Recognition string
16. TACS system information
17. A color indicator for whether the vehicle is compliant (green) or in violation (red)

823 **18.** If the vehicle is in violation an error in
824 measurement has occurred, a message indicating the
825 violation or error.
826

827 **(c)** The user shall be able to select any vehicle record in
828 the listing and open a detailed display which shows all data
829 recorded for that vehicle, including all the data above plus
830 individual wheel weights, maximum allowed weights for each
831 axle, all violations, and the full-size image in the vehicle
832 record.
833

834 **(d)** When viewing a detailed vehicle record, user shall be
835 able to step forward or back to the next record in the system
836 memory.
837

838 **(15) Data Collection.** The Mainline System shall also perform all
839 functions of a Data Collection System, collecting Vehicle Record
840 Data from the site in a format that may be used for analysis of
841 system operation and traffic patterns. The data shall be available
842 for collection over a telecommunications connection. All vehicle
843 shall be stored as individual vehicle records in REV 10 Binary File
844 Format.
845

846 **(C) IROC Specifications.**
847

848 **(1) User Interface.**
849

850 **(a)** The application software shall provide a Graphic User
851 interface.
852

853 **(b)** The application software shall uniquely display the
854 following for each vehicle:
855

- 856 **1.** Vehicle number
- 857
- 858 **2.** Timestamp of the vehicle passage
- 859
- 860 **3.** Lane
- 861
- 862 **4.** Vehicle classification
- 863
- 864 **5.** Vehicle GVW
- 865
- 866 **6.** Vehicle length
- 867
- 868 **7.** Any error codes generated

869
870 8. Any status codes generated

871
872 9. Vehicle speed

873
874 10. The screening decision

875
876 11. Vehicle images

877 12. License plate number

878
879 13. USDOT Number

880
881 (c) The application software shall provide search
882 capabilities by date, time and vehicle record.

883
884 **(2) Data Updates.**

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886 (a) The application software shall import SAFER-
887 compliant data.

888
889 (b) The application software shall automatically perform
890 daily updates to the SAFER data.

891
892 (c) While performing the daily updates the application
893 software shall automatically send email notification if no new
894 data is found.

895
896 (d) While performing the daily updates the application
897 software shall automatically send email notification if the size
898 of the update does not match the expected size.

899
900 **(3) Screening.**

901
902 (a) The application software shall have the ability screen
903 against SAFER data.

904
905 (b) The application software shall have the ability screen
906 against PRISM targeted carriers.

907
908 (c) The application software shall have the ability screen
909 against PRISM targeted vehicles.

910
911 (d) The application software shall have the ability to
912 screen against state specific permits.
913

914 (e) The application software shall have the ability to
915 screen vehicles based on CVISN compliant transponders.

916
917 (f) The application software shall have the ability to
918 screen vehicles based on license plate and jurisdiction
919 information from a LPR system.

920 (g) The application software shall have the ability to
921 screen vehicles based on USDOT information from a
922 USDOT number recognition system.

923
924 (h) The application software shall support screening
925 against the following:
926

- 927 1. International Registration Plan (IRP)
- 928 2. International Fuel Tax Agreement (IFTA)
- 929 3. Single State Registration System (SSRS)
- 930 4. Hazardous Materials (HazMat)
- 931 5. Safety Credentials (ISS2)
- 932 6. Intrastate Screening
- 933 7. PRISM Targeted Vehicle
- 934 8. PRISM Targeted Carrier
- 935 9. State Specific Permits

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945 **(4) Hot Lists.**

946
947 (a) The application software shall be capable of
948 supporting carrier “hot lists”.

949
950 (b) The application software shall be capable of
951 supporting vehicle “hot lists”.

952
953 (c) The application software shall have the ability for
954 authorized users to modify “hot lists” in the field.

955
956 (d) The application software shall have the ability for
957 authorized users to modify the screening criteria.
958

959 **(5) System Integration.**

960
961 **(a)** The application software shall integrate to the WIM
962 system via XML.

963
964 **(b)** The application software shall send screening
965 decisions to the WIM system.

966 **(c)** The application software shall receive vehicle
967 dimensions from the WIM system.

968
969 **(d)** The application software shall receive vehicle images
970 from the WIM system.

971
972 **(e)** The application software shall receive vehicle license
973 plate numbers from the WIM system.

974
975 **(f)** The application software shall receive vehicle USDOT
976 numbers from the WIM system.

977
978 **(D) Conduits and Pull Boxes.**

979
980 **(1)** All cables shall be in conduits unless specifically approved
981 by the engineer. All pull boxes are to meet Department
982 specifications.

983
984 **(2)** All materials shall comply with the "National Electrical Code"
985 and the current Department Standard Specifications for Highway
986 Construction, "Highway Division Standard Drawings for design and
987 Construction", and special requirements by Department weigh in
988 motion and automatic vehicle identification system specifications.
989 Duct seal shall be used to seal all conduits in the cabinets and in all
990 junction boxes. All conduits shall have a polyethylene pull string
991 with at least 210 pound break strength left in place at completion of
992 construction.

993
994 **(3)** Separate conduits shall be used for AC/DC power and low
995 voltage signal cables. Low voltage signal cables shall include video,
996 digital communication, sensor signal cable, and sensor excitation
997 cables where voltage is under +/- 20 volts DC. Conduits for video
998 and RF cables shall be of a large enough size to accommodate the
999 maximum bend radius using factory 90 degree "bends".

1000
1001 **(4)** All cables shall be in conduits.

1005 (E) **WIM Standards.**
1006

1007 (1) Each standard shall be furnished with anchor base; uniform
1008 continuously tapered steel shaft; anchor bolts and nuts; grounding
1009 lug; cast pole top cap, mast arms and mounting flange plate where
1010 indicated, handhole and handhole cover; and other associated
1011 hardware necessary to make each WIM standard complete. Each
1012 assembly shall have no rough edges or surfaces, depressions or
1013 other defects.
1014

1015 (2) Standards shall be designed to support the equipment
1016 mounted on the pole shafts and mast arms. Equipment mounting
1017 heights shall be as indicated on the contract documents and in
1018 accordance with WIM system manufacturer recommendations.
1019

1020 (3) Shaft shall be constructed of No. 10 gage minimum, hot-
1021 rolled sheet steel conforming to ASTM A 1011 or ASTM A 595.
1022 Silicon content shall be kept to less than 0.06 percent, and boron
1023 shall not be added. Transverse seams shall be perpendicular to
1024 shaft axis. Reinforce transverse seams with internal sleeves
1025 welded in place. Shaft shall have reinforced opening for a
1026 handhole located approximately 9 inches above the bottom surface
1027 of anchor base plate. Reinforced opening shall be furnished with a
1028 gasket, cover plate and non-slip fastener. Handhole frame shall be
1029 tapped for cap screws to secure cover plate.
1030

1031 (4) Provide J-hook wire support, welded at top of shaft. Top of
1032 shaft shall be capped with cast pole top, secured in place with set
1033 screws.
1034

1035 (5) **Anchor Base.** Single-piece steel anchor base of sufficient
1036 size, shape and strength to support standard shall be secured to
1037 lower end of shaft by two continuous electric arc welds. Shaft shall
1038 telescope with base. One weld shall be on inner portion of base at
1039 end of shaft and another weld shall be on outside at top of base.
1040 An approximately 2-inch separation shall be provided between the
1041 two welds. Base shall have four holes sized to accommodate
1042 anchor bolts.
1043

1044 (6) **Tapered Mast Arm.** Mast arm shall be made from material
1045 from single length of No. 10 gage minimum hot rolled sheet steel
1046 conforming to ASTM A 1011 or ASTM A 595. Silicon content shall
1047 be kept to less than 0.06 percent, and boron shall not be added.
1048 Large end of mast arm shall telescope with flange plate of
1049 thickness recommended by manufacturer. Flange plate shall be
1050 welded to mast arm by two continuous electric arc welds. One

weld shall be on outer portion of plate next to shaft and another weld shall be on inner portion at end of tubular cross section. Four holes in flange plate shall match four tapped holes in mounting plate on pole.

(7) Anchor Bolts. Each pole shall have a minimum of four steel anchor bolts, with each bolt fitted with two hex or heavy hex nuts. Each anchor bolt shall have "L" bend or plate washer welded to bottom. Anchor bolts shall be threaded at top end. Bolts shall be of strength, size, and length recommended by manufacturer and as specified in Subsection 718.01 - Standard Fasteners, to support pole shaft, mast arm, and WIM equipment.

(8) Zinc-Coating. Steel and iron parts of base, shaft and mast arm shall be zinc-coated in accordance with AASHTO 232. Washers and nuts may be hot-dip zinc-coated or electro-zinc-coated.

(9) Standard Specifications. Design of WIM standards and appurtenances shall conform to *AASHTO LFRD Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*, 1st Edition, with 2017 Interim Revisions.

(10) Certification and Mill Test Reports. Certification and mill test 133 reports shall be submitted with the following information:

(a) List of component parts including the following:

1. Description of each part.
2. Materials manufacturing location (including ASTM number where applicable.
3. Certificate of compliance.

(b) Shop drawings accompanied by complete and detailed engineering computations that justify selection of dimensions and material. Hawaii Licensed Professional Structural Engineer shall certify computations.

(c) Copy of mill test report for structural members (posts and beams), including physical and chemical descriptions of material incorporated.

1097 **(F) Conductors.**

1098
1099 **(1) Conductors.** All conductors shall be copper, No. 12 AWG
1100 minimum. No. 8 AWG and larger diameter shall be stranded; No.
1101 10 AWG and smaller shall be solid. Do not provide wires and
1102 cables manufactured more than 12 months prior to the date of
1103 delivery to the site. Aluminum conductors shall not be provided.

1104
1105 **(2) Color Coding.** Provide for feeder and branch circuit
1106 conductors. Color shall be green for grounding conductors and
1107 white for neutral conductor. Color of ungrounded conductors shall
1108 be as follows:

1109
1110 **(a)** 120/240 volt, single phase.

- 1111
1112 1. Phase A - black
1113 2. Phase B - red
1114

1115 **(3) Insulation.** Type XHHW or RHW-2 unless otherwise
1116 specified.
1117

1118 **(4) Bonding Conductors.** Solid bare copper wire for sizes No.
1119 8 AWG and smaller diameter; Class B, stranded bare copper wire
1120 for sizes No. 6 AWG and larger diameter.
1121

1122 **(5) Splices.** Any splices necessary shall be compression type,
1123 mechanically firm and made only in wireway, pull boxes or
1124 handholes. Splices shall be sufficiently taped and coated to
1125 provide a completely waterproof permanent joint. An approved
1126 plastic electrical tape and waterproof coating shall be used. A
1127 minimum of two layers of tape shall be applied.
1128

1129 **(6) Electrical Tapes.**

1130
1131 **(a) Insulating Tape.** UL 510, plastic insulating tape,
1132 capable of performing in a continuous temperature
1133 environment of 80 degrees C.
1134

1135 **(b) Other Tapes.** Tapes shall be UL listed for electrical
1136 insulation and other purposes in wire and cable splices.
1137 Terminations, repairs and miscellaneous purposes, electrical
1138 tapes shall comply with UL 510.
1139

1140 **(G) Fiber Optic Cable.** The fiber optic cable shall consist of multi-mode
1141 fibers. Furnish and install fiber optic cable suitable, and meeting

standards, for underground installations. The fiber optic cables shall meet the following specifications:

(1) Stranded Loose Tube Cables. General Considerations.

The cable shall meet the requirements of the United States Department of Agriculture Rural Utilities Service (RUS) 7 CFR 1755.900 and the ANSI/ICEA Standard for Fiber Optic Outside Plant Communications Cable, ANSI/ICEA S-87-640-1992.

(2) Multi-Mode Cables. The multi-mode fiber utilized in the cable specified herein shall meet EIA/TIA-492AAA-1989, "Detail Specification for 62.5 μ m core diameter 125 μ m cladding diameter Class 1a multi-mode, graded index optical waveguide fibers."

(a) Core Diameter: 62.5 \pm 3.0 μ m

(b) Cladding Diameter: 125 \pm 2.0 μ m

(c) Core to Cladding Offset: \leq 3.0 μ m

(d) Cladding Non-Circularity: \leq 2.0 percent

(e) Core Non-Circularity: \leq 5 percent

(f) Coating Diameter: 245 \pm 10 μ m

(g) Colored Fiber Diameter: nominal 250 μ m

(h) Attenuation Uniformity: No point discontinuity greater than .020 dB at either 850 nm or 1300 nm.

(i) Refractive Index Profile: Graded index

(j) Numerical Aperture: 0.275 \pm 0.015

(k) The coating shall be a dual layered, UV cured acrylate applied by the fiber manufacturer. The coating shall be mechanically strippable.

(3) Fiber Specification Parameters.

(a) **Required Fiber Grade** Maximum individual fiber attenuation.

(b) **Multi-Mode.** The minimum normalized bandwidth of multi-mode optical fibers shall be \geq 160 MHz-km at 850 nm and \geq 500 MHz-km at 1300 nm.

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- (c) All optical fibers shall be proof tested by the fiber manufacturer to a minimum load of 0.7 GN/m² (100 kpsi).
- (4) Optical fibers shall be inside a loose buffer tube. The nominal outer diameter of the buffer tube shall be 3.0 mm.
 - (a) Each buffer tube shall contain up to 12 fibers.
 - (b) The fibers shall not adhere to the inside of the buffer tube.
 - (c) Each fiber shall be distinguishable by means of color coding in accordance with TIA/EIA-598-A, "Optical Fiber Cable Color Coding".
 - (d) The fiber shall be colored with ultraviolet (UV) curable links.
 - (e) Buffer tubes containing fibers shall be color coded with distinct and recognizable colors in accordance with TIA/EIA-598-A, "Optical Fiber Cable Color Coding".
 - (f) Buffer tube colored stripes shall be inlaid in the tube by means of co-extrusion required. The nominal stripe width shall be one mm.
 - (g) In buffer tubes containing multiple fibers, the colors shall be stable across the specified storage and operating temperature range and not subject to fading or smearing onto each other or into the gel filling material. Colors shall not cause fiber to stick together. The buffer tubes shall be resistant to external forces and shall meet the buffer tube cold bend and shrink back requirements of 7 CFR 1755.900.
 - (h) Fillers may be included in the cable core to lend symmetry to the cable cross section where needed. Fillers shall be placed so that they do not interrupt the consecutive positioning of the buffer tubes. In dual layer cables, any filler shall be placed in the inner layers. Fillers shall be nominally 3.0 mm in outer diameter.
 - (i) The central anti-buckling member shall consist of a dielectric, glass reinforced plastic (GRP) rod. The purpose of the central member is to prevent buckling of the cable. The GRP rod shall be over coated with a black colored

thermoplastic when required to achieve dimensional sizing to accommodate buffer tubes/fillers.

(j) Each buffer tube shall be filled with a non-hygroscopic, non-nutritive electrically non-conductive, homogenous gel. The gel shall be free from dirt and foreign matter. The gel shall be readily removable with conventional nontoxic solvents.

(k) Buffer tubes shall be stranded around the dielectric central member. Water blocking yarns shall be applied longitudinally along the central member during stranding.

(l) Two polyester yarn binders shall be applied contra helically with sufficient tension to secure each buffer tube layer to the dielectric central member without crushing the buffer tubes. The binders shall be non-hygroscopic, non-wicking and dielectric with low shrinkage.

(m) For single layer cables, a water blocking tape shall be applied longitudinally outside of the stranded tubes/fillers. The tape shall be held in place by a single polyester binder yarn. The water blocking tape shall be non-nutritive to fungus, electrically conductive and homogenous. It shall also be free from dirt and foreign matter.

(n) The cable shall contain at least one ripcord under the sheath for easy sheath removal of all-dielectric cable. The cable shall contain at least one ripcord under the inner sheath and under the steel armor for armored cable. The ripcord color shall be orange for non-armored sheaths.

(o) Tensile strength shall be provided by dielectric yarns. The high tensile strength dielectric yarns shall be helically stranded evenly around the cable core.

(p) All dielectric cables shall be sheathed with medium density polyethylene (MDPE). The minimum nominal jacket thickness shall be 1.4 mm. Jacketing material shall be applied directly over the tensile strength members and water blocking tape. The polyethylene shall contain carbon black to provide ultraviolet light protection and shall not promote the growth of fungus.

(q) The MDPE jacket material shall be as defined by ASTM D1248, Type II, Class C and Grade J4, E7, and E8.

The jacket or sheath shall be free of holes, splits, and blisters. The cable jacket shall contain no metal elements and shall be of a consistent thickness.

(r) Cable jackets shall be marked with manufacturer's name, sequential meter or foot marking month and year of manufacture, and a telecommunication handset symbol, as required by the National Electrical Safety Code (NESC). The actual length of the cable shall be with the exception 0/+1 percent of the length markings. The print color shall be white, with the exception that cable jackets containing one or more coextruded white stripes shall be printed in light blue. The height of the markings shall be approximately 2.5 mm.

(s) The maximum pulling tension shall be 2700 N (608 Lbft) during installation (short term) and 890 N (200 Lbft) long term installed.

(t) The shipping, storage, and operating temperature range of the cable shall be -40C to +70C.

(5) Quality Assurance Provision.

(a) All cabled optical fibers > 1000 meters in length shall be 100 percent attenuation tested. Attenuation of each fiber shall be provided with each cable reel.

(b) The cable manufacturer shall be ISO 9001 registered.

(6) Packaging.

(a) Top and bottom ends of the cable shall be available for testing.

(b) Both ends of the cable shall be sealed to prevent the ingress of moisture. Each reel shall have a weather resistant reel tag attached identifying the reel and cable.

(c) The reel tag shall include the following information:

1. Cable number
2. Gross Weight
3. Shipped length in meters

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4. Job order number
5. Product Number
6. Date cable tested

(d) Each cable shall be accompanied by a cable data sheet. Cable data shall include manufacturer number, billable length, bandwidth specs and measured attenuation of each fiber.

(H) Warning Tape. Pre-printed polyethylene tape marked with "CAUTION BURIED ELECTRICAL LINE BELOW," 4 mil thick, detectable foil backed, 3" minimum width.

(I) Duct Seal. Pliable, non-toxic material used for application around and in conduits and to minimize moisture and rodent/insect infiltration. Must be re-enterable material allowing form removal/reapplication after initial installation. Non-drying, non-cracking, non-corrosive material that will not adversely affect raceways and conductors. Provide duct seal at all duct entries in handholes, apparatus and risers.

(J) Ground Rods. Copper clad steel, 3/4" x 10' long minimum.

(K) Construction Requirements.

(1) Equipment List and Drawings. The bidder shall submit the equipment list according to Subsection 106.13 - Substitution of Materials and Equipment After Bid Opening.

(2) Upon completion of the work, submit an 'As Built' or corrected plan showing in detail the construction changes.

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

(4) Installation.

(a) Standards. Install each WIM standard with its shaft precisely vertical on a concrete foundation. Locations of standards shown in the contract are approximate. The Engineer will decide the exact locations in the field.

1370 (b) **Pole Mounted Equipment.** Assemble the equipment
1371 to give the arrangement shown in the contract and in
1372 accordance with manufacturer recommendations. Plumb or
1373 level the members, arrange the members symmetrically, and
1374 assemble the members securely. Installation shall be such
1375 that the Contractor conceals the conductors within the
1376 standards and mounting assemblies as much as possible.
1377
1378 (c) **Roadside Enclosure.** Mount the cabinet according to
1379 the contract. Assemble, wire, and house the controller and
1380 auxiliary equipment specified in the cabinet and in accordance
1381 with manufacturer recommendations.
1382
1383 (d) **Vehicle Detectors.** Vehicle detectors shall be
1384 inductive loop detectors installed according to details shown in
1385 the contract. The saw cut groove shall be air blown to remove
1386 debris before inserting the loop cable. The loop cable shall be
1387 continuous within the roadway. Splice in the pullbox. Fill the
1388 saw cut groove with epoxy sealer or hot applied rubberized
1389 sealant. As accepted by the Engineer, the Contractor may
1390 use a sealant designed for use as a protective seal for traffic
1391 inductive loop detectors installed in asphalt concrete or
1392 concrete pavements.
1393
1394 (e) **Foundations and Pullboxes.** Construct the
1395 foundations and boxes required carefully at the locations
1396 designated. Pour the foundations and boxes in areas that the
1397 Contractor has carefully excavated to receive the foundations
1398 and boxes. Construct each unit as detailed in the contract and
1399 connect each unit properly with the facilities of which each unit
1400 is a component part.

1401 Mix, place, and cure the concrete according to Section
1402 601 - Structural Concrete, and Section 503 - Concrete
1403 Structures. The Engineer will allow hand mixing.
1404
1405 Set the anchor bolts for the foundations to fit the bases
1406 of the standards to be installed.
1407
1408 Give the pullbox frames and covers two coats of
1409 asphaltic base paint after installation.
1410
1411 (f) **Conduits.** Conduits shall be concrete encased, PVC
1412 Schedule 80.
1413

1414 Install the ducts to drain towards either one or both
1415 pullboxes, manholes, or WIM standard foundation.

1416
1417 Make directional changes in the conduits, such as
1418 bends and changes to clear obstructions with curved
1419 segments using accepted deflection couplings or with short
1420 lengths of straight ducts and couplings. The deflection angle
1421 between two adjacent lengths of ducts shall not exceed 6°. The bends shall not have a radius of less than 12 times the
1422 nominal size of the conduit. The Contractor may use
1423 factory-made ells.
1424

1425
1426 Cut the rigid PVC conduits with a hacksaw. Square
1427 and trim the ends after cutting to remove rough edges. The
1428 connections shall be of the solvent weld type. Make the
1429 solvent weld joints according to the conduit manufacturer's
1430 recommendations and as accepted.

1431
1432 Use the rigid PVC conduit for drilling or jacking.

1433
1434 Thread the PVC fittings for connecting PVC conduit to
1435 rigid metal conduit on the metal conduit side.

1436
1437 Seal the ends of the duct with plugs at the end of each
1438 day of work, whenever problems interrupt the duct installation
1439 work and whenever ducts are subject to submergence in
1440 water.

1441
1442 Keep the conduits clean during construction.

1443
1444 Use only hand shovels in compacting concrete
1445 encasements. Cure the concrete for at least 72 hours before
1446 permitting vehicular traffic to run over the concrete.

1447 Provide each conduit run with a No. 10 gauge flexible,
1448 zinc-coated pull wire extending through its entire length.
1449 Double an additional two feet back into the conduit at each
1450 end of the run. Conduits and sleeves entering pullboxes shall
1451 end flush in the wall with ends ground smooth. Plug the
1452 conduits and sleeves temporarily.

1453
1454 Ends of conduit runs shall extend at least 24 inches
1455 past the face of curb or edge of pavement unless the ends end
1456 in the pullboxes. Locate the ends accurately by special
1457 markers, markings on curb, or as specified by the Engineer.
1458 Show these locations on the 'As Built' plans.
1459

The completed duct lines shall be subject to a field test. Pass a bullet-shaped test mandrel about 8 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-secondth 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 obtains a satisfactory result.

Use galvanized rigid steel or Schedule 80 PVC conduits for all exposed construction except risers for communications cables. Use only Schedule 80 PVC conduits for risers for communication cables.

(g) Wiring. Wiring shall conform to the appropriate articles of the NEC and NESC. Arrange the wiring within cabinets, WIM equipment, WIM standards and pullboxes 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.

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. Leave the wires or cables under tension nor tight against bushings or fittings.

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. Make the splices, taps and terminations with pressure-indented connectors or lugs as appropriate or as specified herein. Tape or seal the ends of the spare conductors as accepted.

Join the conductors by a 'western union' type splice. Use the connectors for splicing conductors No. 8 AWG, or larger. Solder the splices by the pouring or dipping method.

Pencil the conductor insulation well, trim the conductor insulation to conical shape, and roughen the conductor insulation before applying splice insulation.

Splice insulation includes layers of thermoplastic electrical insulating tape not over 0.007-inch thick applied to a thickness equal to and well lapped over the original insulation. The splice insulation shall conform to Federal Specifications MIL-I-7798. Leave at least two feet of slack for each conductor at each splice.

Furnish the cables on reels and handle the cables with great care to avoid damage to the conductors or the jacket.

Install the communications cable, connect the communication cable to terminals, and wire the communication cable to the proper equipment to produce a closed loop network suitable for operating within the WIM system. Cable runs shall be continuous between equipment cabinets without splices.

Pull the cable in the conduit with a cable grip designed to provide a firm hold on the exterior covering of the cable. Pull the cable with a minimum dragging on the ground or pavement. Use powdered soapstone, talc, or other accepted lubricants to ease the pulling of the cable.

(h) Fiber Optic Cable. The qualified Fiber Optic Contractor, shall install the new fiber optic cable in conduits as shown on the plans.

Fiber optic splice locations are permitted only at splice points where splice cabinets are shown on the plans. Fiber optic fibers shall be spliced in every cabinet location, and it is the responsibility of the Fiber Optic Contractor to maintain a continuous run throughout the system.

Provide documented historical cable pulling data indicating tensile pressure exerted on the cable during the installation. All fibers shall be spliced at camera cabinets, hubs, and splice cabinets and shall have no more than .07 dB loss per splice based on the appropriate system operating wavelength. As part of the final testing and acceptance prior to final terminations to WIM equipment, submit OTDR readings to the Engineer for review.

All necessary equipment and plug-in, fiber optic pigtails, fittings, enclosures, and work to complete an operational system shall be furnished and installed by the Contractor, unless otherwise indicated, at no additional cost.

(i) Bonding and Grounding. Make the metallic cable sheaths, conduits and standards mechanically and electrically secure to form a continuous system. Ground the system effectively. Bonding and grounding jumpers shall be No. 8 AWG copper wire or equivalent copper strap of the same cross-sectional area.

Bond the standards by a bonding strap attached to an anchor bolt or a three-sixteenth inch or larger, brass or bronze bolt installed in the lower portion of the shaft.

Ground the conduits and the neutral wires at the service points as required under the Code, except that grounding conductors shall be No. 6 AWG or equal.

Install a copper-clad steel or pure copper ground rod 3/4 inch diameter by ten feet long alongside each WIM standard and roadside enclosure concrete base.

The Contractor shall connect them with No. 6 AWG wire to the No. 8 AWG ground wire loop and power system neutral.

(L) Restoring Pavements and Other Improvements. Restore the existing pavements and other improvements such as driveways, sidewalks, curbs and gutters disturbed by excavation to their original condition according to the contract. Materials used for restoration work shall be equal to 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 conform to the existing grades.

(M) System Acceptance.

(1) The system shall be accepted subject to fulfilling the following conditions:

(a) System review.

(b) Acceptance tests (meeting WIM accuracy on a weekly basis).

(c) Training.

1597
1598 **(2) System Review.**
1599

1600 **(a)** The WIM Vendor shall submit six (6) copies of a
1601 system layout for each individual site. These layouts shall
1602 be submitted to the Department for review. Approval shall be
1603 either an official from the Department or a designate.
1604

1605 **(b)** A preliminary on-site meeting shall be held for each
1606 site to discuss contractors' plans for the routing of conduits,
1607 cables, and placement of equipment.
1608

1609 **(3) Acceptance Tests.** The system, all-inclusive as contracted,
1610 shall be designed, built and tested by the Vendor, and as proof of
1611 operation, the systems, overall and singularly, shall be tested at
1612 various times according to the test specifications. All field tests shall
1613 be performed by the WIM Vendor and observed by the Department
1614 with all reports submitted to the Department.
1615

1616 **(4) Factory Acceptance Tests.**
1617

1618 **(a)** Prior to shipment of any equipment, Factory
1619 Acceptance Tests shall be performed for each system to
1620 verify the equipment operating as described in the contract
1621 documents and in accordance with the test specifications
1622 approved by the Department. The Factory Acceptance Tests
1623 shall include at minimum the following:
1624

1625 1. A physical inspection to verify that the quality
1626 of material and workmanship satisfy specified
1627 requirements and standards and that the equipment
1628 and software under test are complete and ready for
1629 delivery.
1630

1631 2. A functional test to verify that the equipment
1632 and software operate as described in the contract
1633 documents.
1634

1635 **(b)** A performance test to verify that the equipment
1636 satisfies performance and operation criteria.
1637

1638 **(c)** For the purpose of these tests the equipment and
1639 software shall be configured as nearly as possible to the final
1640 configuration. Any field inputs not available at the factory test
1641 site shall be simulated to provide a close approximation to
1642 actual site conditions.

(5) Site Acceptance Test. After all the equipment and software have been installed at the site, the Vendor shall run tests to ensure that all equipment shall operate as specified in the contract documents. These tests shall be witnessed or conducted by the Department within one week of the manufacturer notifying the Department that the system is ready for testing.

(6) Continuous Operating Test.

(a) Following successful completion of the Site Acceptance Test, a Continuous Operating Test shall be conducted for a period of thirty (30) calendar days. During this period the system shall operate under normal conditions and attain a Level of Service of 98.0% or better of the total station operating hours within any period of thirty (30) consecutive days.

(b) The Weight Sorter System shall be considered unavailable when:

1. A major system component completely fails which significantly degrades the performance or operation of the weigh station. This situation is said to have prevailed if either the WIM system or the communication system has failed.

2. More than one system component fails to operate or respond to operator commands and/or system automation for more than thirty minutes.

3. Weekly WIM accuracy is not met.

(c) During the continuous operating test, the entire system shall be fully operational under normal traffic conditions and operate trouble free for thirty (30) consecutive days.

(d) In the event that one of the abovementioned conditions persists and the specified availability cannot be achieved, the WIM Vendor will be informed and problem(s) shall be corrected and the continuous operating test shall start over until thirty (30) continuous days of trouble free operation are experienced.

(e) The continuous operating test will be the basis for acceptance or rejection of the systems as a result of demonstrated performance.

(f) The Department shall issue a Certificate of Final Acceptance upon successful completion of the Continuous Operating Test and training program.

(g) This calibration/acceptance procedure follows ASTM E1318 Standards. Calibration is to be performed by the running of one (1) calibration truck. The test vehicle should be a five (5) axle, tractor/trailer combination (3S2), with air ride suspension. The truck will be in excellent mechanical condition. The truck will be loaded with solid, non-shifting material. The truck will be loaded to within 90 to 100% of allowable Gross Vehicle Weight for the road under test.

(h) The calibration procedure is as follows:

1. The vehicle will be weighed at a government certified static weigh scale. The weight information on the front (single axle), drive (tandem axle group), and trailer (tandem axle group), should be recorded. The Gross Vehicle Weight (GVW) of the vehicle will be calculated by adding the three weights together.

2. The distance between the five (5) individual axles on the truck will be measured and recorded.

3. The test vehicle will make three (3) test passes over the system under test at a selected speed which is indicative of the truck traffic at the site. Adjustments will be made by vendor personnel on site during this time to fine tune the axle spacing, and weight output of the WIM system.

4. Once all initial adjustments have been made, the test vehicle will make an additional two (2) test passes to confirm the accuracy of the adjustments. If all the readings fall within the ASTM ranges for the WIM Type under test, and vendor personnel do not feel that additional adjustments are required, the tests will continue. If this is not the case, additional adjustments will be performed and two (2) more confirming passes will be made by the test truck.

1734 **5.** The test truck should then make an additional
1735 ten (10) passes at a selected speed that is indicative
1736 of the truck traffic at the test site.
1737

1738 **6.** All of the data should be recorded and placed
1739 into a spreadsheet. The mean error and standard
1740 deviation for all recorded measurements will be
1741 calculated at the end of the ten (10) test passes. The
1742 calculations will be as follows:
1743

1744 **a.** For weight measurements, the percent
1745 error for each test pass will be calculated using
1746 the following formula: $[(\text{WIM Weight} - \text{Static Weight}) / \text{Static Weight}] \times 100 = \% \text{ error}$
1747

1748 **b.** The mean error for each weight type
1749 (single, group, GVW) will be calculated as
1750 follows: $\% \text{ errors for single, group or GVW} / \# \text{ of}$
1751 $\text{samples} = \text{Mean error. (Each weight type}$
1752 $\text{calculated individually)}$
1753

1754 **c.** The error for individual axle spacings
1755 will be calculated using the following formula:
1756 $10 \text{ of } [(\text{WIM Axle Spacings} - \text{Actual Axle}$
1757 $\text{Spacing})] / 10 = \text{Mean Axle Spacing Error.}$
1758 $(\text{Each of the four axle spacings calculated}$
1759 $\text{individually})$
1760

1761 **d.** All of the calculated errors will also be
1762 entered into the spreadsheet.
1763

1764 **7.** A check will be made of the calculated result
1765 against the acceptable range for the ASTM WIM Type
1766 under test. There will be one of two results:
1767

1768 **a.** If 95% of all recorded test results,
1769 (single axles, axle groups, GVW, axle spacing)
1770 fall within the specified tolerance for the ASTM
1771 WIM Type under test then the system will have
1772 passed the requirements.
1773

1774 **b.** If less than 95% of the calculated
1775 differences fall within the specified tolerance
1776 for the ASTM WIM Type under test then the
1777 system will be readjusted and an additional ten
1778

(10) test passes will be required to retest the system.

c. The testing will continue until the system passes all criteria according to ASTM E1318 Standards.

(N) Training.

(1) The Vendor shall set up and conduct formal training programs for Department personnel on the operation of the WIM Systems. The training shall include the following:

(a) Two half-day operator training sessions providing an introduction to the operation of the WIM Systems and to the functions performed by the major system components. A class size of up to eight individuals per session can be expected.

(b) Two one-day "hands-on" guidance sessions for operators in the operation of the systems. A class size of up to four individuals per session can be expected. This training will occur during the first two days of the Continuous Operating Test.

(2) The training program will be scheduled the week following the completion of the operations test.

(3) The cost for the first training sessions shall be included in the contract price. The Department shall, from time to time review any future training requirements. The WIM Vendor shall agree to provide future and additional training sessions upon receipt of requests from the Department. The Department shall reimburse the WIM Vendor the cost of providing additional training sessions on a per diem basis and at a rate agreed upon by Department at the time of the request. The Department shall provide classroom space for training session.

(O) Warranty.

(1) The WIM Vendor shall warrant all manufactured materials and equipment for a period of one (1) year from the date of acceptance of the system.

(2) The warranty shall cover the manufacture of the equipment, and includes manufacturer's workmanship, material defects,

assembly and installation of system components, hardware and software. The warranty shall not cover damage to any in-road equipment as a result of pavement deterioration. The warranty shall not cover physical damage caused by accident, vandalism, lightning, flood, fire, acts of God, acts of war or terrorism, or improper installation or servicing by personnel not authorized by the Vendor.

(3) The Vendor shall not under any circumstances be liable for any special, incidental, indirect or consequential damage, including damages from the use or malfunction of the product, loss of profits or revenue or cost of replacement goods, whether the Vendor has been informed or not in advance of the possibility of such damages.

(4) Following the expiry of the warranty, the Vendor shall provide the option of a system maintenance service contract for a period to be negotiated between the Department and the Vendor.

(P) Scheduled Maintenance Service.

(1) The Vendor's routine maintenance on all major systems, system components and ancillary equipment shall be scheduled at 6 month intervals. A semi-annual maintenance report shall be submitted to the Department upon completion of the scheduled maintenance service. Scheduled maintenance, emergency maintenance and refresher training shall be included as part of the one (1) year warranty.

(2) The scheduled maintenance service shall include the following:

(a) Visual inspection, signal checks and testing measures on all loops.

(b) Cleaning, repair and testing measures on all WIM Scales.

(c) Visual inspection, testing measures and signal checks on all piezoelectric sensors.

(d) Visual inspection and cleaning of cabinet and system electronics.

(e) Maintenance of WIM cables, connectors, terminal strips and back-up batteries.

(f) Electrical inspection.

- 1870
- 1871 (g) Cabinet mechanical condition inspection.
- 1872
- 1873 (h) Heating, ventilation and air conditioning maintenance
- 1874 (if applicable).
- 1875
- 1876 (i) Interface card operation inspection, testing measures
- 1877 and maintenance.
- 1878
- 1879 (j) Notification sign inspection, testing and maintenance.
- 1880
- 1881 (k) Structural integrity check of all poles and mast arms.
- 1882
- 1883 (l) Inspection and verification of computer
- 1884 communication systems.
- 1885
- 1886 (m) Camera and Video inspection, testing and
- 1887 maintenance.
- 1888
- 1889 (n) A report shall accompany the scheduled maintenance
- 1890 service and shall be submitted to the Department. The report
- 1891 shall include:
- 1892
- 1893 (o) Pass/Fail grading of all sensors.
- 1894
- 1895 (p) A checklist of all components checked as listed
- 1896 above, as well as the location of the components and
- 1897 comments on their general state.
- 1898
- 1899 (q) A checklist and commentary detailing whether each
- 1900 component (as listed above) met standards or required
- 1901 repairs.

1902 **(3) Emergency Repair Services.** Emergency repair services

1903 shall be completed on an as-required basis. The maximum

1904 response time for notice by fax or other mutually agreed upon

1905 mode of communication. The Vendor shall initiate on-site repairs

1906 within 7 days of notification.

1907

1908 **(4) Operator Refresher Courses.** In conjunction with the

1909 scheduled maintenance services, the Vendor shall provide Operator

1910 Refresher Courses on the operation of the entire WIM System. The

1911 courses shall have a maximum duration of four (4) hours and shall be

1912 scheduled before or after the semi-annual maintenance service. The

1913 course attendees shall be decided by the Department.

1914

1915 **(Q) Material.** Material used in the construction of this equipment shall
1916 be of good commercial quality entirely suitable for the intended purpose.
1917 Material shall be free from all defects and imperfections that might affect
1918 serviceability of the finished product.

1919
1920 **(R) Standard Products.** The equipment shall be constructed of
1921 standard material, so that the prompt and continuing service and delivery
1922 of spare parts may be assured. The component parts need not be
1923 products of the same manufacturer.

1924
1925 **(S) Lightning Protection.**

1926
1927 **(1)** Ground rod(s) shall be provided and installed at all outdoor
1928 equipment cabinet locations, scale vault(s), and equipment
1929 mounting pole(s) and structure(s). All system components and
1930 equipment shall be properly grounded.

1931
1932 **(2)** Lightning protection devices shall be provided for signal
1933 input/output and power connections at any separately packaged
1934 electronic signal processing device/equipment.

1935
1936 **(3)** Lightning protection devices shall be either in the form of
1937 terminal boxes equipped with terminal blocks and lightning/transient
1938 suppressors or modular lightning protectors. Lightning protection
1939 shall be provided.

1940
1941 **679.04 Measurement.** The Weigh-In-Motion System will be paid on a
1942 lump sum basis. Measurement for payment will not apply.

1943
1944 **679.05 Basis of Payment.** The Engineer will pay for the accepted Weigh-
1945 In-Motion system on a contract lump sum basis. Payment will be for full
1946 compensation for the work prescribed in this section and the contract documents.

1947
1948 The Engineer will consider additional materials and labor, needed to
1949 complete the installation of the system and not shown in the contract included in
1950 the bid price of the various contract items.

1951
1952 The Engineer will pay for hauling and stockpiling of salvaged materials
1953 and equipment off the right-of-way as ordered by the Engineer in accordance
1954 with Subsection 104.02 - Changes.

1955
1956 The Engineer will pay for each of the pay items when included in the
1957 proposal schedule:
1958
1959

1960	Pay Item	Pay Unit
1961		
1962	Weigh-In-Motion System	L.S.
1963		
1964		
1965	END OF SECTION 679	

1 Make the following section a part of the Standard Specifications.

2
3 **“SECTION 680 - PREFORMED METAL ROOFING**

4
5 **680.01 General Conditions.**

6
7 (A) The General Conditions, the Special Provisions, and all other
8 applicable documents preceding these specifications shall govern all work
9 specified hereinafter in all Divisions and Sections.

10
11 **680.02 Related Sections.**

12
13 (A) Section 661 – Flashing and Sheet Metal.

14
15 (B) Section 662 – Sealants.

16
17 **680.03 General Requirements.**

18
19 (A) The Roofing Contractor shall be an approved installer of the
20 manufacturer whose roofing system he proposes to install and his men
21 shall have been instructed by that manufacturer, (or their representative or
22 independent roofing auditor/inspector), in the proper installation of his
23 system.

24
25 (B) The Roofing Manufacturer's Representative and their independent
26 roofing auditor/inspector (where applicable) shall be competent,
27 thoroughly trained and experienced in the work and shall be completely
28 familiar with the products, equipment and the specified requirements and
29 methods needed for the proper installation of the roofing system and
30 flashings.

31
32 (C) The Contractor, Roofer and authorized Roofing Manufacturer's
33 Representative and/or their independent roofing auditor/inspector shall
34 attend a pre-construction conference to review preparation and installation
35 procedures for the roofing system and coordinating and scheduling
36 required with related work. They shall also inspect the roof installation at
37 the following times:

38
39 (1) At the start of the roofing installation.

40
41 (2) Minimum of two times during the roofing installation.

42
43 (3) At job completion.

(Note: It shall be the responsibility of the Contractor to notify the Roofer, Manufacturer's Representative or their independent roofing auditor/inspector (where applicable) and the Engineer of his schedule of operations. Parties shall be notified at least five (5) days in advance to enable their attendance.

680.04 Drawings.

Should the Manufacturer's warranty requirements necessitate different drawings and details exceeding the requirements of those shown or specified, provide shop drawings and field adjustments at no cost to the State.

680.05 Submittals.

(A) Submit in accordance with Section 105.02 – Submittals.

- (1)** Prior to the start of any work, a signed certificate from the proposed roofing manufacturer showing that the roofer is a trained and authorized applicator of his roofing system.
- (2)** Detailed roofing inspection reports by the Manufacturer's representative or their independent auditor/inspector, (minimum twice during the roof application and one at job completion).
- (3)** Manufacturer's product literature.
- (4)** Shop drawings showing roofing installation and fabrication details.
- (5)** Warranties and Guaranties as noted under paragraph B704.06.

680.06 Warranties and Guaranties.

(A) The Contractor shall furnish to the Engineer the following:

- (1)** A written guaranty on the roofing system for a 2-year period after the Project Acceptance Date. The guaranty shall provide the following at no cost to the State:
 - (a)** Repair of roofing and flashings as necessary to seal leaks which are attributable to faulty materials and/or workmanship;

(b) Repair and replacement of damage to the building and/or its finishes, equipment and/or furniture when occasioned by such leaks; and

(c) Inspection of the roofing and flashings together with the Engineer or his designated representative, on or about the 1st and 2nd anniversaries of the Project Acceptance Date, and repair or replacement of roofing and/or flashing as necessary to correct deficiencies in workmanship or materials. Such repairs or replacement of roofing and/or flashings shall be done in a manner which will preserve the integrity of the roofing membrane.

(2) A 10-year roof system warranty and flashing endorsement from the roofing manufacturer. The warranty shall cover both material and workmanship and shall provide that in the event of failure due to normal weathering and wind conditions during the remainder of the warranty period (the 3rd through 10th years after the Project Acceptance Date), the roofing system manufacturer will make repairs as necessary to maintain the roof in a watertight condition at no cost to the State. The warranty shall also state the manufacturer's acceptance and certification that the roof has been installed in accordance with the manufacturer's instructions and that the owner's personnel have been properly instructed in its maintenance.

(3) A signed certificate from the proposed roofing manufacturer naming their representative and their independent roofing auditor/inspector (where applicable) and showing that he is authorized to act on and make commitments in their behalf.

(4) Eight (8) complete sets of the following information for the roofing system he proposes to use. Submittals shall be marked-up as necessary to clearly identify the item being submitted and its conformance to the requirements of these specifications.

(a) Manufacturer's material product data.

(b) Detailed installation drawings and specifications for the proposed roofing system. Locations of all vents, mechanical equipment, etc.

680.07 Materials.

(A) Metal Roofing shall be pre-formed, standing seam, 24-gauge, aluminum-zinc alloy coated steel conforming to ASTM 792, AZ55 Z-NAL coating, surface treated for maximum coating performance. Profile shall be SHUR-LOCK as manufactured by Custom Metal Roofing, or approved substitute. Secure roof panels with concealed clips which allow for expansion and contraction. Panel seams shall be interlocking, 1-1/2" to 2" high and spaced 12" on center. Panels shall be continuous from ridge to eave without joints.

(B) Panels shall be coated with an "Ultra Cool" finish of 70% fluoropolymer (PVDF) resin technology. Dry film thickness of the primer shall be 0.15 – 0.30 mil; dry film thickness of the topcoat shall be 0.70 – 0.80 mil. Color shall be as selected by the Engineer. Exterior finish warranty - 20 years.

For interior surfaces, provide a coat of off-white polyester enamel applied to a minimum total dry film thickness of 1.0 mil.

(C) Metal edge flashing and wall flashing shall be furnished under Section 661 – Flashing and Sheet Metal, and shall be finished same as for metal roofing.

(D) Closures: Shall be standard manufactured closed cell polyethylene, as required.

(E) Exposed fasteners: Shall be self-drilling and self-tapping type 316 stainless steel screws with combination metal and neoprene washers with hex head and sealing washer painted to match metal roofing color. Concealed fasteners shall be as recommended by the manufacturer.

(F) Underlayment: Roofing underlayment shall be self-adhering and cold-applied, "WeatherMaster Polyseal SE" or approved substitute.

(G) Flashing Tape: Shall be self-sticking rubberized asphalt with an aluminum foil facing for application under ridge and hip flashings and/or where indicated on the drawings and as approved by the roofing panel manufacturer.

(H) Components: Provide as required for a complete roofing/flashing system, including trim, copings, flashing, closure strips, etc.

(I) Manufacturer: Subject to compliance with the specified requirements, the following metal roofing products are acceptable for use

on this project. The products of other manufacturers are acceptable provided they meet or exceed the material and construction requirements specified herein and are prequalified.

- (1) "Shur-Lock" as manufactured by Custom Metal Roofing.
- (2) "Vertical Seam" as manufactured by Metal Sales Manufacturing Corporation.
- (3) "Lok-Seam" as manufactured by MBCI Corporation.
- (4) Or approved substitute.

680.07 Installation and Workmanship.

(A) Work shall be performed by skilled workmen in conformance with approved commercial practice and/or manufacturer's instructions to and recommendations to insure weather tightness.

(B) Insert closure strip where indicated on drawings. Apply a bead of adhesive sealant to all sides of closure before installation per roofing manufacturer's recommendations.

(C) Coordinate installation of metal roofing with gutters and downspouts, specified in Section 661 – Flashing and Sheet Metal.

(D) Manufacturers technical representative shall conduct inspection of roofing installation to ensure compliance with these specifications and conformance with manufacturers installation instructions. Upon completion of the roof system installation, the manufacturer's representative shall provide written certification to the Engineer that roofing has been installed in accordance with manufacturer's instructions and is free of defects in material and workmanship.

680.08 Clean-up.

Roofing shall be swept clean of metal filings at the end of each day to prevent rusting and discoloration of roofing. Touch-up paint shall not be used without the expressed permission of the Engineer or Manufacturer.

680.09 Measurement and Payment.

(A) Preformed Metal Roofing work shall not be paid separately but shall be considered incidental to the construction of the Truck Weigh Station, in the Proposal Schedule.

END OF SECTION 680”

1 Make the following section a part of the Standard Specifications:

2
3 **“SECTION 681 – METAL-PLATE-CONNECTED WOOD TRUSSES**

4
5 **681.01 General Conditions.**

6
7 (A) The General Conditions, the Special Provisions, and all other applicable
8 documents preceding these specifications shall govern all work specified
9 hereinafter in all Divisions and Sections.

10
11 **681.02 Summary.**

12
13 (A) Section includes:

- 14
15 (1) Wood roof trusses
16
17 (2) Wood truss bracing
18
19 (2) Metal truss accessories
20

21
22 **681.03 Definitions.**

23
24 (A) **Metal-Plate-Connected Wood Trusses.** Planar structural units
25 consisting of metal-plate-connected members fabricated from dimension lumber
26 and cut and assembled before delivery to Project site.

27
28 **681.04 Submittals.**

29
30 (A) **Product Data.** For wood-preservative-treated lumber, metal-plate
31 connectors, metal truss accessories, and fasteners.

32
33 (1) Include data for wood-preservative treatment from chemical
34 treatment manufacturer and certification by treating plant that treated
35 materials comply with requirements. Indicate type of preservative used
36 and net amount of preservative retained.

37
38 (2) For products receiving a waterborne treatment, include statement
39 that moisture content of treated materials was reduced to levels specified
40 before shipment to truss fabricator.

41
42 (3) Include copies of warranties from chemical treatment
43 manufacturers for each type of treatment.
44
45

(B) Shop Drawings. Show fabrication and installation details for trusses.

(1) Show location, pitch, span, camber, configuration, and spacing for each type of truss required.

(2) Indicate sizes, stress grades, and species of lumber.

(3) Indicate locations of permanent bracing required to prevent buckling of individual truss members due to design loads.

(4) Indicate locations, sizes, and materials for permanent bracing required to prevent buckling of individual truss members due to design loads.

(5) Indicate type, size, material, finish, design values, orientation, and location of metal connector plates.

(6) Show splice details and bearing details.

(C) Delegated-Design Submittal. For metal-plate-connected wood trusses indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

(B) Material Certificates. For dimension lumber specified to comply with minimum specific gravity. Indicate species and grade selected for each use and specific gravity.

(B) Evaluation Reports. For the following, from ICC-ES:

(1) Wood-preservative-treated lumber.

(2) Metal-plate connectors.

(3) Metal truss accessories.

681.05 Quality Assurance.

(A) Metal Connector-Plate Manufacturer Qualifications. A manufacturer that is a member of TPI and that complies with quality-control procedures in TPI 1 for manufacture of connector plates.

(1) Manufacturer's responsibilities include providing professional engineering services needed to assume engineering responsibility.

(2) Engineering Responsibility: Preparation of Shop Drawings and comprehensive engineering analysis by a professional engineer licensed in the State of Hawaii.

681.06 Delivery, Storage, and Handling.

(A) Handle and store trusses to comply with recommendations in TPI BCSI, "Building Component Safety Information: Guide to Good Practice for Handling, Installing, Restraining, & Bracing Metal Plate Connected Wood Trusses."

(1) Store trusses flat, off of ground, and adequately supported to prevent lateral bending.

(2) Protect trusses from weather by covering with waterproof sheeting, securely anchored.

(3) Provide for air circulation around stacks and under coverings.

(B) Inspect trusses showing discoloration, corrosion, or other evidence of deterioration. Discard and replace trusses that are damaged or defective.

681.07 Performance Requirements.

(A) **Delegated Design.** Engage a professional engineer licensed in the State of Hawaii to design metal-plate-connected wood trusses.

(B) **Structural Performance.** Provide metal-plate-connected wood trusses capable of withstanding design loads within limits and under conditions indicated. Comply with requirements in TPI 1 unless more stringent requirements are specified below.

(1) Design Loads: As indicated.

(2) Maximum Deflection Under Design Loads:

(a) Roof Trusses: Vertical deflection of 1/240 of span.

(C) Comply with applicable requirements and recommendations of the following publications:

(1) TPI 1, "National Design Standard for Metal Plate Connected Wood Truss Construction."

(2) TPI DSB, "Recommended Design Specification for Temporary Bracing of Metal Plate Connected Wood Trusses."

(3) TPI BCSI, "Building Component Safety Information: Guide to Good Practice for Handling, Installing, Restraining, & Bracing Metal Plate Connected Wood Trusses."

(D) **Wood Structural Design Standard.** Comply with applicable requirements in AF&PA's "National Design Specifications for Wood Construction" and its "Supplement."

681.08 Dimension Lumber.

(A) **Lumber.** DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

(1) Factory mark each piece of lumber with grade stamp of grading agency.

(2) Provide dressed lumber, S4S.

(3) Provide dry lumber with 19 percent maximum moisture content at time of dressing.

(B) **Minimum Chord Size for Roof Trusses.** 2 by 6 inches nominal for top chords and 2 by 4 inches nominal for bottom chords.

(C) **Permanent Bracing.** Provide wood bracing.

681.09 Wood-Preservative-Treated Lumber.

(A) Preservative Treatment by Pressure Process. AWP A U1; Use Category UC3b.

(1) Preservative Chemicals. Acceptable to authorities having jurisdiction and containing no arsenic or chromium.

(B) Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or does not comply with requirements for untreated material.

(C) Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

(D) Application. Treat all trusses unless otherwise indicated.

681.10 Metal Connector Plates.

(A) Source Limitations. Obtain metal connector plates from single manufacturer.

(B) General. Fabricate connector plates to comply with TPI 1.

(C) Hot-Dip Heavy-Galvanized-Steel Sheet. ASTM A 653/A 653M; Structural Steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 coating designation; and not less than 0.036 inch thick.

681.11 Fasteners.

(A) General. Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

(1) Provide fasteners for use with metal framing anchors that comply with written recommendations of metal framing manufacturer.

(2) Where trusses are exposed to weather, in ground contact, made from pressure-preservative treated wood, or in area of high relative humidity, provide fasteners of Type 304 stainless steel.

(B) Nails, Brads, and Staples. ASTM F 1667.

681.12 Metal Framing Anchors and Accessories.

(A) Manufacturers. Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

- (1)** Simpson Strong-Tie Co., Inc.
- (2)** or approved equal.

681.13 Fabrication.

(A) Cut truss members to accurate lengths, angles, and sizes to produce close-fitting joints.

(B) Fabricate metal connector plates to sizes, configurations, thicknesses, and anchorage details required to withstand design loads for types of joint designs indicated.

(C) Assemble truss members in design configuration indicated; use jigs or other means to ensure uniformity and accuracy of assembly with joints closely fitted to comply with tolerances in TPI 1. Position members to produce design camber indicated.

- (1)** Fabricate wood trusses within manufacturing tolerances in TPI 1.

(D) Connect truss members by metal connector plates located and securely embedded simultaneously in both sides of wood members by air or hydraulic press.

681.14 Source Quality Control.

(A) Special Inspections: Owner will engage a qualified special inspector to perform special inspections.

- (1)** Provide special inspector with access to fabricator's documentation of detailed fabrication and quality-control procedures that provide a basis for inspection control of the workmanship and the fabricator's ability to conform to approved construction documents and referenced standards.

- (2)** Provide special inspector with access to places where wood trusses are being fabricated to perform inspections.

- (B) Correct deficiencies in Work that special inspections indicate does not comply with the Contract Documents.

681.15 Installation.

- (A) Install wood trusses only after supporting construction is in place and is braced and secured.
- (B) If trusses are delivered to Project site in more than one piece, assemble trusses before installing.
- (C) Hoist trusses in place by lifting equipment suited to sizes and types of trusses required, exercising care not to damage truss members or joints by out-of-plane bending or other causes.
- (D) Install and brace trusses according to TPI recommendations and as indicated.
- (E) Install trusses plumb, square, and true to line and securely fasten to supporting construction.
- (F) Space trusses as indicated; adjust and align trusses in location before permanently fastening.
- (G) Anchor trusses securely at bearing points; use metal truss tie-downs. Install fasteners through each fastener hole in metal framing anchors according to manufacturer's fastening schedules and written instructions.
- (H) Securely connect each truss ply required for forming built-up girder trusses.
- (1) Anchor trusses to girder trusses as indicated.
- (I) Install and fasten permanent bracing during truss erection and before construction loads are applied. Anchor ends of permanent bracing where terminating at walls or beams.
- (J) Install wood trusses within installation tolerances in TPI 1.
- (K) Do not alter trusses in field. Do not cut, drill, notch, or remove truss members.
- (L) Replace wood trusses that are damaged or do not meet requirements.

(1) Damaged trusses may be repaired according to truss repair details signed and sealed by the qualified professional engineer responsible for truss design, when approved by Architect.

681.16 Repairs and Protection.

(A) Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

(B) Protect wood *trusses* from weather. If, despite protection, wood trusses become wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

(C) Repair damaged galvanized coatings on exposed surfaces with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

(D) Protective Coating: Clean and prepare exposed surfaces of metal connector plates. Brush apply primer, when part of coating system, and one coat of protective coating.

(1) Apply materials to provide minimum dry film thickness recommended by coating system manufacturer.

681.17 Measurement and Payment.

(A) Payment for the work covered under this section shall not be made directly but shall be considered incidental to the construction of the Truck Weigh Station, in the Proposal Schedule.

END OF SECTION 681"

Make the following section a part of the Standard Specifications:

“SECTION 682 – TRUCK WEIGH STATION

682.01 Description. This work includes furnishing labor, materials, tools, machinery and equipment necessary to construct the truck weigh station buildings, consisting of the truck weigh station building and the weighing scale storage building.

682.02 Materials and Construction. Materials and construction methods for the truck weigh station buildings shall conform to the following specification sections:

Concrete Structures	503
Reinforcing Steel	602
Carpentry	657
Wood Treatment	658
Batt Insulation	659
Fluid Applied Roofing System	660
Flashing and Sheet Metal	661
Sealants	662
Aluminum Doors and Frames	663
Aluminum Windows	664
Finish Hardware	665
Gypsum Wallboard	666
Acoustical Ceilings	667
Resilient Tile Floor	668
Ceramic Tile	669
Painting	670
Miscellaneous Specialties	671
Sun Control Devices	672
Plumbing	673
Air Conditioning and Ventilation	674
General Electrical Requirements	675
Electrical Work	676
Interior Lighting	677
Unit Masonry Assemblies	678
Preformed Metal Roofing	680
Metal-Plate-Connected-Wood Trusses	681

682.03 Measurement. The Truck Weigh Station will be paid on a lump sum basis. Measurement for payment will not apply.

682.04 Basis of Payment. The Engineer will pay for the accepted Truck Weigh Station on a contract lump sum basis. Payment will be for full compensation for the work prescribed in this section and the contract documents.

The Engineer will consider additional materials and labor, needed to complete the installation of the system and not shown in the contract included in the bid price of the various contract items.

The Engineer will pay for hauling and stockpiling of salvaged materials and equipment off the right-of-way as ordered by the Engineer in accordance with Subsection 104.02 - Changes.

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

Pay Item	Pay Unit
Truck Weigh Station	L.S.

END OF SECTION 682"

SECTION 696 – FIELD OFFICE AND PROJECT SITE LABORATORY

Make the following amendments to said Section:

(I) Amend Subsection **696.05** Materials, by replacing lines 232 to 248 to read as follows:

“Field Office Trailer (Not to Exceed \$50,000.00)	Force Account
---	---------------

An estimated amount for force account may be allocated in proposal schedule under "Field Office Trailer (Not to Exceed \$50,000.00)", but the actual amount to be paid will be the sum shown on accepted force account records, including initial utility installation, start up costs, and disconnection of utilities, whether this sum be more or less than the estimate amount allocated in the proposal schedule."

END OF SECTION 696

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(I) Amend **699.03 Applicability** by revising from lines 21 to 24 to read as follows:

(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

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SECTION 702 – BITUMINOUS MATERIALS

Make the following amendments to said Section:

- (I) 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

1 **SECTION 750 – TRAFFIC CONTROL SIGN AND MARKER MATERIALS**

2
3 Make the following amendments to said Section:

4
5 **(I)** Amend **Subsection 750.01(A)(1) Retroreflectorization** by replacing lines
6 8 through 31 to read:

7
8 **“(1) Retroreflectorization.** The following shall be retroreflectorized:

9
10 **(a)** Background for illuminated guide signs and exit number panels ("E"
11 designation) with ASTM D 4956 Type XI retroreflective sheeting.

12
13 **(b)** Background for non-illuminated guide signs and exit number panels
14 ("D" designation) with ASTM D 4956 Type XI retroreflective sheeting.

15
16 **(c)** Messages, arrows, and borders of guide signs and exit number
17 panels ("D" and "E" designations) with ASTM D 4956 Type XI
18 retroreflective sheeting.

19
20 **(d)** Regulatory and warning signs, directional signs ("DIR" designation),
21 route and auxiliary markers, shield symbols, yellow "EXIT ONLY" panels,
22 construction warning signs, and barricade rails, completely, with Type III,
23 IV, or IX retroreflective sheeting.

24
25 **(e)** Pedestrian, school, bicycle crossing series, completely with Type IX
26 fluorescent yellow green retroreflective sheeting.”

27
28
29 **(II)** Amend **Subsection 750.01(B) Backing** by replacing lines 72 through 73
30 to read:

31
32 “Aluminum sheet shall conform to ASTM B 209, alloy 5052-H38 or 6061-
33 T6 flat sheet.”

34
35 **(III)** Amend **Subsection 750.01(E) Retroreflective Sheeting Materials** by
36 replacing lines 1126 through 1137 to read:

37
38 **“(E) Retroreflective Sheeting Materials.** Retroreflective sheeting
39 includes white or colored sheeting having smooth outer surface.

40
41 Retroreflective sheeting shall be classified in accordance with ASTM D
42 4956.

43
44 The coefficient of retroreflection shall meet the minimum requirements of
45 ASTM D 4956 for the type of reflective sheeting specified.

47 The color shall conform to the latest appropriate standard color tolerance
48 chart issued by the U.S. Department of Transportation, Federal Highway
49 Administration and to the daytime and nighttime color requirements of ASTM D
50 4956.

51
52 Test methods and procedures shall be in accordance with ASTM.

53
54 **(IV)** Amend **Subsection 750.02 Sign Posts** by replacing lines 1168 through
55 1172 to read:

56
57 **“(C) Square Tube Posts.** Square and other tube posts shall conform to ASTM
58 A 653 for cold-rolled, carbon steel sheet, commercial quality; or ASTM A 787 for
59 electric-resistance-welded, metallic-coated carbon steel mechanical tubing.”

60
61
62
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66 **END OF SECTION 750**

1 **SECTION 755 – PAVEMENT MARKING MATERIALS**

2
3 Make the following amendments to said Section:

4
5 **(I) Amend Subsection 755.02 (C) Retroreflective Pavement Markers** by
6 revising lines 223 to 236 to read:

7
8 “Exterior surface of shell shall be smooth and contain one or two
9 retroreflective faces of specified color.”

10
11 **(II) Amend Subsection 755.05 (C)(1) Glass Beads** by adding the following
12 after line 869:

13
14 **“(f)** The glass spheres shall not contain more than 200 ppm (total)
15 arsenic, 200 ppm (total) antimony nor more than 200 ppm (total)
16 lead, when tested according to EPA Methods 3052 and 6010C.
17 Other suitable x-ray fluorescence spectrometry analysis methods
18 may be used to screen samples of glass spheres for arsenic and
19 lead content.”

20
21
22
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26 **END OF SECTION 755**
27

1 **SECTION 760 - ROADWAY AND SIGN LIGHTING SYSTEMS MATERIALS**

2
3 Make the following amendments to said Section:

4
5 (I) Amend **760.03 (A)** to read as follows:

6
7 **“(A) Luminaires for Roadway Lighting.** Luminaires for roadway
8 lighting shall be fully shielded LED, UL listed for wet locations.

9
10 **(1) Housing.** Housing shall be rear-entry, low copper, one
11 piece die-cast aluminum with integral heat sink fins, two-inch
12 slipfitter for inner wiring, polished aluminum reflector of snap-in
13 design and pressed flat glass refractor optical assembly. A solid
14 barrier wall shall separate the optical and electrical compartments.

15
16 **(2) Door Assembly.** The door assembly shall be a one-piece
17 die cast, low copper aluminum alloy assembly for bottom entry.
18 The door assembly shall use a stainless steel tool-less screw or
19 cam-latch and have a secondary stainless steel safety latch to
20 prevent the door from falling when opening. The door assembly
21 shall have hinge latches that do not require tools for removal from
22 the housing.

23
24 **(3) Photoelectric Cell Receptacle.** Luminaire shall have a 7-
25 pin photoelectric control receptacle per ANSI C136.41. The
26 photoelectric receptacle socket shall rotate without tools. Luminaire
27 housing shall not interfere with the operation of the photocell.

28
29 **(4) Electronic Driver.** One piece unit pre-wired and installed in
30 the electrical compartment of the luminaire and mounted to the
31 luminaire housing.

32
33 **(a)** Rated lifetime of 100,000 hours at less than 60
34 degrees C.

35
36 **(b)** Maximum allowable case temperature of 80
37 degrees C with built-in thermal protection.

38
39 **(c)** Input Voltage: 120-277 volts.

40
41 **(d)** Input Frequency: 50/60 Hz.

42
43 **(e)** Full Load Efficiency at 120 volts: Greater than 88%.

44
45 **(f)** Total Harmonic Distortion: Less than 20%.

46 (g) Power Factor: Greater than 90%.

47
48 (h) Operating Temperature: -40 degrees C to 80 degrees
49 C.

50
51 (i) Surge Protection: 10 kV/5 kA per IEEE/ANSI C136.2-
52 2015 Location C.

53
54 (5) **LED Light Source.** 4000K nominal correlated color
55 temperature (CCT) per ANSI C78.377-2011.

56
57 (a) CRI: Greater than 70 at 4000K.

58
59 (b) Lumen Depreciation: Light source shall deliver a
60 minimum of 85% of initial lumens after a minimum of 50,000
61 hours.

62
63 (c) Lumen output and wattage shall be as indicated in the
64 contract documents.

65
66 (6) **Illumination:** Luminaires shall provide the roadway with
67 minimum average maintained illumination values in accordance
68 with manufacturer's specifications and IES light distribution type
69 indicated in the contract documents. Photometric data with
70 certification of conformance shall be submitted.

71
72 (7) Luminaire shall be provided with a flat translucent tempered
73 glass lens beneath the LED optical assembly to minimize direct
74 view of the LEDs. Exposed optics and internal shields will not be
75 allowed.

76
77 (8) **Networked Highway Lighting Controls.** Lighting control
78 nodes shall be provided at each roadway lighting luminaire.
79 Control node shall be mechanically and electrically attached to the
80 luminaire via the twistlock photocell receptacle on the luminaire.
81 Node shall have an internal GPS device and shall be capable of
82 responding to any command received from the DOT Highways
83 Division's existing wireless lighting control network.

84
85
86 **END OF SECTION 760**

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]

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.
- 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]
- Payroll records shall be maintained by the contractor and subcontractors for three years after completion of construction. The records shall contain: [HAR §12-22-10]
 - the name and home address of each employee
 - 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
 - actual wages paid
 - date of payment
- Records shall be made available for inspection by the contracting agency, the Department of Labor and Industrial Relations, and any of its authorized representatives, who may also interview employees during working hours on the job. [§104-3(b), HRS]

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 and Trainees

- In order to be paid apprentice or trainee rates, apprentices and trainees must be parties to an agreement either registered with or recognized as a USDOL nationally approved apprenticeship program by the Department of Labor and Industrial Relations, Workforce Development Division, (808) 586-8877. [§12-22-6(1), HAR]
- The number of apprentices or trainees on any public work in relation to the number of journeymen in the same craft classification as the apprentices or trainees employed by the same employer on the same public work may not exceed the ratio allowed under the apprenticeship or trainee standards registered with or recognized by the Department of Labor and Industrial Relations. A registered or recognized apprentice receiving the journeyman rate will not be considered a journeyman for the purpose of meeting the ratio requirement. [§12-22-6(2), 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:
 - 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**.
- **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]
- **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)]
- 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)]
- 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)]

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) 322-4808
Kauai	(808) 274-3351
Maui	(808) 243-5322

"General Decision Number: HI20210001 03/19/2021

Superseded General Decision Number: HI20200001

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: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.95 for calendar year 2021 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, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.95 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 calendar year 2021. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/01/2021
1	01/08/2021
2	01/22/2021
3	02/12/2021
4	02/19/2021
5	03/19/2021

ASBE0132-001 08/30/2020

	Rates	Fringes
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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.....	\$ 41.90	25.65
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BOIL0627-005 01/01/2013

	Rates	Fringes
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BOILERMAKER.....	\$ 35.20	27.35
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BRHI0001-001 08/31/2020

	Rates	Fringes
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BRICKLAYER

Bricklayers and Stonemasons.	\$ 45.95	29.59
Pointers, Caulkers and Weatherproofers.....	\$ 46.21	29.59

BRHI0001-002 08/31/2020

	Rates	Fringes
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Tile, Marble & Terrazzo Worker

Terrazzo Base Grinders.....	\$ 41.69	28.11
Terrazzo Floor Grinders and Tenders.....	\$ 40.14	28.11
Tile, Marble and Terrazzo Workers.....	\$ 43.50	28.11

CARP0745-001 08/31/2020

	Rates	Fringes
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Carpenters:

Carpenters; Hardwood Floor Layers; Patent Scaffold Erectors (14 ft. and over); Piledrivers; Pneumatic Nailers; Wood Shinglers and Transit and/or Layout Man.....	\$ 50.50	23.59
Millwrights and Machine Erectors.....	\$ 50.75	23.59
Power Saw Operators (2 h.p. and over).....	\$ 50.65	23.59

CARP0745-002 08/31/2020

	Rates	Fringes
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Drywall and Acoustical

Workers and Lathers.....	\$ 50.50	23.59
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ELEC1186-001 08/23/2020

	Rates	Fringes
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Electricians:

Cable Splicers.....	\$ 56.71	31.16
Electricians.....	\$ 51.55	29.58
Telecommunication worker....	\$ 32.69	12.96

ELEC1186-002 08/23/2020

	Rates	Fringes
Line Construction:		
Cable Splicers.....	\$ 56.71	31.16
Groundmen/Truck Drivers.....	\$ 38.66	25.63
Heavy Equipment Operators...	\$ 46.40	28.00
Linemen.....	\$ 51.55	29.58
Telecommunication worker....	\$ 32.69	12.96

ELEV0126-001 01/01/2021

	Rates	Fringes
ELEVATOR MECHANIC.....	\$ 63.18	35.825+a+b

a. VACATION: Employer contributes 8% of basic hourly rate for 5 years service and 6% of basic hourly rate for 6 months to 5 years service as vacation pay credit.

b. PAID HOLIDAYS: New Year's Day, Memorial Day, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day, the Friday after Thanksgiving Day and Christmas Day.

ENGI0003-002 09/03/2018

	Rates	Fringes
Diver (Aqua Lung) (Scuba))		
Diver (Aqua Lung) (Scuba) (over a depth of 30 feet)...	\$ 66.00	31.26
Diver (Aqua Lung) (Scuba) (up to a depth of 30 feet)..	\$ 56.63	31.26
Stand-by Diver (Aqua Lung) (Scuba).....	\$ 47.25	31.26
Diver (Other than Aqua Lung)		
Diver (Other than Aqua Lung).....	\$ 66.00	31.26
Diver Tender (Other than Aqua Lung).....	\$ 44.22	31.26
Stand-by Diver (Other than Aqua Lung).....	\$ 47.25	31.26
Helicopter Work		
Airborne Hoist Operator for Helicopter.....	\$ 45.80	31.26
Co-Pilot of Helicopter.....	\$ 45.98	31.26
Pilot of Helicopter.....	\$ 46.11	31.26
Power equipment operator - tunnel work		
GROUP 1.....	\$ 42.24	31.26
GROUP 2.....	\$ 42.35	31.26
GROUP 3.....	\$ 42.52	31.26
GROUP 4.....	\$ 42.79	31.26
GROUP 5.....	\$ 43.10	31.26
GROUP 6.....	\$ 43.75	31.26
GROUP 7.....	\$ 44.07	31.26
GROUP 8.....	\$ 44.18	31.26
GROUP 9.....	\$ 44.29	31.26
GROUP 9A.....	\$ 44.52	31.26
GROUP 10.....	\$ 44.58	31.26
GROUP 10A.....	\$ 44.73	31.26
GROUP 11.....	\$ 44.88	31.26
GROUP 12.....	\$ 45.24	31.26
GROUP 12A.....	\$ 45.60	31.26

Power equipment operators:

GROUP 1.....	\$ 41.94	31.26
GROUP 2.....	\$ 42.05	31.26
GROUP 3.....	\$ 42.22	31.26
GROUP 4.....	\$ 42.49	31.26
GROUP 5.....	\$ 42.80	31.26
GROUP 6.....	\$ 43.45	31.26
GROUP 7.....	\$ 43.77	31.26
GROUP 8.....	\$ 43.88	31.26
GROUP 9.....	\$ 43.99	31.26
GROUP 9A.....	\$ 44.22	31.26
GROUP 10.....	\$ 44.28	31.26
GROUP 10A.....	\$ 44.43	31.26
GROUP 11.....	\$ 44.58	31.26
GROUP 12.....	\$ 44.94	31.26
GROUP 12A.....	\$ 45.30	31.26
GROUP 13.....	\$ 42.22	31.26
GROUP 13A.....	\$ 42.49	31.26
GROUP 13B.....	\$ 42.80	31.26
GROUP 13C.....	\$ 43.45	31.26
GROUP 13D.....	\$ 43.77	31.26
GROUP 13E.....	\$ 43.88	31.26

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Fork Lift (up to and including 10 tons); Partsman (heavy duty repair shop parts room when needed).

GROUP 2: Conveyor Operator (Handling building material); Hydraulic Monitor; Mixer Box Operator (Concrete Plant).

GROUP 3: Brakeman; Deckhand; Fireman; Oiler; Oiler/Gradechecker; Signalman; Switchman; Highline Cableway Signalman; Bargeman; Bunkerman; Concrete Curing Machine (self-propelled, automatically applied unit on streets, highways, airports and canals); Leveeman; Roller (5 tons and under); Tugger Hoist.

GROUP 4: Boom Truck or dual purpose ""A"" Frame Truck (5 tons or less); Concrete Placing Boom (Building Construction); Dinky Operator; Elevator Operator; Hoist and/or Winch (one drum); Straddle Truck (Ross Carrier, Hyster and similar).

GROUP 5: Asphalt Plant Fireman; Compressors, Pumps, Generators and Welding Machines (""Bank"" of 9 or more, individually or collectively); Concrete Pumps or Pumpcrete Guns; Lubrication and Service Engineer (Grease Rack); Screedman.

GROUP 6: Boom Truck or Dual Purpose ""A"" Frame Truck (over 5 tons); Combination Loader/Backhoe (up to and including 3/4 cu. yd.); Concrete Batch Plants (wet or dry); Concrete Cutter, Groover and/or Grinder (self-propelled unit on streets, highways, airports, and canals); Conveyor or Concrete Pump (Truck or Equipment Mounted); Drilling Machinery (not to apply to waterliners, wagon drills or jack hammers); Fork Lift (over 10 tons); Loader (up to and including 3 and 1/2 cu. yds); Lull High Lift (under 40 feet); Lubrication and Service Engineer (Mobile); Maginnis Internal Full Slab Vibrator (on airports, highways, canals and warehouses); Man or Material Hoist; Mechanical Concrete Finisher (Large Clary, Johnson Bidwell, Bridge Deck and similar); Mobile Truck Crane Driver; Portable Shotblast Concrete Cleaning Machine; Portable Boring Machine (under streets, highways, etc.); Portable Crusher; Power Jumbo

Operator (setting slip forms, etc., in tunnels); Rollers (over 5 tons); Self-propelled Compactor (single engine); Self-propelled Pavement Breaker; Skidsteer Loader with attachments; Slip Form Pumps (Power driven by hydraulic, electric, air, gas, etc., lifting device for concrete forms); Small Rubber Tired Tractors; Trencher (up to and including 6 feet); Underbridge Personnel Aerial Platform (50 feet of platform or less).

GROUP 7: Crusher Plant Engineer, Dozer (D-4, Case 450, John Deere 450, and similar); Dual Drum Mixer, Extend Lift; Hoist and/or Winch (2 drums); Loader (over 3 and 1/2 cu. yds. up to and including 6 yards.); Mechanical Finisher or Spreader Machine (asphalt), (Barber Greene and similar) (Screedman required); Mine or Shaft Hoist; Mobile Concrete Mixer (over 5 tons); Pipe Bending Machine (pipelines only); Pipe Cleaning Machine (tractor propelled and supported); Pipe Wrapping Machine (tractor propelled and supported); Roller Operator (Asphalt); Self-Propelled Elevating Grade Plane; Slusher Operator; Tractor (with boom) (D-6, or similar); Trencher (over 6 feet and less than 200 h.p.); Water Tanker (pulled by Euclids, T-Pulls, DW-10, 20 or 21, or similar); Winchman (Stern Winch on Dredge).

GROUP 8: Asphalt Plant Operator; Barge Mate (Seagoing); Cast-in-Place Pipe Laying Machine; Concrete Batch Plant (multiple units); Conveyor Operator (tunnel); Deckmate; Dozer (D-6 and similar); Finishing Machine Operator (airports and highways); Gradesetter; Kolman Loader (and similar); Mucking Machine (Crawler-type); Mucking Machine (Conveyor-type); No-Joint Pipe Laying Machine; Portable Crushing and Screening Plant; Power Blade Operator (under 12); Saurman Type Dragline (up to and including 5 yds.); Stationary Pipe Wrapping, Cleaning and Bending Machine; Surface Heater and Planer Operator, Tractor (D-6 and similar); Tri-Batch Paver; Tunnel Badger; Tunnel Mole and/or Boring Machine Operator Underbridge Personnel Aerial Platform (over 50 feet of platform).

GROUP 9: Combination Mixer and Compressor (gunite); Do-Mor Loader and 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, Liebherr, 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 09/03/2018

	Rates	Fringes
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Power Equipment Operators
(PAVING)

Asphalt Concrete Material Transfer.....	\$ 42.92	32.08
Asphalt Plant Operator.....	\$ 43.35	32.08
Asphalt Raker.....	\$ 41.96	32.08
Asphalt Spreader Operator...	\$ 43.44	32.08
Cold Planer.....	\$ 43.75	32.08
Combination Loader/Backhoe (over 3/4 cu.yd.).....	\$ 41.96	32.08
Combination Loader/Backhoe (up to 3/4 cu.yd.).....	\$ 40.98	32.08
Concrete Saws and/or Grinder (self-propelled unit on streets, highways, airports and canals).....	\$ 42.92	32.08
Grader.....	\$ 43.75	32.08
Laborer, Hand Roller.....	\$ 41.46	32.08
Loader (2 1/2 cu. yds. and under).....	\$ 42.92	32.08
Loader (over 2 1/2 cu. yds. to and including 5 cu. yds.).....	\$ 43.24	32.08
Roller Operator (five tons and under).....	\$ 41.69	32.08
Roller Operator (over five tons).....	\$ 43.12	32.08
Screed Person.....	\$ 42.92	32.08
Soil Stabilizer.....	\$ 43.75	32.08

 IRON0625-001 09/01/2020

	Rates	Fringes
Ironworkers:.....	\$ 42.50	36.84
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.		

 LAB00368-001 09/02/2020

	Rates	Fringes
Laborers:		
Driller.....	\$ 39.70	22.68
Final Clean Up.....	\$ 29.65	18.17
Gunite/Shotcrete Operator and High Scaler.....	\$ 39.20	22.68
Laborer I.....	\$ 38.70	22.68
Laborer II.....	\$ 36.10	22.68
Mason Tender/Hod Carrier....	\$ 39.20	22.68
Powderman.....	\$ 39.70	22.68
Window Washer (bosun chair).\$	38.20	22.68

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, establishing 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 unloading 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 waterpools, 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 Scalpers; 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; Stripper (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 and false

work.

LAB00368-002 09/01/2020

	Rates	Fringes
Landscape & Irrigation Laborers		
GROUP 1.....	\$ 26.40	14.25
GROUP 2.....	\$ 27.40	14.25
GROUP 3.....	\$ 21.70	14.25

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 of landscaping 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 performance of other types of gardening, yardman, and horticultural-related work.

LAB00368-003 09/02/2020

	Rates	Fringes
Underground Laborer		
GROUP 1.....	\$ 39.30	22.68
GROUP 2.....	\$ 40.80	22.68
GROUP 3.....	\$ 41.30	22.68
GROUP 4.....	\$ 42.30	22.68
GROUP 5.....	\$ 42.65	22.68
GROUP 6.....	\$ 42.90	22.68
GROUP 7.....	\$ 43.35	22.68

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 Picker (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 01/01/2021

	Rates	Fringes
Painters:		
Brush.....	\$ 38.90	30.09
Sandblaster; Spray.....	\$ 38.90	30.09

PAIN1889-001 07/01/2020

	Rates	Fringes
Glaziers.....	\$ 39.50	34.85

PAIN1926-001 03/03/2020

	Rates	Fringes
Soft Floor Layers.....	\$ 36.65	31.29

PAIN1944-001 01/05/2020

	Rates	Fringes
Taper.....	\$ 43.10	29.90

PLAS0630-001 09/02/2019

	Rates	Fringes
PLASTERER.....	\$ 42.64	30.58

PLAS0630-002 09/02/2019

	Rates	Fringes
Cement Masons:		
Cement Masons.....	\$ 41.10	30.68
Trowel Machine Operators....	\$ 41.25	30.68

 * PLUM0675-001 01/03/2021

	Rates	Fringes
Plumber, Pipefitter, Steamfitter & Sprinkler Fitter...	\$ 51.43	24.55

ROOF0221-001 09/06/2020

	Rates	Fringes
Roofers (Including Built Up, Composition and Single Ply).....	\$ 41.80	20.50

SHEE0293-001 09/02/2018

	Rates	Fringes
Sheet metal worker.....	\$ 42.55	27.44

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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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 www.dol.gov/whd/govcontracts.

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) (ii)).

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.

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 Regional Office for the area in which the survey was conducted because those Regional Offices have 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: Sand Island Access Road
Truck Weigh Station
District of Honolulu
Island of Oahu

FEDERAL AID PROJECT NO.: NH-064-1(010)

COMPLETION TIME: 213 WORKING days from the date indicated in the
Notice to Proceed from the Department.

DBE PROJECT GOAL: 13.2%

DESIGN PROJECT MANAGER:

NAME: Mr. Lawrence Laus
ADDRESS: 601 Kamokila Boulevard, Room 609
PHONE NO.: (808) 692-8431
EMAIL: lawrence.m.laus@hawaii.gov
FAX NO.: (808) 692-7590

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 Joint Contractor or Subcontractor and the nature of work to be done by each on the following page. 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 it's 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	DBE (Y/N)
1.	_____	_____	_____
1a ¹ .	_____	_____	_____
2.	_____	_____	_____
2a.	_____	_____	_____
3.	_____	_____	_____
3a.	_____	_____	_____
4.	_____	_____	_____
4a.	_____	_____	_____
5.	_____	_____	_____
5a.	_____	_____	_____
6.	_____	_____	_____
6a.	_____	_____	_____
7.	_____	_____	_____
7a.	_____	_____	_____

NOTES:

Firms claiming DBE Status must be certified with HDOT prior to the bid opening date. Prime Bidder must reasonably assure itself that the listed firms claiming DBE status are certified with HDOT as of the bid opening date.

The Name of Firm and Nature of Work shall be indicated for all firms.

¹ Second tier subcontractors

JOINT CONTRACTOR, SUPPLIER AND MANUFACTURER LISTING

(Attach additional sheets if necessary.)

NAME OF FIRM	NATURE OF WORK	DBE (Y/N)
JOINT CONTRACTOR:		
1. _____	_____	_____
1a ¹ . _____	_____	_____
SUPPLIER:		
1. _____	_____	_____
1a. _____	_____	_____
2. _____	_____	_____
2a. _____	_____	_____
MANUFACTURER:		
1. _____	_____	_____
1a. _____	_____	_____
2. _____	_____	_____
2a. _____	_____	_____

NOTE:

Firms claiming DBE Status must be certified with HDOT prior to the bid opening date. Prime Bidder must reasonably assure itself that the listed firms claiming DBE status are certified with HDOT as of the bid opening date.

The Name of Firm and Nature of Work shall be indicated for all firms.

¹ Second tier subcontractors

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

By _____
Authorized Signature

Title

Business Address

Business Telephone

Date

Contact Person and Phone Number
(If different from above.)

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
201.2000	Clearing and Grubbing	1400	S.Y.	\$ _____	\$ _____
203.0100	Roadway Excavation	2100	C.Y.	\$ _____	\$ _____
204.1000	Trench Excavation for Water Pipe	70	C.Y.	\$ _____	\$ _____
204.2000	Trench Excavation for Sewer Pipe	50	C.Y.	\$ _____	\$ _____
206.2020	Excavation for Drain Pipe and Utility Vaults	30	C.Y.	\$ _____	\$ _____
209.1000	Installation, Maintenance, Monitoring, and Removal of BMP	L.S.	L.S.	L.S.	\$ _____
209.2000	Additional Water Pollution, Dust, and Erosion Control	F.A.	F.A.	F.A.	\$ <u>15,000.00</u>
301.0100	Hot Mix Asphalt Base Course	3830	Tons	\$ _____	\$ _____
406.0600	SMA Pavement	1915	Tons	\$ _____	\$ _____
406.0610	Third-Party Profile Testing and Equipment	Allow.	Allow.	Allow.	\$ <u>20,000.00</u>
406.0620	Third-Party Dispute Resolution Profile Testing	Allow.	Allow.	Allow.	\$ <u>20,000.00</u>
503.6000	Concrete for Utility Vaults	20	C.Y.	\$ _____	\$ _____
602.6000	Reinforcing Steel for Utility Vaults	2610	Pounds	\$ _____	\$ _____

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PROPOSAL SCHEDULE

ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT
604.2300	Type 1211214P Steel Frame and Grate	3	Each	\$ _____	\$ _____
604.6000	Type 1211214P Grated Drop Inet	3	Each	\$ _____	\$ _____
607.0060	6- Feet, Chain Link Fence	8	L.F.	\$ _____	\$ _____
607.6100	Chain Link Gate, 6 Feet High and 12 Feet Wide	2	Each	\$ _____	\$ _____
622.1001	Highway Lighting Standard, LED, 10,000 Lumens	6	Each	\$ _____	\$ _____
622.1002	Highway Lighting Luminaire and Bracket Arm	2	Each	\$ _____	\$ _____
622.2001	Highway Lighting Pullbox, 2' x 4', Traffic Rated	1	Each	\$ _____	\$ _____
622.3001	Remove Wood Pole/Highway Lighting Luminaire	5	Each	\$ _____	\$ _____
622.5001	Highway Lighting Ductline, One- 2 Inch PVC Schedule 80, Concrete Encased	990	L.F.	\$ _____	\$ _____
622.6001	Highway Lighting Conductors, #2 AWG	3150	L.F.	\$ _____	\$ _____
622.6002	Highway Lighting Conductors, #4 AWG	1050	L.F.	\$ _____	\$ _____
623.1001	Traffic Signal Standard, Type I	2	Each	\$ _____	\$ _____
623.1005	Traffic Signal Head	3	Each	\$ _____	\$ _____

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PROPOSAL SCHEDULE

ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT
623.2001	Traffic Signal Pullbox, 2' x 4', Traffic Rated	2	Each	\$ _____	\$ _____
623.4001	Loop Detector Sensing Unit (6' x 6'), 1 Loop	6	Each	\$ _____	\$ _____
623.5001	Traffic Signal Ductline, One-2 Inch PVC Schedule 80, Concrete Encased	320	L.F.	\$ _____	\$ _____
623.6001	Traffic Signal Cable, Type 2, 2/C #14	290	L.F.	\$ _____	\$ _____
624.1000	Water Laterals	1	Each	\$ _____	\$ _____
624.2000	Fire Hydrants and Fire Hydrant Laterals	2	Each	\$ _____	\$ _____
629.1010	4-Inch Pavement Striping (Thermoplastic Extrusion)	3200	L.F.	\$ _____	\$ _____
629.1012	8-Inch Pavement Striping (Thermoplastic Extrusion)	3000	L.F.	\$ _____	\$ _____
629.1013	12-Inch Pavement Striping (Thermoplastic Extrusion)	28	L.F.	\$ _____	\$ _____
629.2001	Pavement Arrow (Thermoplastic Extrusion)	7	Each	\$ _____	\$ _____
629.2002	Pavement Word (Thermoplastic Extrusion)	1	Each	\$ _____	\$ _____
629.2003	Pavement Symbol (Thermoplastic Extrusion)	14	Each	\$ _____	\$ _____
629.3010	Type C Pavement Marker	150	Each	\$ _____	\$ _____

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PROPOSAL SCHEDULE

ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT
629.3020	Type H Pavement Marker	115	Each	\$ _____	\$ _____
631.1001	Regulatory Sign	4	Each	\$ _____	\$ _____
635.1000	E-Construction License	F.A.	F.A.	F.A.	\$ 110,000.00
638.1000	Curb, Type 2D	186	L.F.	\$ _____	\$ _____
645.1000	Traffic Control	L.S.	L.S.	L.S.	\$ _____
645.2000	Additional Police Officers, Additional Traffic Control Devices, and Advertisement	F.A.	F.A.	F.A.	\$ 50,000.00
648.1000	Field-Posted Drawings	L.S.	L.S.	L.S.	\$ _____
651.2001	HECO Pullbox, 2' x 4', LRFD Rated	1	Each	\$ _____	\$ _____
651.2002	HT Pullbox, 2' x 4', Traffic Rated	1	Each	\$ _____	\$ _____
651.5001	HECO Ductline, One 3-Inch PVC Schedule 40, Concrete Encased	150	L.F.	\$ _____	\$ _____
651.5002	HT Ductline, One 2-Inch PVC Schedule 40, Concrete Encased	150	L.F.	\$ _____	\$ _____
651.8001	Utility Company Service Charges	F.A.	F.A.	F.A.	\$ 50,000.00
679.1000	Weigh In Motion System	L.S.	L.S.	L.S.	\$ _____

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PROPOSAL SCHEDULE

ITEM NO.	ITEM	APPROX. QUANTITY	UNIT	UNIT PRICE	AMOUNT
682.1000	Truck Weigh Station	L.S.	L.S.	L.S.	\$ _____
696.2000	Field Office Trailer (Not to Exceed \$50,000)	F.A.	F.A.	F.A.	\$50,000.00
699.1000	Mobilization (Not to Exceed 6% of the Sum of All Items Excluding the Bid Price of This Item).	L.S.	L.S.	L.S.	\$ _____
Sum of All Items					\$ _____
NOTES: <ol style="list-style-type: none"> 1. Bids shall include all Federal, State, County and other applicable taxes. 2. The SUM OF ALL ITEMS will be used to determine the lowest responsible bidder. 3. In case of a discrepancy between unit price and the total in said bid, the unit price shall prevail. 4. Bidders must complete all unit prices and amounts. Failure to do so may be grounds for rejection of bid. 					

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CONFIRMATION BY DBE

The undersigned DBE owner or his/her designee confirms that it is currently certified by the State Department of Transportation as a DBE in the field of work indicated below, and if selected for this contract, will perform work as specified by the apparent successful prime contractor.:

☐ Licensed Subcontractor ☐ Trucker ☐ Supplier ☐ Manufacturer

☐ Consultant ☐ Broker ☐ Vendor

☐ Other, please specify _____

Primary NAICS Code: _____

Secondary NAICS Codes: _____

Description of Work to be Performed: _____

Name of DBE Firm: _____

DBE Address: _____

The undersigned submitted a bid proposal for:

(Project Name or Number)

(Name of Prime Contractor)

Signature of DBE Representative

Title

Date

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 _____ 20_____, by and between the STATE OF HAWAII, by its Director of Transportation, hereinafter referred to as "STATE," and _____ whose business and/or post office address is _____

_____ hereafter 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

or such a part thereof as shall be required by the STATE, the total amount of which labor, material 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 _____ DOLLARS (\$ _____) as follows:

which sum shall be provided from the following fund(s):

all in accordance with the specifications, the special provisions, if any, the notice to bidders, the instructions to bidders, the proposal, and plans for _____, 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, undertaking 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 _____ DOLLARS (\$ _____) 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. In any event, extras shall not exceed _____ DOLLARS (\$ _____) in lawful money and shall be provided from the following fund(s):

Where Federal funds are involved, it is covenanted and agreed by and between the parties hereto that the sums of

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.

The CONTRACTOR further agrees to execute the attached non-gratuity affidavit form prior to payment of the final estimate by the STATE.

All words used herein in the singular number shall extend to and include the plural. All words used in the plural number shall extend to and include the singular. The use of any gender shall extend to and include all genders.

IN WITNESS WHEREOF, the parties hereto have caused this instrument to be duly executed the day and year first above written.

STATE OF HAWAII

By _____
Director of Transportation

By _____

By _____

APPROVED AS TO FORM

Deputy Attorney General

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 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 Obligeo 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 Obligeo, 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 Obligeo, 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 Obligeo, 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 Obligor, 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 Obligor 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

[illegible]

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.
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DISCLOSURE OF LOBBYING ACTIVITIES
CONTINUATION SHEET

Approved by
0348-0046

Reporting Entity: _____ Page _____ of _____

STATEMENT OF COMPLIANCE

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. 2760, 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 from 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 _____.

Name of Corporation, Partnership, or Individual

Signature and Title of Signer

Subscribed and sworn before me this
_____ day of _____.

Notary Public, _____ Judicial Circuit,
State of Hawaii
My Commission Expires: _____

Doc. Date: _____ # Pages: _____.

Notary Name: _____ Circuit
Doc. Description: _____

Notary Signature Date
NOTARY CERTIFICATION